

Livestock and Poultry Sector in Odisha - Current Status, Challenges, and Future Prospects

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Abstract

As per the Odisha Economic Survey 2020-21, agriculture and allied sectors share 21.27% of the Gross State Value Added (GVA) at current basic prices. The Animal Husbandry sector provides 2.49% of Gross Value Added which is approximately 12% of the state GVA of Agriculture. Odisha has four distinct indigenous cattle breeds: Binjharpuri, Ghumsuri, Khariar, Motu, and three buffalo breeds viz; Chilika, Kalahandi, and Manda. However, a lot of lesser-known buffalo germplasm like Sambalpuri, Paralakhemundi, Jirangi, Arni, and Kujang are also found in the state. Two nationally recognized breeds each of goat (Black Bengal and Ganjam) and sheep (Bolangir and Ganjam) are found in Odisha. However, a lot of indigenous breeds are found like Narayanapatna, Raighar, Malkangiri, Bada Bihan, Dorangi, Koraput hill, and Dalua goat. Edka, Kuzi, Kendrapara, Dharamagarh Sheep, and Koraput sheep are indigenous sheep breeds. Burudi, Pondi or Jhinga, and Ganjam Golla are a few lesser-known pig breeds of Odisha. Hansli and Aseel are recognized chicken breeds. Kuzi, Moti, Raja Hansa, Koraput, and Kalahandi ducks are indigenous duck breeds. According to Basic Animal Husbandry Statistics, (2020), Odisha ranks 12th (2.38 billion numbers) among Indian states in egg production, 16th in milk production (2.38 million tonnes) and 12th in meat production. Approximately 50% of meat is obtained from poultry followed by goat (39%), sheep (9%), and pig (3%). Commercial poultry accounts for 87% of the total egg produced in the state; limiting backyard poultry to only 13%.

Keywords: Buffalo, Cattle, Goat, Livestock, Odisha, Poultry, Sheep.

Introduction

Natural and artificial selection, geographical isolations and unique adaptability of specific animals to specific local conditions have developed a number of genetically diverged species, breeds, and strains of livestock and poultry. Odisha - a state of diverse cultural heritage, traditions, and customs is bestowed with eleven rivers and their tributaries, dense forest coverage, and a large proportion of tribal community i.e., 62 ethnic groups or tribes. This diverse background of the state has helped in the development of rich livestock and poultry genetic resources. Odisha is the 9th largest state (15.67 million hectares of landmass) of India based on area; 11th based on population (Odisha profile, 2018), and is situated on the eastern coast. As per the 2011 census, the population is 41.94 million. Approximately 85% of the population is rural and home-based animal husbandry units are a major source of the rural economy (Census, 2011). Agriculture and allied sectors play a dominant role in the economy of Odisha with a contribution of 21.27% of GVA at current basic prices. The Animal Husbandry sector provides 2.49% of GVA which is approximately 12% of the state GVA of Agriculture (Odisha Economic Survey, 2021). Total output from agriculture and allied sector was 75,800 crore of which milk (9.1%) and meat (11.3%) together accounted for more than 20% (ARD, 2021).

Population Dynamics of Livestock and Poultry in Odisha vs India

Odisha has diverse cattle, buffalo, sheep, goat, and poultry breeds. The population is represented in Table 1.

Table 1: Population of different livestock and poultry as per 20th livestock census

Species Population (2019 Census)	India	Odisha	% share
Cattle (millions)	193.46	9.9	5.12
Buffalo(millions)	109.85	0.46	0.42
Sheep(millions)	74.26	1.28	1.72
Goat(millions)	148.88	6.39	4.29
Pig(millions)	9.06	0.135	1.49
Total Livestock (millions)	536.76	18.17	3.39
Total Poultry (millions)	851.51	27.4	3.22

(Source: 20th Livestock Census, Govt of India Report, 2019)

