Economic Affairs
DOI : 10.5958/0976-4666.2015.00060.1

Livestock Sector in Assam: An Appraisal and Performance

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Paper No.: 243 Received: 8 November 2014 Accepted: 17 July 2015

Abstract

Livestock is the integral part of the mixed-farming system that characterizes agriculture in Assam. Among all other livestock the cattle population constituted the largest group in Assam. The poultry population of the State, as revealed from the Livestock Census 2007, has registered an increase of 34.2 % over the previous census 2003. However, Per capita milk, egg and meat have been reported to very less in Assam as compared to national level and requirement as per ICMR. In Assam though livestock products are increasing year by year the demand and supply gap is still large. Besides, absence of organized marketing channels in Assam is also one of the major constraints faced by livestock sector of the state. Considering these problems and potentiality of the sector to develop in the state, GOI and GOA has been implementing lots of schemes and programmes to promote the livestock sector in Assam.

Keywords: Livestock, appraisal, performance, growth, Assam

Assam economy continues to be predominately an agrarian economy as more than 85 percent of the population is living in the rural areas and more than 52 percent of the total labour force are found to be engaged in agriculture and allied activities. Livestock is the integral part of the mixed-farming system that characterizes agriculture in Assam. The importance of livestock goes beyond its food production function (Birthal *et al.*, 2002). Livestock and their products provide direct cash income and the animals are the living assets for many farmers (FAO/ILRI, 1995).

It generates a continuous stream of income and employment and reduces seasonality in livelihood patterns particularly of the rural poor (Birthal and Ali, 2005). Several empirical studies indicate that livestock rearing has significant positive impact on equity in terms of income and employment and poverty reduction in rural areas (Singh and Hazell, 1993; Adams and He, 1995; Birthal and Singh, 1995; Thornton *et al.*, 2002; Birthal and Ali, 2005). Animal Husbandry is potentially one of the most important sectors of rapid socioeconomic development of the state. Fast growth in this sector is essential not only to achieve higher productivity levels in livestock production but also for increase in rural house hold income. Keeping this point in view, this paper has made an attempt to study the present status and performance of livestock population and production in Assam.

Database and Methodology

The study is based mainly on secondary data collected from various published sources such as published reports of Directorate of Animal Husbandry and Veterinary of Assam, various issues of BAHS, Department of Animal Husbandry, Dairying and Fisheries (Ministry of Agriculture, GOI), state/UT Animal Husbandry, Economic Survey Assam 2011-12, Statistical Handbook Assam 2011. The tabular analysis and compound growth rates were computed to show the status of livestock population and production of different livestock products in the state. In the case of livestock population annual compound growth rates of inter-census period was computed using the formula: $P_t/P_o = (1 + r)^t/100$, where P_t is population in the t^{th} period, P_o is population in the base period, r is the compound growth rate (Bhowmick *et al.*, 2005).

In the present study, Compound Annual Growth rate analysis was used to estimate the growth of production of the livestock products. CGR was computed by using the formula CAGR = Antilog (b) - 1 × 100, where, 'b' is the co-efficient and which was derived by using

the formula $Y = ab^t$ or $\ln Y = \ln a + t \ln b$, where, Y= Time series data on production of livestock products, a= Intercept, t= Time in years, b= co-efficient. The compound growth rate was worked out as CAGR (r) = (b-1) 100, where, b = antilog of b.

Result and Discussion

Amongst NE states, Assam possessed about three-fourths each of the total bovines and ovine, and one-half of pigs and poultry birds in the region (Kumar et al, 2007). According to the Livestock Census 2007, the cattle population constituted the largest group with more than one crore of which 6.90 lakh of crossbred cattle (Jersey x local) was found in Assam, which is a negligible proportion of the total cattle population. The lower percentage of cross-bred population may be attributed to limited coverage, poor breeder involvement, poor marketing and conception rate, decreasing grassland, natural calamities like flood or increasing farm mechanization etc. Decreased population of the indigenous cattle in the state as compared to national level might be due to increase in cattle slaughter for beef purposes and smuggling of cattle to border-countries as reported by Barbaruah, (2012). After cattle, goat and pig population occupied second and third position in the state. Except buffalo, all livestock species have showed positive growth in 2003 over the population of the census of 1997 and also in 2007 over the population of the census of both 1997 and 2003 as shown in table 1. The buffaloes in Assam are mostly of swamp type. No river-type buffaloes are found in rural Assam (Sarkar, 2001).

