Content list available at http://epubs.icar.org.in, www.kiran.nic.in; ISSN: 0970-6429

Indian Journal of Hill Farming

June 2021, Volume 34, Issue 1, Page 195-200

Current Status and Future Strategies for Enhancing Livestock and Poultry Sectors in the Meghalaya state of North East India

G. Kadirvel . Sunil Doley . Keshab Jamatia . Kishore Kumar Baruah . Sourabh Deori

ICAR Research Complex for NEH region, Umiam, Meghalaya-793103, India

ARTICLE INFO

Article history:
Received: 23 December 2020
Revision Received: 25 March 2021
Accepted : 12 April, 2021

Key words: Dairy, Goatery, Livestock, Meghalaya, Piggery, Poultry, Strategy

ABSTRACT

Meghalaya is one of the eight states belonging to north eastern of India. It is bestowed with diverse flora and fauna species. Majority of the population in Meghalaya belong to Scheduled Tribe categories and in food habit they are non-vegetarian. The percentage of meat-eating population is more than 80% and maximum households rear livestock and poultry in the backyard for nutritional security and subsidiary income. The state has around 10 % of net cultivable land, therefore people are more dependent on livestock rearing. Thus, livestock and poultry play an important role in the livelihood improvement of tribal people of Meghalaya. However, with the increasing population there is a deficit of livestock products like milk, meat and egg in the state, which are always high in demand. There exists a huge gap between supply and demand of livestock products. It is highly essential to narrow the gap in order to meet the daily requirement of animal protein by its population. This strategy paper aimed to discuss the current status and future strategies for upliftment of livestock and poultry sector in the state of Meghalaya.

1. Introduction

Meghalaya is one of the hill states of North Eastern region of India. The state is also known as 'abode of the clouds' and 'Scotland of East' because of its geographical and climatic condition. The average rainfall of the state is 1150 cm (Indian Meteorological Department, 2020) and is bestowed with diversified ecosystem of flora and fauna. The state is surrounded by Bangladesh on south and west and Assam on North and East border. Currently, there are 11 districts in the state with three main hills divided according to the different tribal inhibited in the state. According to 2011 census, estimated population is 29.64 lakh out of which 14.71 lakhs are females and 14.92 lakhs are males (Population census, 2011). The projected population for year 2016, 2021, 2026, 2031, and 2036 are 31.29, 32.88, 34.40, 35.78 and 36.87 lakh respectively based on arithmetic increase method of population projection formula (Census of India, 2011). Majority of the population in Meghalaya belong to Scheduled Tribe (ST) categories and non-vegetarian in food habit. Being a tribal-dominated state, percentage of meat-eating population is more than 80% and maximum households rear livestock and poultry in the backyard for food and subsidiary income. Agriculture and livestock are the main sources of livelihood of the people of Meghalaya. The state has around 10 % of net cultivable land; therefore people are more dependent on livestock rearing. Thus, livestock and poultry play an important role in the livelihood improvement of tribal people of Meghalaya. However, there is deficit of livestock products like milk, meat and egg which are always high in demand. There exists a huge gap in supply-demand of livestock products. Therefore, the state is importing livestock products from neighbouring states to reduce the gap in supply-demand of livestock products. This paper enumerates the current status and future strategies to enhance production and productivity from livestock and poultry sector to meet the self-sufficiency in the state of Meghalaya.

Current status of livestock sector

As per the latest livestock census, the state has 903.57 thousand cattle, 15.71 thousand buffalo, 706.36 thousand pig, 397.50 thousand goats, 15.67 thousand sheep and 5379.53 thousand poultry (Livestock Census, 2019). The total livestock and poultry population in Meghalaya are given in the Table.1.

