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An analysis of the livestock rearing pattern of farm-households and its future potentials –A case study in Golaghat district of Assam

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ABSTRACT

The present study was an attempt to analyze the present status of livestock rearing in Golaghat district of Assam and also to examine the future scope and potentiality for its further improvement. Methodology used was Three Stage Stratified Random Sampling Methods. Study revealed that the average availability of farm animals (consisting of bullock, buffaloes, dairy cows and goat) was 5.63 per farm household and 97.73 per cent of farm animals reared was of indigenous type and only 2.27 per cent was of improved type of breed. The average number of farm birds which consisted of indigenous type of poultry, ducks, and goose was 5.26. The average per day milk production of local cow was 0.47 litre per animal and the average egg laying capacity of farm birds were very low. The average net return from livestock rearing was Rs.3610.81 per farm and its benefit-cost ratio was 1.08. The present study revealed that there was vast scope for increasing the production, productivity and profit in livestock rearing through the very adoption of suitable improved methods and commercial level of livestock rearing followed by efficient processing and marketing technology in due space and time.

Key words: Benefit-cost ratio, Farm animal, Farm bird, Farm household, Livestock, Net return.

INTRODUCTION

The state Assam is predominantly an agrarian state and Agriculture sector supports more than 75 per cent of total population directly or indirectly providing employment to more than 53 per cent of the total workforce. The contribution of agriculture and allied sector to the gross state domestic product (GSDP) at constant (2004-05) price is 18 per cent (quick estimate) during the 2013-14 and its growth rate is estimated as 4.4 per cent (Anonymous, 2014).

On the other hand among agricultural sector livestock sector plays a vital role in the income generation of both rural and semi-urban economy of Assam. The contribution of livestock sector to state's gross domestic product is estimated as 7.7 percent, only second to crop agriculture (Anonymous, 2014). According to the state Animal Husbandry and Veterinary Department, the estimated population of different categories of livestock and poultry during the 2014 was –Indigenous cattle 90.93 lakh, cross-breed cattle 4.70 lakh, buffaloes 5.35 lakh, goat 31.29 lakh, fowl 111.13 lakh and ducks 41.78 lakh. Assam is not self-sufficient in fulfilling the requirement of various livestock product. But Assam is not self sufficient in various livestock products/produce. The total annual deficit of various livestock products such as – milk, egg and meat are 1550 million liters, 5206 million nos. and 310 tonnes respectively (Anonymous, 2014). Therefore, present study was an attempt to analyze the existing condition of livestock rearing in Golaghat district of Assam and also to highlight the future due courses of action for enhancing the production, productivity and profit in this sector for the greater interest of the very farming community for their right economic development.

The Golaghat district of Assam with a geographical area of 3502 Sq. kilometer is situated between $93^0 16'$ to $94^0 10'$ East Longitude and $25^0 50'$ to $26^0 47'$ North Latitude. The climate is tropical with a hot and humid weather prevailing most of the summer and monsoon months. Total average annual rainfall is 1300 mm. Maximum precipitation occurs in June and July. Maximum temperature is 38.0°C in June and minimum temperature is 8.0°C in December (Krishi Vigyan Kendra Golaghat, 2013). Total population of the district is 10.66 lakh of which 90.84 percent are rural population (Anonymous, 2011). The net cropped area and gross cropped area of the district are 1.19 lakh hectare and 1.82 lakh hectare respectively (GoA, 2014) and the resulting cropping intensity is about 153 percent in the district.

MATERIALS AND METHODS

Methodology used for the present study was Three Stage Stratified Random Sampling Methods. Block formed the first stage, village formed the second stage and farm households were the third and final stage of sampling. Farm households were stratified as marginal (less than 1 ha), small (1.01 to 2 ha), medium (2.01 to 3 ha) and large (more than 3ha). From each household 15 percent were selected

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for the purpose of data collection. Thus sample for the study had 112 farm households comprised of 45 marginal, 35 small, 15 medium and 17 large group of farm household .Data were collected in a pre-tested especially designed interview schedules and these collected data were latter on compiled and analyzed in order to get a desired result for arriving at a concrete conclusion and policy implications.

RESULTS AND DISCUSSION

The district has a total livestock population of 11.60 lakh numbers which is 4.08 percent of total livestock population of the state Assam (Table 1). These livestock population of the district comprised of indigenous cattle 4.5 per cent, crossed breed cattle 3.43 per cent, buffaloes 3.88 per cent, goat 4.24 per cent, fowls 3.78 per cent and ducks 3.99 per cent of the total livestock population of the state. Thus the district is characterized by the dominance of indigenous type of livestock reared by its farmers and so it suggests that there is vast scope to boost the total production, productivity and profit in livestock sector with very help of improved livestock production, processing and marketing technologies in right time and in right place.