Table 1: Livestock and poultry population according to 1997, 2003 and 2007 census

Livestock species	Growth rate (%)		
	in 2003 over 1997	in 2007 over 2003	in 2007 over 1997
Cross breed	2.98	11.90	6.46
Indigenous	1.08	4.94	2.60
Total cattle	**0.79**	**5.34**	**2.59**
Buffaloes	-1.18	-6.14	-3.19
Sheep	10.78	23.56	15.73
Goat	1.84	10.02	5.03
Pigs	6.09	8.43	7.02
Fowls	2.23	15.13	7.21
Ducks	5.31	17.61	10.07

Source: Author's calculation based on data of Economic Survey of Assam 2012-13

Table 2: Growth in milk production in Assam during 1995-96 to 2011-12 (per cent)

Cattle			Buffalo	Goat	Total
C.B.	Ind.	Total			
3.47***	0.33	1.16***	0.87***	-0.44	1.07***

Source: Authors own calculation based on data collected from Directorate of Animal Husbandry and Veterinary, Assam Guwahati-3

Table 3: Growth in egg production in Assam during 1995-96 to 2009-10 (Per cent)

Fowl Egg			Duck Egg			Grand Total
Local	Imp.	Total	Local	Imp.	Total	Egg
2.85***	-7.14***	1.28***	1.20*	-7.27***	-1.65*	0.17

Source: Author's own calculation based on data collected form Directorate of Animal Husbandry and Veterinary, Assam Guwahati-3 *significant at 10 and ***significant at 1 per cent significance level

Table 4: Growth in meat production in Assam during 1997-98 to 2009-10

Ind. Cattle	C.B. Cattle	Total cattle	Buffalo	Goat	Sheep	Pig	Fowl	Duck	Total
4.72***	7.90***	4.90***	-0.13	8.79***	6.43***	10.43***	3.25**	1.66*	7.03***

Source: Author's own calculation based on data collected from Directorate of Animal Husbandry and Veterinary, Assam Guwahati-3.*significant at 10 per cent, **significant at 5per cent and ***significant at 1 per cent significance level

The poultry population of the State, as revealed from the Livestock Census 2007, has registered an increase of 34.2 percent over the previous census 2003 (NEDFi data bank). The category-wise population growth rate of these species in 2007 over 2003 was fowls 15.13 and ducks 17.61 per cent per annum as against 2.23 per cent for fowl and 5.31 per cent for duck recorded in 2003 over 1997.The comparative analysis of Livestock census Reports shows that the annual compound growth rate of fowl population was 7.21 percent in 2007 over 1997, while, In respect of duck population it was 10.07 percent during the same period (table1). However, growth in the population of poultry bird per capita human population was not significant. Therefore, the overall picture is that of declining livestock assets per capita. (Kumar *et al.*, 2007). The fowl and duck population recorded 21.6 percent and 22.4 percent fall during 2009-10 over 2005-06 .This decrease was mainly due to outbreak of "bird flu" and other related diseases in the State during 2007-08 and 2008-09 (reports published by the State Animal Husbandry and Veterinary Department).

The total milk production of the state for the year 2011-12 was estimated at 796 million liters. The cattle milk contributes highest i.e. 82.56 percent out of which cross breed and indigenous account for 28.23 and 54.33 per cent. Cattle milk was followed by buffalo (14. 68%) and goat (2.76%) to the total milk production during the year. Except Goat, milk production of Cattle (only Cross breed) and buffalo registered positive and highly significant growth (Shown in table 2).

During 2009-10, total egg production in the state was 4684.07 lakhs. Fowl egg contributes 70.97 per cent out of which 66.49 per cent was contributed by local eggs whereas only 4.48 per cent was contributed by improved category of Fowl. Conversely, duck egg contributes 29.03 per cent to total egg production of which 23.93 per cent from local eggs and 5.10 per cent from improved category of Duck. During the period of 1995-96 to 2009-10, total egg production showed a positive growth but it was not considerable. Local Fowl egg showed a very highly significantly positive compound annual growth which again resulted to a highly significant and positive growth for total fowl eggs. Improved category of both Fowl and duck eggs showed highly significant negative growth. CGR was estimated as negatively significant for the total Duck egg (table 3). According to reports published by the State Animal Husbandry and Veterinary Department, although the yield rate of layer bird of improved category of both fowl and duck is high, the less growth of these categories of

Table 5: Per capita availability of milk, egg and meat in Assam and India during the period from 1991-92 to 2011-12