Correspondence author: sourabhd1@rediffmail.com

Table 1: Livestock and Poultry Population in Meghalaya, Northeast and All India (in thousands) and percentage share of state

Species	CB/ Exotic	ND/ Indigenous	Total	Northeast	All India	%Share in NE	% Share in All India
Cattle	33.40	870.16	903.57	13371.06	192523.36	6.76	0.47
Buffalo	-	15.71	15.71	506.07	109851.68	3.10	0.01
Pig	276.05	430.31	706.36	4242.59	9055.49	16.65	7.80
Goat	-	397.50	397.50	5408.24	148884.79	7.35	0.27
Sheep	0.09	15.58	15.67	369.36	74260.62	4.24	0.02
Poultry			5379.53	69224.94	851809.93	7.77	0.63
Total Livestock			2038.81	23897.32	535828.88	8.53	0.38

(Source: 20th Livestock Census, Basic Animal Husbandry Statistics, Govt. of India, 2019)

Table 2: Milk, meat and egg production and per capita availability in Meghalaya and All India, 2018-19

Products	Production		Per capita availability	
	Meghalaya	All India	Meghalaya	All India
Meat	45.12 ('000 tons)	8114.45 ('000 tons)	43.86 (g/day)	8.109 (g/day)
Milk	86.28 ('000 tons)	187749.50 ('000 tons)	84 (g/day)	394 (g/day)
Egg	109.04 (million nos)	103317.63 (million nos)	39 (no/year)	79 (no/year)

(Source: ISS Report 2018-19, Govt. of Meghalaya, Basic Animal Husbandry Statistics, Govt. of India, 2019)

Meghalaya has a cattle population of 903.57 thousand, out of which more than 96% are indigenous (Table.1). Although the total milk production in the state has increased from 77.47 thousand tons in 2008-09 to 86.28 thousand tons in 2018-19 (Table 2), the per capita availability of milk is only 84 g/day in comparison to 394 g/day national average and recommended milk intake of 160 g/day for non-vegetarians. To bridge this gap in production and minimum milk requirement, crossbred cattle need to be popularized in the state. Presently, the crossbred cattle contribute only around 4 % of the total cattle population in Meghalaya.

As a result, additional milk production of at least 43 thousand tons in 2 years, 82 thousand tons in 5 years and at least 120 thousand tons in 10 years could become achievable. This will improve the per capita milk availability to 109 g/day by 2021, almost 135 g/day by 2026 and 159 g/day by 2031 adjusted with the increasing population in the state.

The average monthly (per consumer unit) consumption of meat in Meghalaya in the rural and urban sector is 0.856 kg and 0.892 kg, respectively whereas the national score is only 0.468 kg. From the year 2015-16, it is observed that there is a continuous increase in meat production in the state. In the year 2018-19, a total of 45.2 thousand tons of meat, 86.28 thousand tons of milk and 109.04 million numbers of eggs are produced in the state (table 2). Trend analysis for per capita meat availability was 43.86 g/day/head in 2018-19 (table 2).

The percentage of meat consumption in the region is much higher which reflects the importance of meat in the diet of Meghalaya. Most of the households of the state used to rear pigs at their backyard. In spite of being mostly rear in the state of Meghalaya, there is a deficit of supply and demand for pork in the state. There is an increase of pig population in the state but there is a huge deficit of pork in the state for domestic consumption. There is a steady increase of pig population up to 20th Livestock census which recorded 7.06 lakh pig population in the state. The piggery is preferred as the most reared and preferred enterprises as a livelihood option by the farmers of the state.

The most preferred meat among the tribal population of Meghalaya is pork, but the demand of meat is very high and there is huge gap between production and supply. The meat supply can be supplemented by goat farming in the state of Meghalaya. In comparison to pig, goat management is easier with lesser feeding requirements, lesser incidence of diseases and availability of vaccines, lesser cost of production and chevon (goat meat) fetch higher price in market in comparison to pork and has no religious taboo. With the increase in human population in the region, the meat production has to be intensified. They can easily survive on grass and tree fodders. The goat population of Meghalaya declined by 15.97 % in the current livestock census (397.5 thousand) (Livestock census, 2019) in comparison to previous census (473.07 thousand).

The total poultry population of the state is 5.3 million, with the per capita availability of 39 eggs. Out of the total poultry in the state, more than 96 % birds are indigenous and located in the rural areas. The potentiality of these indigenous birds in terms of egg production is only 70 to 80 eggs/bird/ year and meat production is also very less. The poultry population is highest in the West Garo Hills followed by East Khasi Hills and Ri-Bhoi districts. Rural poultry farming is a primary source of nutritional security and subsidiary family income by sale of excess eggs.