The average availability of draft animals consisting of bullock and buffaloes was 2.15 per farm household and it varied from 1.96 o 2.32 across different size group of farms (Table 2). These draft animals were used for various land preparation works required for the cultivation of different crops in the study area. The average availability of cows in milk was 1.04 for indigenous type and 0.08 for improved type of breed per farm household. On the other hand, average availability of dry cow was 0.55 for indigenous type and 0.03 for improved type of breed. Similarly the availability of young stock of cattle was 0.61 for indigenous type and 0.02 for improved type of breed. The average number of goat reared in the study area was 1.15 per farm household and these were of local type of breed. Thus it was found that the average availability of farm animals (consisting of bullock, buffaloes, dairy cows and goat) was 5.63 per farm household and it varied from 5.02 to 7.20 across different size group of farms and it increased with the increase in size group of farms. In terms of percentage the dominant farm animals were-draft animals(38.22%),goat(20.42%), indigenous type of cows in milk(18.50%),improved type of cows in milk(1.40%),dry cows-indigenous type (9.77%) and improved type (0.52%),indigenous young stock cattle(10.82%) and improved young stock cattle (0.35%). Thus it revealed that 97.73 per cent of farm animals reared in the study area was of indigenous type and only 2.27 per cent farm animals was of improved type of breed. Thus study implied that farm animals were an important part of farming community in the study area and there is a vast scope for increasing the production, productivity and profit in farm animal rearing through adoption of a very

Table 1: Estimated Livestock in Assam 2013-14(Sample Survey)

Name of livestock	Golaghat district		Assam	
	Total Population(No)	Average availability(No)	Total Population(No)	Average availability(No)
Indigenous cattle	394041(4.50)	1.73	8754988	1.37
Crossed breed cattle	16606(3.43)	0.07	483567	0.08
Buffaloes	19226(3.88)	0.08	496062	0.08
Goat	136854(4.24)	0.60	3230577	0.50
Fowls	419982(3.78)	1.85	11118230	1.74
Ducks	173217(3.99)	0.76	4340883	0.68
Total	**1159926(4.08)**	**5.11**	**28424307**	**4.44**

Source: Statistical Handbook of Assam, 2014. Figure in the parenthesis indicate the percentage of state total Assam

Table 2: Availability of livestock in different size group of farms (in nos.)

Type of	Marginal		Small		Medium		Large		All farms	
Livestock	Total	Average	Total	Average	Total	Average	Total	Average	Total	Average
1.Bullock	74(37.76)	1.89	66(37.71)	2.00	30(34.48)	2.14	32(27.83)	2.00	202(35.25)	1.98
2.Buffaloes	3(1.53)	0.07	8(4.57)	0.24	1(1.15)	0.07	5(4.35)	0.32	17(2.97)	0.17
3.Cows in milk										
Indigenous	37(18.88)	0.95	31(17.71)	0.94	14(16.09)	1.00	24(20.87)	1.15	106(18.50)	1.04
Improved	1(0.51)	0.03	-	-	2(2.30)	0.15	5(4.35)	0.31	8(1.40)	0.08
4.Dry cows										
Indigenous	29(14.80)	0.75	11(6.29)	0.33	8(9.20)	0.57	8(6.96)	0.50	56(9.77)	0.55
Improved	1(0.51)	0.03	-	-	-	-	2(1.74)	0.13	3(0.52)	0.03
(c)Young stock										
Indigenous	16(8.16)	0.41	18	0.54	11	0.79	17	1.06	62	0.61
Improved	-	-	-	-	-	-	2(1.74)	0.13	2(0.35)	0.02
5.Goat	35(17.85)	0.89	41(23.43)	1.24	21(24.13)	1.5	20(17.33)	1.25	117(20.42)	1.15
Total	**196(100)**	**5.02**	**175(100)**	**5.29**	**87(100)**	**6.22**	**115(100)**	**7.20**	**573(100)**	**5.63**

Source: Primary field data. Figure in the parenthesis indicate the percentage of total

suitable improved method of livestock rearing along with the adoption of a very efficient processing and marketing technology in due space and time.

Study revealed that the average number of farm birds which consisted of indigenous type of poultry, ducks, and goose was 5.26 and it varied from 3.39 to 11.32 per household across different size group of farms (Table 3). Thus the availability of farm birds increased with increase in size of farms. Among farm birds reared 31.10 per cent was poultry, 47.49 per cent was ducks and 21.41 per cent was goose. Farmers reared farm birds both for supplementing their income and also to meet their household meat and egg demand.