Year	Milk (gm/day)		Egg(Nos./annum)		Meat (kg/ annum)	
	Assam	India	Assam	India	Assam	India
1991—92	77	178	—	—	—	—
1992—93	78	182	—	—	—	—
1993—94	78	188	—	—	—	—
1994—95	79	191	—	—	—	—
1995—96	95	197	—	—	—	—
1996—97	79	202	—	—	—	—
1997—98	78	207	20	30	—	—
1998—99	79	213	19	30	—	—
1999—2000	71	217	19	32	—	—
2000—01	69	220	19	36	—	—
2001—02	70	225	19	38	0.91	1.83
2002—03	71	230	19	39	0.95	1.99
2003—04	71	231	19	40	1.00	1.95
2004—05	72	233	19	42	1.09	1.93
2005—06	72	241	26	42	1.15	2.02
2006—07	71	251	18	45	1.23	2.08
2007—08	70	260	17	47	1.25	2.05
2008—09	70	266	16	48	1.27	2.37
2009—10	69	273	16	51	1.28	3.47
2010—11	71	281	15	53	—	—
2011—12	70	290	15	55	—	—
CAGR (%)	—0.85***	2.35***	—1.81*	4.42***	4.78***	5.58*

Source: Authors calculation based on data of Department of Animal Husbandry, Dairying and Fisheries, GOI and State/UT Animal Husbandry Department.

**significant at 10 per cent, **significant at 5per cent and ***significant at 1 per cent significance level*

layer bird led to less production of eggs in the State. Moreover, rearing of birds mostly for meat purpose also one of the prime cause of less production egg in the State. Over and above, impact of outbreak of "Bird Flu" also affected egg production in some of the districts.

The estimated meat production in the state was calculated on the basis of number of animals slaughtered per season/per year and average meat yield (reports of the State Animal Husbandry and Veterinary Department, Assam). The total meat production in the State during 2009-10 was estimated at 31.59 thousand tones comprising of both livestock and poultry as against estimated meat production around 30.69 thousand tones during 2008-09. In the year 2009-10, pig meat contributes highest i.e. 41.93 percent of the total meat production in the State followed by goat meat (23.96 percent) and cattle meat (16.27 percent) respectively (reports of the State Animal Husbandry and Veterinary Department, Assam). Except buffalo, all above mentioned species of livestock and poultry showed significantly positive growth in meat production (table 4).

Though milk production has been increased in the state, per capita milk availability was very less as compared to national level availability as well as normative requirement as per the Indian Council of Medical Research's (ICMR). During the year 2011-12, per capita milk availability was only 70 gm/day against 290 gm/day of national availability and 208 grams of milk requirement per head per day as per ICMR norms. In fact, a very highly significant negative growth -0.85per cent) was seen in Assam in respect to per capita milk availability during the period of 1991-92 to 2011-12. On the other hand, in India, a positive and highly significant growth was seen for the same period as shown in table 5.

Due to low production of the egg in Assam, per capita egg availability was very less as compared to national availability and ICMR recommendation. The normative requirement as per ICMR norms is 180 eggs per head, per annum, whereas in Assam only 15 nos. against national availability level accounting for 55 nos. in the year 2011-12. In fact, per capita egg availability has been declined with a growth rate of -1.81 per cent whereas India showed a positive as well as highly significant growth in the same respect (table 5).

Despite of the increasing meat production per capita meat availability is very low in Assam as compared to national level and ICMAR recommendation. During 2009-10, per capita meat availability in Assam was only 1.28 kg/annum against the national level of 3.47 and ICMR recommendation of 10.95 kg per year. However, a positive and highly significant compound annual growth was reported in per capita meat availability in the state during the period of 2001-02 to 2009-10 (table 5).