Strategies for piggery sector

Pig is the most popular and valued livestock species in Meghalaya since pig farming is the important and integral component of farming system. About 80% of the total population in this region belonging to tribal community and this region has typical traditional tribal agricultural production system (Population census, India, 2011). Pig husbandry plays a significant role in uplifting the social, cultural and economic livelihood of the tribal people in the state.

- Promotion of improved management practices will enhance pig productivity since almost every household in Meghalaya rear two-three pigs under backyard traditional pig production system.
- The state has around 60% nondescript pigs which have low productivity whereas the crossbred pigs recorded faster growth rate and attain the body weight of 78.5-95.7 kg by the age of 12 months and excellent reproductive ability with higher litter size at birth as well as weaning (Annual Report, ICAR RC NEH, 2017). Thus introduction of crossbred/ improved variety of pigs will enhance the pig production and productivity in the state.
- Artificial Insemination (AI) is one of the cost effective technique to produce crossbred piglets at farmer's doorsteps. AI in pigs can be promoted through different models viz., direct AI service, mobile AI service and AI through trained educated youth and these models are tested in Meghalaya (Kadirvel *et al*, 2013, 2021)
- Shortage of improved variety piglet is one of the bottle-necks in the piggery sector in the state. Therefore, establishment of community participatory/ or cluster piglet production unit in each block will meet the shortage of piglets in the state.
- Feed cost accounts for about 70% of the total production cost and hence, pig ration can be formulated with locally available on-farm resources like banana stem, palm oil sludge, colacasia, tapioca and other agri-based resources to reduce feed cost.
- Comfort of the pigs in their shed is one of the important factors to ensure normal growth and behaviour. Promotion of scientific pigpen/housing model and regular cleaning of shed is very important.
- Regular deworming at three months' interval and vaccination for diseases like swine fever and FMD especially during outbreaks and once a year should be carried out.
- Promotion of multi-skilled animal health workers at village level who will act as the local service provider for livestock and poultry in different specific villages is advantageous.
- Outlets or market centres will be created at cluster level which will be run by selected trained educated youths after training and capacity building.

Strategies for dairy sector

- There is no recognised diary breeds in the state, indigenous dairy breeds of cattle like Tharparkar, Sahiwal besides crossbred Jersey and Holstein Friesian crossed can be introduced to enhance productivity.
- Feed and fodder production for cattle feeding is an important aspect for the sustainability of hill agro-ecosystem. Since the Meghalaya has only 10 % cultivable land in the total land area and remaining land area is covered under forest and waste land. Establishment of community based pasture land with perennial grass and effective regular range management is essential to reduce the feed cost in the dairy sector in the state.
- Promising variety of improved perennial grasses such as setaria, congosignal, guinea and broom may be propagated for pasture development to economize milk, beef and chevon production.
- Maize production plays a significant role in ensuring food security and is used both for human consumption and livestock and feed forming. The maize is grown extending from extreme semi-arid to sub-humid and humid regions of India. Maize production need to be encouraged in the state.
- Application of suitable fodder preservation techniques like silage, hay and straws for trees fodders has a potential scope in the state and this will support the dairy farming in the state.

- Fodder banks need to established at each district level. This will be useful in adverse condition like floods, drought and extreme climatic change.
- Promotion of hydroponics in the state will support the shortage of fodder. It will also be useful to landless farmers since it required no land for cultivation.
- Regular health examination of the herd should be done to detect diseased animals. Diseased animals must be isolated from the healthy animals and strict quarantine measures need to be followed. Vaccination schedules and regular deworming need to be strictly followed.
- It is necessary to create marketing channel for dairy product as well as involvement of cooperative societies in dairy sector for dairy development in this region. Based on Amul dairy model of milk procurement and distribution system will improve the flow-chain of milk from milk producers to consumers in all districts of Meghalaya.
- Promotion of small scale dairy unit with around 10-20 cows will provide regular income and employment to rural youths of the state. Provision of milk chilling unit at village level will increase the self-life of milk.
- Training programmes should be conducted to train the native population regarding dairy farming. Training and capacity building programmes will boost the confidence to take up this profession especially by the rural women and unemployed youths.