Cattle and Buffalo Genetic Resources of Odisha: In terms of Cattle genetic resources of India there are four distinct indigenous breeds: Binjarpuri, Ghumsuri, Khariar, and Motu (Table 2). The state has a 5.86% share of the total indigenous cattle and a 5.11% share of the total cattle population of the country (Mandal *et al.*, 2020). These resources have evolved through a series of natural selection and associated with the local farming community for a long. In terms of buffalo genetic resources, Odisha has three nationally recognized breeds Chilika, Kalahandi, and Manda (Table 2). However, a lot of lesser-known buffalo germplasm like Sambalpuri, Paralakhemundi, Jirangi, Arni, and Kujang are also found in the state. Odisha evidenced a sizeable raise in crossbred cattle population (13.06 lakh in 2012 to 15.8 lakh in 2019). There is a substantial rise in the female crossbred cattle population by 44% (8.97 lakhs in 2012 to 13.44 lakh in 2019). The state accounts for 1.17% of the country's total milk production with 6.82% of the total female cattle population (ARD, 2021). Thus, the development of the dairy sector is in prime focus.

Small Ruminant Population of Odisha: The small ruminant (mainly sheep and goats) are reared under a small holding system chiefly for meat. Sheep and Goat are means of livelihood for more than 40% of rural people. More than 87% of the sheep and goats are reared under a smallholder production system mostly for meat production. About 85% of the state population is non-vegetarian (Singh *et al.*, 2015). Chevon and mutton besides poultry and fish are very popular dishes. The demand for chevon and mutton is ever-increasing in the state. Goat milk is popular in the Ganjam, Gajapati, and Nayagarh districts. Ghee prepared from Ganjam goat milk is considered to have medicinal value and is sold at a premium price. The manure obtained from sheep and goats has a high demand. Penning of sheep and goats on the paddy field is a good source of income for farmers in Ganjam district and its nearby areas Khurda and Nayagarh. The state has two nationally recognized breeds Black Bengal and Ganjam goat. However, a lot of other indigenous breeds are found like Narayanapatna, Raighar, Malkangiri, Bada Bihan, Dorangi Goat, Koraput hill goat, and Dalua goat. Bolangir and Ganjam breeds of sheep are two nationally recognized breeds of the state. Edka, Kuzi, Kendrapara, Dharamagarh Sheep, and Koraput Sheep are indigenous breeds of the state (Das and Das 2016).

Table 2: Registered Cattle and Buffalo Breeds of Odisha

	NBAGR Accession Number	Specific Feature of the Breed
Cattle Breeds		
Motu	INDIA_CATTLE_1526_MOTU_03031	Small draught purpose breed reared mainly by Koya tribes of Odisha (Dash and Sethi, 2007)
Ghumsuri	INDIA_CATTLE_1500_GHUMSURI_03032	Small draught purpose breed mainly reared in Ganjam district of Odisha (Dash <i>et al.</i> , 2011)
Binjarpuri	INDIA_CATTLE_1500_BINJARPURI_03033	Reared for milk, draught, and manure. Average Daily milk yield of 4 litre with average fat and SNF% of 4.4 and 8.5%, respectively (Dash et al, 2013)
Khariar	INDIA_CATTLE_1526_KHARIAR_03034	Small-sized draught purpose breed reared mainly in Nuapada, Kalahandi, and Bolangir districts (Sethi <i>et al.</i> , 2009). The lactation yield varies from 300 to 450 Kg with fat% being 4 to 5 % (Dairy Knowledge Portal, 2016)
Buffalo Breeds		
Chilika	INDIA_BUFFALO_1500_CHILIKA_01012	Large and compact body. Feeds on weeds of Chilika Lake. Low milk production but high fat% in milk, tolerant to salt water, and are a good swimmer.
Kalahandi	INDIA_BUFFALO_1500_KALAHANDI_01013	Medium-sized animals, Draught type breed Well known for longevity.
Manda	INDIA_BUFFALO_1500_MANDA_01019	Medium size, Reared in hills, forests. Hardy and can live without housing facilities. Drought breed. Small population existing.

(ICAR-NBAGR, 2021)

Pig Breeds: Koraput ‘Burudi’ Breed, Pondi or Jhinga Breed, and Ganjam Golla Breed are a few lesser-known pig breeds of Odisha.