Absence of organized marketing channels in NE region is one of the major constraints faced by livestock sector of the region. Only a few cooperative milk plants are working in the region. Only three per cent of the total marketed milk and milk products is handled by organized sector, both cooperative and private in Assam. Thus, the traditional market is the only option available in the region to market the indigenous as well as processed milk products (Feroze, 2010). The traditional market, for either fresh liquid milk or for traditional milk products such as sweets, thus accounted for about 97 per cent of the market opportunities for farmers. For smallholder producers in areas with poor market access, there are likely to be no alternative market options besides the traditional markets. It is thus apparent that developments in the traditional market will be very important. (Kumar *et al.*, 2007). Growth of commercial poultry sector (mostly for broiler chicken production) at Assam can largely be attributed to the private sector entrepreneurial initiatives and service delivery by input supplying companies. Total commercial broiler chicken input market in the State is estimated at ₹ 264.6 million per month (FARMER, 2009), a major portion of which is imported from outside the State. There are about 36 private hatcheries in Assam that collectively produce around 3 million day-old chicks in a month. Approximately 14 percent of the total commercial broiler chicken market of Assam is under the control of commercial integrators or contract growing companies. This share is increasing in the post bird flu (2008) scenario of the State with occasional incidence of conflict arising out of inability on the part of industry to ensue ethical practices ensuring fair completion for all. There are about 18 brands of feed in the market, of which only 4 brands are produced by local manufacturers, while approximately 15 to 20 leading medicine and feed supplement companies operate in Assam (Barbaruah, 2012). Import dependency of the livestock input market (e.g., feeds, medicines, supplements) make local production vulnerable to changes outside the State. A majority of poor farmers is price-sensitive, and when coupled with their limited knowledge regarding selection and use of inputs, it is possible for unscrupulous traders to market inferior quality inputs (Barbaruah, 2012).

According to Economic Survey of Assam (2012-13), the dairy development department has been focussing

on increasing milk production as well as creating processing facilities for economic uplift of rural dairy farmers. It has in recent years also reinforced its facilitating role in increasing opportunities for income and employment and upliftment of poorer sections of the society with the broader perspective of a complete rural transformation. Recently the dairy department of the state has developed the scheme of Dairy co operative society (DCS) through which, farmers will get the quality inputs at a reasonable price as well as the incremental returns for their produces. DCS also provides the service to its members for the supply of milk from the surplus producing area to urban consumer markets. Through these DCS assamese rural women can sale different Value added products of milk like dahi, paneer, cream etc to the urban market. The World Bank funded project Assam Agricultural Competitiveness Project (AACP) has been playing important role in this regard. The objective of the project in respect of Dairy Development is to organize the dispersed dairy farmers into Dairy Cooperative Society (DCS) and Self Help Group (SHG) and Milk Producers Institutions (MPIs) to provide both forward and backward linkage to them in order to strengthen their capacity, make them more competitive and economically sustainable and to make them able to take advantage of emerging commercial opportunities. A substantial number of dispersed dairy farmers have been organized in viable groups with assured linkages under the Assam Agricultural Competitiveness Project (AACP).

Besides this, software named "PIIM" has recently been developed for use in various dairy co-operaive societies and has been successfully applied by the Department of Dairy Development, Govt. Of Assam under RKVY (Rastriya Krishi Vikash Yogana). The department has applied the newly developed software for efficient functioning of the many dairy co-operative societies in the state. The software was developed by Arindam Mani Das, Technology Consultant, Centre for Humanistic Development. PIIM (an Algerian word for milk) is MIS (Management Information System) software and it will enable the diary cooperative societies of the various districts of Assam to generate reports and records properly (Das, 2010).

Conclusion

It can be concluded that in Assam though livestock products are increasing year by year the demand and supply gap is still large. This widening gap between the demand and supply of livestock products can be bridged by introducing changes in production structure or opening up the international trade, either of which can correct the imbalances in the long-run (Kumar et al 2007). The contribution of livestock sectors to state's Gross Domestic Products (GDP) is estimated as 7.7 percent, only second to crop agriculture. The livestock account for 22 percent of GDP of Agriculture sector without accounting for contribution made by animal power and manorial value of animal dung (AACP). However, it is worth mentioning that 82 per cent of the smallholders in the NER rear livestock to supplement their livelihood. They possess nearly half of the arable land, about 88-90 per cent of all the livestock species. It implies that there are more income and employment opportunities for smallholders in the livestock production than in land-intensive crop production. This also indicates that the development strategy for livestock must be focused on the small farm sector (Kumar *et al.*, 2007).

Considering these points in mind, GOI and GOA has implemented numerous developmental programmes such as Breed up-gradation Programme, various centrally sponsored schemes viz., RKVW, Livestock Census Programmes, Assistance to ALPCO Integrated Piggery Development Programme, Goat Development programme, Fodder Development programme, Central Minikit Scheme, Frozen Semen and Assam Livestock Development (ALDA), Co-ordinated Cattle Breeding Project (CCBP), Bovine Contagious Pneumonia Project (BCCP), National Project on Rinderpest Eradication (NPRE), Formation of new Dairy Co-operative Societies, Integrated Dairy Development Project (IDDP), Clean Milk Production, Rastriya Krishi Vikash Yojana (RKVY), Milk Village Scheme, Town Milk Supply Scheme etc. Provision of more number of processing plants for milk and milk products, scientific slaughter houses for meat marketing, improved incubation centre for egg production are expected to boost the production of milk, meat and egg in the state. Further rearing of milch cows and production of milk in cooperative manner in the line of Dairy Cooperative Society is expected to enhance the milk production in the state and thereby enhance the income of the livestock farmers.