Meghalaya is known for organic agriculture as there is minimal use of inorganic fertilizers. This can be further exploited for production of organic milk. The state can be the most ideal region in the country for production and propagation of organic dairy farming. Moreover, the tribal population of the region has knowledge of different ethno-veterinary practices to treat livestock diseases. Therefore, the state has a scope for exploitation of avenues for production of organic milk in the country.

Strategies for goatary sector

The tribal population of Meghalaya traditionally rear pigs under backyard system. They are more comfortable with pig rearing. Therefore, awareness programmes need to be carried out throughout the state to encourage the native population to take up goat farming. They should be made aware about the benefits of goat farming over piggery. Training and capacity building programmes will boost the confidence to take up this profession especially by the rural women and unemployed youths.

- The majority of the goat population in the state belong to local indigenous type. However, Assam Hill goat (AHG) is a registered breed of India found in the hills of Assam and Meghalaya. AHG is known for its meat quality and multiple births. The animal is well adapted to the local environment. AHG may be propagated through selective breeding.
- Since, Meghalaya is abundant of biomass and goat can be fed with different tree leaves, shrubs, fodders etc. Therefore, different feeding options may be tried as per availability and season. Package of practices may be developed to rear goats with different feeding options with least monetary investment. Scientists should work out the effect of different feeding regimes on various economic traits. This will reduce the investment on feeding and increase the income from goat farming.
- Among all the livestock, goat received very little attention about the health care management under field conditions. The government should take strict measures for deworming and regular vaccination. The most common cause of mortality for goat is Enterotoxemia (ET) and PPR. Therefore, regular vaccination against ET and PPR will protect the goat population against these dreaded diseases. The native population should be taught about different goat disease management procedures, because in the hilly state of Meghalaya veterinary care may not be adequately available all the time.
- Mineral blocks need to be developed for feeding the goat so as to supplement necessary minerals to the animals. The goats are maintained under free range system without any supplementation. To compensate the necessary mineral and vitamins, feed blocks may be developed and propagated.
- Frozen goat semen centre should be developed in the state and the paravets staffs should be trained to carry out AI in goat for rapid genetic improvement through use of semen from selected bucks.

Strategies for poultry sector

Quality improved dual purpose chick supply at low cost is a prerequisite for improved backyard poultry farming. Local indigenous chicks are mostly bought from each other in the village or at local market, which have low productive potential. Location specific dual purpose chicken varieties in the states of Meghalaya need to be developed.

- The local indigenous breeds of this region need to be considered for selective breeding to develop context appropriate varieties suitable for backyard farming. However, till then, the improved dual purpose chicken varieties developed by the ICAR and other organizations which have been recommended for this region *viz.* Vanaraja, Gramapriya Srinidhi etc. should be popularized further in the state for backyard poultry farming.
- The backyard/ integrated duck farming with Indigenous and Khaki Campbell ducks should be promoted, because of their advantages due to low input cost of housing, feeding and less disease problems.
- The state has significant diversity in terms of productivity of poultry thereby local selection and propagation must be promoted with establishment of local mini hatchery at block levels.
- Minimum balanced feed is required for getting maximum income for rearing of improved poultry varieties. Hence, there is a need to develop cost effective balance ration using locally available ingredients like Azolla, Chinese palak, Buck wheat, Rice bean etc. for feeding to improved backyard poultry, besides kitchen wastes. Moreover, production of major feed ingredients like maize and soya bean should be promoted through availability of quality seeds and bringing more area under cultivation.
- Poultry diseases are a major cause for loss in rural poultry farming. Almost entire village poultry gets wiped out through spread of contagious diseases like Ranikhet disease in the village. Being under the scavenging system of production, they have high chances of acquiring infection through contact and disease can get spread across village and even to nearby villages. Thus, awareness about the various diseases and regular vaccination and deworming schedule should be ensured.
- Requisite vaccines must be available in the state and supply and monitoring system for disease surveillances should be carried out regularly. Facilities of veterinary laboratories and sub-health centres should be upgraded and well equipped for providing effective service in field condition.
- Veterinary extension services should be strengthened in the rural areas and training to the farmers on scientific management of the poultry should be provided. This will also encourage the farmers in taking up poultry farming with modern technology in the long run.
- Marketing of poultry meat and eggs in the village level remains relatively insignificant despite efforts in the past to develop and promote collective market mechanisms. It is thus apparent that developments in the traditional village level marketing mechanism to avoid the middle men for the benefit of the farmers will be very important.
- Government should formulate strategies to increase investment in poultry sector through greater budgetary support and attracting private entrepreneurs to invest in this sector.