Poultry Breeds: Hansli and Aseel are recognized chicken breeds of Odisha however, Vezaguda, Kalahandi, HazraDhinki, Phulbari, Phulabani are indigenous poultry germplasm of the state. These breeds are famous for their adaptability and ability to survive in poor feed regimens. Kuzi, Moti, Raja Hansa two and Koraput, Kalahandi ducks are indigenous duck breeds (Das and Das 2016).

Present Status in Animal and Poultry Products

According to BAHS, (2020) as represented in Table 3; Odisha ranks 12th (2.38 billion numbers) among Indian states in egg production, 16th in milk production (2.38 million tonnes), and 12th in meat production (0.2 billion tonnes). The crossbred and indigenous cattle produced 50.35 and 41.04 percent of the total milk respectively followed by buffalo (8.43%) and goat (0.20%). The average daily milk yield of crossbred cows is 6.62 kg followed by indigenous cows 2.61 kg and non-descriptive cows 1.36 kg. The average daily milk yield of indigenous buffalo is 4.57 kg while for non-descriptive buffalo is 2.53 kg. The milk yield of goats is only 130 ml/day. The state produced a total of 204.68 thousand tonnes of meat out of which 49.57% i. e. 101.47 thousand tonnes is obtained from poultry, Pig 5.36 thousand tonnes (2.62%), Sheep 17.92 thousand tonnes (8.75%), and 79.93 thousand tonnes (39.05%) from goat. The state produced 23814 lakhs eggs out of which chicken produced almost 99.5% and egg production from the duck sector was only 0.5%. Commercial poultry accounts for 87% of the total egg produced in the state; limiting backyard poultry to only 13% (BAHS, 2020).

Table 3: Status of Livestock and Poultry Products India Vs Odisha

Parameter	India	Odisha	Rank
Milk Production (2.38 million tonnes)	198.44	2.38	16
Meat Production (million tonnes)	8.6	0.2	12
Egg Production (billions)	114.38	2.38	12
Per capita availability of milk	406	144	21
Per capita availability of meat (Kg/Annum)	6.45	4.55	23
Per capita availability of egg	86	53	13

(Source- Basic Animal Husbandry Statistics, 2020)

Feeds and Fodder

Feeds and fodder encompass the daily maintenance and production ration of livestock. Thus, economic development through livestock highly depends on the availability and accessibility of feed and fodder to the animals. Fodder cultivation plays a substantial role in the economic progress of the State. The state produces approximately 65 lakh litres of milk daily of which crossbred cows and crossbred cows share 30 lakh litres. Cultivation and feeding of nutritious fodder have not yet been fully implemented by the farmers of the State to utilize the full production potential of animals, especially crossbred (C.B) cows. The estimated availability of green and dry fodder is 16121.750 thousand metric tons and 31203.66 thousand metric tons, respectively. The current shortage is 48.4% and 23.5% for green and dry fodder, respectively (Swain and Sunani, 2015). Thus, to shrink the gap and generate awareness among livestock farmers, different fodder development programme has been formulated by the Animal Resource Development Department in partnership with International Livestock Research Institute.

1. **Seasonal Fodder Cultivation Programme:** Govt is providing rabi and kharif seasonal fodder seeds in the form of mini kits containing seeds of cereal and legume fodder seeds at the farmer's doorstep free of cost. Kharif season mini kit: Maize, Sorghum, bajra as cereal, and cowpea as legume fodder. Rabi season mini kit contains oat (cereal) with berseem or lucerne as a legume component.
2. **Perennial Fodder Cultivation Programme:** Perennial fodder is fodder that produces fodder for three to four years. The objective of the program is to cultivate perennial fodder at farmers' fields to supply fodder to the milch animals.
3. **Distribution Of Chaff Cutter:** this programme facilitates scientific feeding practices by chaffing the fodder into small pieces and improving digestion and reduction in feed wastage.
4. **Fodder Seed Production Programme (Farm):** The state has 8 fodder seed production plants.
5. **Fodder Production and Demonstration Farms:** the state has 13 fodder demonstration farms
6. **Establishment of Azolla Demonstration Units**
7. **Other Programs Include:** The Central Mini kit Testing Programme on Fodder Crops, Training and Demonstration in Fodder Cultivation and Pasture Development and Strengthening of Departmental Fodder Plans (State Plan), Enrichment of Crop Residue (State Plan), Fodder Development Programme under ILDP-Kalyani and Rashtriya Krishi Vikash Yojana are in operation in the state.