References

Adams, R.H. Jr. and He, J.J. 1995. Sources of Income Inequality and Poverty in Rural Pakistan, *Research Report 102*, International Food Policy Research Institute, Washington, D.C. http://www.ifpri.org/pubs/abstract/abstr102.htm

Assam Agricultural Competitiveness Project (AACP), Assam Rural Infrustructure and Agricultural Service (ARIAS) Society , Guwahati, Assam.

Barbaruah, M. 2012. Livestock Sector Development in Assam, *The sentinel sentinelassam.com,* Guwahati Assam.

Bhowmick, B.C. and Kalita, D.C. 2005. Performance of Livestock and Fishery: Constraints for Agricultural Development and Prioritization of Strategies. Department of Agricultural Economics Assam Agricultural University, Jorhat, Assam.

Birthal, P.S. and Ali, J. 2005. Potential of livestock sector in rural transformation in India: The Role of Non-farm Sector (Rohini Nayyar and A N Sharma editors) *Institute for Human Development and Manohar Publishers and Distributors*, New Delhi.

Birthal, P.S. and Singh, M.K. 1995. Structure of Rural Income Inequality: A Study in Western Uttar Pradesh, *Indian Journal of Agricultural Economics*, **30**(2): 168-175.

Birthal, P.S. and Taneja, V.K. 2006. Livestock sector in India: Opportunities and Challenges, presented at the ICAR-ILRI workshop on '*Smallholder livestock production in India'* held during January 24-25, 2006 at NCAP, New Delhi 110 012.

Birthal, P.S., Joshi, P.K. and Kumar, A. 2002. Assessment of Research Priorities for Livestock Sector in India, *Policy Paper 15*, National Centre for Agricultural Economics and Policy Research, New Delhi.

Das, J. 2010. Software for Dairy Co-operative Societies of Assam, *Assam Times* (Community news paper) http://www.assamtimes.org/

FAO/ILRI, 1995. FAO/ILRI, 1995. Livestock Development Strategy for Low Income Countries. *Proceedings* of a Roundtable held at ILRI, Addes Ababa, Ethiopia, 27 Feb.

Feroze, S.M, Raju, V.T., Singh, R. and Tripathi A.K. 2010. Status of Livestock Sector: A Micro Study of North Eastern India, *Indian Journal of Hill Farming,* **23**(2): 43-51.

Government of Assam 2010. R*eport of Animal Husbandry & Veterinary Department*, Assam.

Kumar, A., Staal, S.. Elumalai, K. and Singh, D. 2007. Livestock Sector in North-Eastern Region of India: An Appraisal of Performance, *Agricultural Economics Research Review,* **20**: 255-272.

Ravishankar, A. and Birthal, P.S. 1999. Livestock Sector in India: Agenda for Future, *Policy Briefs No. 07*, National Centre for Agricultural Economics and Policy Research (NCAP) New Delhi.

Sarkar, A. 2001. Strategies for development of Animal husbandry in Assam, *Prioritization of Strategies for Agricultural Development in Northeastern India* Proceedings 9 National Centre for Agricultural Economics and Policy Research (NCAP), ICAR, New Delhi.

Singh, R.P. and Hazell, P.B.R. 1993. Rural Poverty in the Semi-Arid Tropics of India: Identification, Determinants and Policy Interventions, *Economic and Political Weekly,* **28**(12 and 13):. A-9: A-15.

Taneja, V.K. and Birthal, P.S. 2004. Role of Buffalo in Food Security in Asia, *Asian Buffalo Magazine,* **1**(1): 4-13.

The Indian Council of Medical Research (ICMR) New Delhi, India.

Thornton, P.K., Kruska, R.L., Henninger, N., Kristjanson, P.M., Reid, R.S., Atieno, F., Odero, A.N. and Ndegwa, T. 2002. Mapping poverty and livestock in the developing world, *ILRI*, Nairobi, Kenya. http://www.ilri.cgiar.org/InfoServ/Webpub/Fulldocs/Mappoverty/index.htm