2. Conclusion

Meghalaya has immense scope for rearing livestock and poultry. The livestock population has been found always in increasing trend which could be due to increasing demand for meat, milk and egg. Further, shifting of small-backyard to large-commercial scale of livestock and poultry farming system will enhance the productivity of the state. Popularization of improved germplasm of livestock and poultry, feeding of unconventional feed resources, up scaling of artificial insemination technology and development of proper marketing linkage and adequate pricing will upgrade economic status of farmers in Meghalaya. The milk production in Meghalaya needs to be enhanced to 43 thousand tons in 2 years, 82 thousand tons in 5 years and 120 thousand tons in 10 years. Presently, the per capita availability of milk is only 84 g/day and this will be increased to 135 g/day by 2024 and 159 g/day by 2030 adjusted with the increasing population in the state. Current meat production in the state is 45.12 thousand tons and that could be increased to 56.53 thousand tons in the 2024 and 65.36 thousand tons in 2030. Similarly, the egg production could be increased from current production of 109 million to 178 million eggs in 2024 and 260 million eggs in 2030. Thus, the per capita availability of eggs will increase from 39 eggs to 55 eggs in 2024 and 76 eggs in 2030. Further, these strategies will also help in improving the nutritional security, income and livelihood of the farmers. Thereby it will reduce the gap in supply-demand of the livestock products in the state.

3. References

Annual Report, ICAR RC NEH Region (2017). Research Achievements, Meghalaya. http://www.icarneh.ernet.in/publication/Annual%20Report%202017%20of%20ICAR%20NEH.pdf; Accessed 10 July 2021

Basic Animal Husbandry Statistics (2019). All India report. Ministry of Fisheries, Animal Husbandry & Dairying, Department of Animal Husbandry & Dairying, Govt. of India.

Census of India (2011). Population projections for India and states 2011 – 2036. Report of the technical group on population projections. November, 2019. https://nhm.gov.in/New_Updates_2018/Report_Population_Projection_2019.pdf; Accessed 15 July 2021

Indian Meteorological Department (2020). Climate Research and Services. Observed Rainfall Variability and Changes over Meghalaya State. https: //imdpune.gov.in/hydrology/ rainfall% 20variability%20page/ meghalaya_final.pdf; Accessed 15 July 2021

ISS Report (2018-19). Report on integrated sample survey for estimation of production milk, egg and meat. Government of Meghalaya. Directorate of Animal Husbandry & Veterinary, Government of Meghalaya. http://megahvt.gov.in/iss_reports/ISS_Report_2018-19.pdf; Accessed 15 July 2021

Kadirvel G, Devi YS, Singh LA, Singh NM, Baruah KK, and BK Kandpal (2021). Productive and reproductive performances of two-breed and three-breed pig crosses with Niang Megha, Hampshire and Duroc inheritance reared under subtropical Eastern Himalayan hilly climate. Tropical Animal Health and Production 53: 1-9.

Kadirvel G, Kumaresan A, Das A, Bujarbaruah KM, Venkatasubramanian V, and SV Ngachan. (2013). Artificial insemination of pigs reared under smallholder production system in northeastern India: success rate, genetic improvement, and monetary benefit. Tropical Animal Health and Production 45: 679-686.

Livestock Census (2019). All India report. Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries https://dahd.nic.in/ sites/default/filess/ Livestock%20%205_0.pdf; Accessed 13 July 2021

Population census (2011). Meghalaya: Census of India. https://www.censusindia.gov.in/2011-prov results/data _files/meghalaya/2.%20 highlighs.pdf; Accessed 15 July 2021