Animal Husbandry Infrastructures

The National Project for Cattle and Buffalo Breeding (NPCBB) is in function since 2001-02 covering all 30 districts of the state. There is one semen collection centre cum frozen semen bank at Khapuria, Cuttack producing about 5.36 lakh doses of semen (pure Jersey, crossbred Jersey, Hariana, Binjharपुरi, Tharparkar, Sahiwal, and Red Sindhi breeds) during 2020-21(ARD, 2021). There are 3319 departmental AI centres (including 2940 Departmental Mobile AI centres), 955 OMFED AI centres, 285 BAIF centres, and 556 private AI workers (Gomitras) in the state for providing AI services (ARD, 2020). The total number of AI done in the state was 12.24 lakh during 2020-21; 4.13 lakh calves were born (ARD, 2021). Jersey semen is well-demanded in the state. Six breeder's societies viz; Chillika

Buffalo Promoter Society, Kalahandi Buffalo Producer Society, Binjharपुरi Cattle Promoter and Producers Society, Motu Cattle Promoters Society, Ghumsuri Cattle Breeder Society, Khariar Breeder's Society. Seven Khariar bull calves and 5 Ghumsuri bull calves reared at Bovine Breeding Research and Bull Mother Farm (BBR and BMF), Chipillima and BBR and BBF Bhanjanagar, respectively to be used as future donor bulls (ARD, 2021).

Table 4: Animal Husbandry Infrastructures of Odisha

Veterinary Hospital /Dispensary	541
Livestock Aid Centre	3239
Frozen Semen Artificial Insemination Centre	5145
State Veterinary Laboratory/ Clinical Investigation Laboratory	4
Animal Diseases Research Institute	1
District Diagnostic Laboratory	26
Odisha Biological Products Institute	2
Department Training Centres	7
Fodder Seed Production Farms	21
Livestock Breeding Farms	16
Poultry/Duck Breeding Farm	10
Central Cattle Breeding Farms	2
Directorate of Poultry Research	1
Central Poultry Development Organization	1

(Annual Activity Report, F & ARD, 2020-21, Govt. of Odisha)

Mobile Veterinary Unit (MVU): under this scheme, a mobile veterinary unit consisting of one Veterinary Asst Surgeon and one Para-vet offers several veterinary services at farmers' doorstep. The MVU unit has been implemented in all the blocks of the state.

The following organizations look after the activities of AH and Dairy:

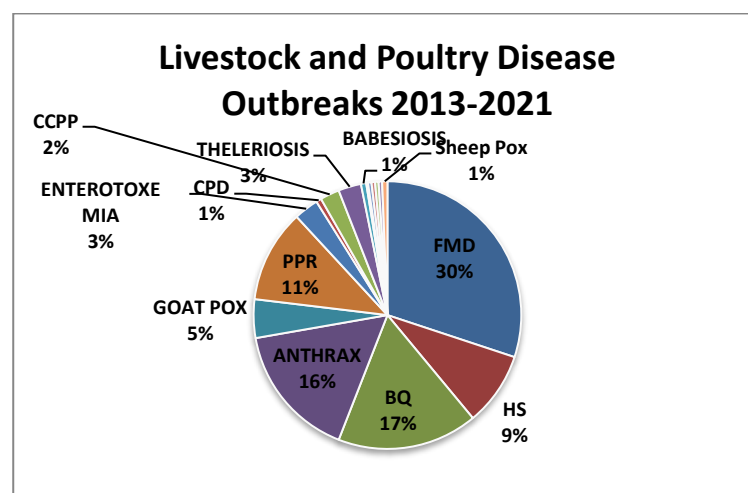
- i. **Odisha Biological Products Institute (OBPI):** The main unit is located in Bhubaneswar. OBPI is an ISO 9001:2008 certified institute that produces different bacterial and viral vaccines for protecting livestock in the state. One Satellite is located at Berhampur, Ganjam is producing the Enterotoxaemia vaccine and Anthrax Spore Vaccine.
- ii. **Orissa Livestock Resources Development Society (OLRDS):** It was established in the year 2000, initially to assure smooth execution of the Central Government Scheme - National Project for Cattle and Buffalo Breeding (NPCBB), subsequently, delegated as the State Implementing Agency (SIA) for Bovine Breeding activities of the Odisha. Assignments of OLRDS include- survey, characterization, registration, performance recording, and conservation of native livestock breeds of the State. Furthermore, OLRDS is the chief agency for the operation of the risk management and insurance of the livestock program of the State. The overall aim and objectives are to strengthen the rural economy through livestock.
- iii. **Society for Prevention of Animal Diseases (SPAD):** SPAD focuses on mass vaccination, de-worming, skill upgradation, and awareness campaigns on preventive and animal health care measures
- iv. **Society for Management of Information, Learning, and Extension (SMILE):** It was established in 2007. The major mandate is to aware the field Veterinary officers regarding the technologies developed by the institute for augmenting livestock health and production. Furthermore, the feedback from field Veterinary officers regarding the performance of the technologies in the field, the grassroots level need of livestock owners, problems/constraints faced by them in using the technologies, and other emerging problems/diseases to generate need-based researchable issues.
- v. **Orissa State Poultry Producers Cooperative Marketing Federation Ltd. (OPOLFED):** State-level topmost poultry co-operative marketing organization. Major Activities:
 - Organization of Primary/Women Poultry Co-operative Societies

- Supply of inputs to poultry farmers
 - Marketing of eggs, dressed chicken meat, and poultry feed
 - Delivery of poultry products to customers at a reasonable rate
 - Supply of eggs to school children under the Mid-Day Meal programme
 - Promoting self-employment prospects for the educated-unemployed youths
 - Odisha Women Poultry Project (OWPP) in Khurda & Angul districts
- vi. **Orissa State Cooperative Milk Producers Federation Ltd. (OMFED):** is a top-level milk cooperative society of the state. The aim is to join together rural milk producers with urban consumers with an innovative aptitude. The main activities include- facilitating the production, procurement, processing, and marketing of milk and milk products for economic up-gradation of the rural farming community in Odisha. As per the reports of the National Action Plan for Dairy Development- Vision2022, the state has a sale of 615.6 thousand litres of ice cream, 1285.2 metric tonnes of paneer, 14.3 MT of table butter, 1380.1 thousand litres of flavored milk, 899.4 MT of Lassi in the year 2015-16 (Mandal *et al.*, 2020).
- vii. **Utkal Go-Mangal Samiti (UGS):** It was established in the year 1936. The prime concern of the Samiti is to bring holistic growth of the livestock through the upgradation of local indigenous animals using improved bulls and buffalo bulls; also, to publicize different types of fodder cultivation. There are 3 farms - one at Patha near N.R.R.I., Bidyadharpur, Cuttack; another at Bhogara near Khuntuniand other at Tirtol in Jagatsinghpur District. Buffalo Bull calves to be used for natural service are being reared at Patha.

Challenges to the Animal Husbandry Sector of Odisha

Epidemic and Zoonotic Diseases

An outbreak of epidemic and enzootic diseases is one of the measure challenges being faced by the animal husbandry sector. As per the annual activity reports of the ARD sector Odisha from 2013 -14 to 2020-21, there were 142 outbreaks of FMD, 42 outbreaks of H.S, 80 outbreaks of B.Q, 53 PPR outbreaks, 3sheep pox, 22 goat pox, 14 enterotoxemia, 13 theileria, and 3 babesia outbreaks. Details of the outbreaks are represented in the pie chart (Figure 1). In the last 9 years, there have been 9 epicenters of avian influenza in the state. Avian influenza is one of the emerging zoonotic diseases that imparts high loss in terms of the high rate of culling of birds, destroying feeds and eggs, and heavy financial loss (ARD, 2021).