The main inputs or resources used in farm animal rearing in the study area found to be human labour, hey, rice polish, salt and grass and these were of owned type of resources (Table 4). In terms of cost farmers incurred highest cost in human labour (68.28%) followed by rice polish (17.71%) and hey (11.77). This implied that the level of inputs used in farm animal rearing was not that of an improved type as it should be. The average annual human labour employment in the farm animal sector in the study area was 222.01 man-days per household.

Study also revealed that the main feed used in farm bird rearing was the home produced paddy or rice and major cost (61.54%)was incurred in human labour (Table 5).This also implied that nature of farm bird rearing in the study area was not that of desired improved type as it should be. Moreover the average annual human labour employed in each farm was 44.22 man-days.

Analysis of the productivity of livestock in the study area revealed the average per day milk production local cow was 0.47 litres per animal and it varied from 0.26 to 0.92 litres per day per animal (Table 6). Feroze *et al,* 2010 reported that the average productivity of local cow in Assam was lowest in the North East India (0.92 litre per day).This implied that there is enough scope for enhancing the production of total milk in the study through improved breeding or improved methods of farm animal rearing in right time and also with the most rational and economic use of required inputs or resources.

The various average annual economic benefits of livestock rearing in the study area are reflected in the Table 7. In the present study the various benefits of livestock rearing consisted of milk, egg, meat, draft animal used in crop cultivation, cow dung and litter produced. Study revealed that the average annual net return earned by farm household was Rs.3610.81 and it varied from 3665.31 to 25703.33 across different size group of farms. Thus average net income from livestock rearing in the study area increased with increase in farm size and this may be due to their economies of scale. The benefit-cost ratio of livestock rearing in the study area found to be 1.08 in the average situation and it varied from 1.11 to 1.33 across different size group of farms. Although livestock rearing in the sample area found to be a profitable one, yet it was not found to be a very commercial one. But there is vast scope in the study area to make livestock rearing a very profitable and commercial one with the adoption of very improved scientific and economic method of livestock rearing in due space and time.

CONCLUSION

Thus from the study it is revealed that the average availability of farm animals (consisting of bullock, buffaloes, dairy cows and goat) was 5.63 per farm household and 97.73 per cent of farm animals reared in the study area was of indigenous type and only 2.27 per cent farm animals was of improved type of breed. The average number of farm birds which consisted of indigenous type of poultry, ducks, and goose was 5.26. The average per day milk production local cow was 0.47 litres per animal and the average egg laying capacity of farm birds were also found to very low. The level of inputs used in farm animal rearing was not that of an improved type as it should be. Study revealed that the average annual net return earned by farm household was Rs.3610.81 and it varied from 3665.31 to 25703.33 across different size group of farms. Thus average net income from livestock rearing increased with increase in farm size and this may be due to their economies of scale. The benefit-cost ratio of livestock rearing in the study area was found to be 1.08 in the average situation and it varied from 1.11 to 1.33 across different size group of farms. Although livestock rearing in the sample area found to be a profitable one, yet it was not found to be a very commercial one.

Thus from the study it can be concluded that livestock rearing is an very important part of farming activity in the study area but there existed a huge gap between the demand for and supply or production of livestock products in Assam in general and study area in particular. And due to this reason there is vast scope for increasing the production,

Table 3: Farm Bird availability in different size group of farms (in nos.)

Farm Birds	Marginal		Small		Medium		Large		All farms	
	Total	Average	Total	Average	Total	Average	Total	Average	Total	Average
Poultry	47(26.26)	1.20	44(39.29)	1.33	19(29.23)	1.36	57(31.49)	3.57	167(31.10)	1.64
Ducks	75(41.90)	1.92	35(31.25)	1.06	33(50.77)	2.37	112(61.87)	7.00	255(47.49)	2.50
Goose	57(31.84)	1.46	33(29.46)	1.00	13(20.00)	0.93	12(6.64)	0.75	115(21.41)	1.12
Total	**179(100)**	**4.58**	**112(100)**	**3.39**	**65(100)**	**4.66**	**181(100)**	**11.32**	**537(100)**	**5.26**

Source: Primary field data. Figure in the parenthesis indicate the percentage of total

Table 4: Average resource utilization pattern and its cost for farm animal rearing in different size group of farms

Name of resource	Marginal		Small		Medium		Large		All farms	
	Quantity	Cost(₹)	Quantity	Cost(₹)	Quantity	Cost(₹)	Quantity	Cost(₹)	Quantity	Cost(₹)
Human(MD/year)	153.25	18390.00(69.88)	217.88	26145.60(70.97)	233.39	28006.80(68.24)	349.88	41985.60(65.93)	222.01	26641.20(69.28)
Hey(Kg/year)	7256.77	3628.39(13.79)	9436.29	4718.15(12.81)	9989.97	4994.99(12.17)	11810.43	5905.22(9.27)	9051.36	4525.68(11.77)
Rice polish(Kg/year)	349.53	3844.83(14.61)	493.54	5428.94(14.74)	697.33	7670.63(18.69)	1391.83	15310.13(24.04)	619.12	6810.32(17.71)
Salt(Kg/year)	3.07	15.35(0.06)	10.59	52.95(0.14)	11.68	58.40(0.14)	16.06	80.30(0.13)	8.71	43.55(0.11)
Grass(Kg/year)	873.75	436.88(1.66)	990.52	495.26(1.34)	622.59	311.29(0.76)	811.05	405.53(0.64)	867.22	433.61(1.13)

Source: Primary field data. Figure in the parenthesis indicate the percentage of total

Table 5: Average resource employment and its cost in farm bird rearing per year in different size group of farms

Type of resource	Marginal		Small		Medium		Large		All farms	
	Physical unit	Cost (₹)	Physical unit	Cost (₹)	Physical unit	Cost (₹)	Physical unit	Cost (₹)	Physical unit	Cost (₹)
Feeds	285.87Kg	2572.83	203.82Kg	1834.38	274.33Kg	2468.97	600.64kg	5405.76	307.11kg	2763.99
(Paddy/Rice)		-38.46		-38.31		-37.16		-39.13		-38.46
Human	41.17MD	4117	29.54MD	2954	41.76MD	4176	84.09MD	8409	44.22MD	4422
		(61.54))		-61.69		-62.84		-60.87		-61.54
All		6689.83		4788.38		6644.97		13814.76		7185.99
		-100		-100		-100		-100		-100

Source: Primary field data. Figure in the parenthesis indicate the percentage of total

Table 6: Average milk and egg production across different size group of farms in the sample area

Yield of livestock produce	Marginal	Small	Medium	Large	All farms
Milk(litre/day/animal))	0.35	0.26	0.56	0.92	0.47
Egg(No/year/bird)	67	82	70	73	72

Source: Primary field data.

Table 7: Annual average income generation from livestock rearing in different size group of farms (in Rupees)

Source of Income	**Marginal**	**Small**	**Medium**	**Large**	**All farms**
Due to the supply of draft animal required in crop production(₹)	6765.00	9817.50	10071.00	18484.50	10044.00
As Milk(₹)	12612.50	17870.00	25125.60	47720.40	18958.05
As meat(₹)	12942.00	15287.00	15178.50	29038.50	15321.00
As egg(₹)	1537.31	1388.83	1629.68	4111.42	1905.75
As cow dung (₹)	2802.60	2842.79	3092.93	3828.60	3016.39
litters (₹)	11.23	7.78	10.14	21.45	5.97
Total Income from livestock rearing (₹)	36670.64	47213.9	55107.9	103205	49251.2
Annual total cost for rearing livestock (₹)	33005.28	41629.28	47687.08	77501.54	45640.35
Net Income (₹)	3665.36	5584.62	7420.77	25703.33	3610.81
Benefit-cost ratio	1.11	1.13	1.16	1.33	1.08

Source: Primary field data.

productivity and profit in livestock rearing in the study area through the very adoption of suitable improved method and commercial level of livestock rearing followed by efficient processing and marketing technology in due space and time. Kumar *et al* (2007) also reported that demand for and supply of livestock products can be minimized by changing the production structure or international trade in the long run. For making the present supplementary nature of livestock rearing to a very desirable, acceptable commercial and profitable livelihood enterprise, following measures may be very effective and efficient for the greater benefit of the farming community in the study area and these measures are-

1. Adoption of very improved methods of livestock rearing both for local and improved type of breed of livestock in right time in a very right manner

2. Motivating farmers for cross-breeding of their local farm animals, rearing location specific suitable high yielding farm animals and birds

3. Providing a very scientific, balanced and nutritional feeds in adequate amount in right time and in very right manner.

4. Making livestock rearing a very economic and profitable livelihood option with adequate credit support in right time and place at affordable and profitable rate of interest with a very rational use of its available resources

5. Reducing or minimizing the availability of unproductive livestock in each farm household

6. Providing right type of improved technologies and skill development trainings from the very right institutions and organizations with the very help of expert personals or groups in a very effective manner in right time.

7. There should be a adequate and easy access and dissemination of suitable improved technologies and technical knowledge required for the very improved methods and profitable livestock farming for our esteemed farming community from the concerned expert groups of scientists belonging to various reputed institutes or organization or NGOs in due space and time in a very effective manner.

In fact, this type of livestock rearing is available in most of the rural areas of Assam. So, finding of this study may be very helpful and effective in those very areas or locality where similar pattern of livestock rearing exist. It may be helpful not only to our policy and decision makers but also helpful to researchers for further in-depth study for the greater interest of our very farming community.

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