(Source- Animal Resources Development Department, Govt of Odisha)

Natural Calamities

Odisha is one of the worst affected states of India with regard to natural calamities. During the super cyclone 1999,

the loss of animal lives was also very high with 6.32 lakh animals and 18.83 lakh poultry. A total of 17.33 lakh hectares of agricultural land were affected (Roy *et al.*, 2002). In 2013, cyclone Phailin affected over 33 lakh bovines, over 14 lakh sheep goats, and 22 lakh poultry. There was a loss of 6644 livestock and 172874 poultry. The estimated livestock cost in the three most severely affected districts is about INR138.2 million (Government of Odisha Report, 2013). The poultry sector of the state faced massive losses due to Cyclone Fani in the year 2019. Around 24.5 lakh large animals, 10 lakh small animals, and 54 lakh poultry birds have been affected due to Cyclone Fani. Damage and losses to livestock were estimated at 1,206.81 crores, representing around 39.7% of the total losses to the sector, including production losses, death of animals, and decline in eggs and milk production. More than 2500 commercial broiler farms got demolished. Fani resulted in the death of 2,499 cows and buffaloes, 139 bullocks, 695 calves, 2,924 sheep and goats, and 53 lakh chickens (Govt of Odisha Report, 2019). Cyclone Amphan associated with heavy rain affected 1903 livestock and 18875 poultry birds. As per the report from Govt. of Odisha, 17 nos. of large milch animals, 7 nos. of small milch animals, and 14 nos. of small draught animals along with 4685 poultry birds have lost their lives due to the cyclone (Govt of Odisha Report, 2020).

Poor Genetics of Livestock

The cattle and buffalo genetic resources are poor in concern to milk production though they have good adaptability to the local harsh climate. The state has 6.82% of the total female cattle of the nation but shares only 1.17% of the national milk pail. Individual productivity of the animals is low in comparison to the nation.

Poverty and Illiteracy

As per the National Multidimensional Poverty Index (MPI) 2021 – Baseline Report, Odisha is ranked eighth from the bottom with 29.35% of the State's population found to be multi-dimensionally poor (NITI Ayog, 2021).

Infrastructure

The state has only one Frozen Semen Bank for supplying semen to the whole state. There is no semen bank for small ruminants. The lack of an organized market for livestock and livestock products is also one of the major drawbacks since livestock products are perishable in nature. The presence of organised market promotes the marketing of products regionally and globally.

Deficit of feed and fodder

According to the Annual Activity Report of F & ARD 2011-12, the deficiency of green fodder and dry fodder in the state is 48.4 and 23.5%, respectively.

Future Perspectives

As per the State Animal Husbandry and Dairy Sector, the state govt has the following future plans for holistic development of the livestock and poultry sector to uplift the livelihood of the farmers and enhance the economy of the state.

- Generate employment opportunities for 5 lakh farmers in ARD Sector within 10 years.
- Increase milk production to 3 million MT per annum by 2023-24.
- Increase meat production to 120 TMT per annum by 2023-24.
- To promote poultry production in the state, Odisha Govt. Has considered poultry as agriculture status. The per capita availability of eggs is still far behind the national average. According to the new Odisha Poultry Development Policy 2015, the target is to reach a daily egg production of 110 lakhs by 2025. As per the policy, several steps are being taken by the department to enhance egg production in the State.
- Augment poultry meat production to 110 TMT per annum by 2023-24.

Conclusion

Animal husbandry has always been a primary part of the rural livelihood systems in Odisha. The principal farming system in the state is the mixed crop-livestock farming system Odisha is bestowed with a rich livestock wealth both in terms of population and breeds even though productivity levels are very low. The animal husbandry sector has abundant opportunity to significantly augment the production to meet the domestic market demands and generate employment for the rural poor and improve their food and livelihood security. As the livestock keepers are mostly landless labourers, small and marginal farmers, the improvement in this sector will bring a stable growth of the rural economy.

Contribution by Authors

Equal contribution

Conflict of Interests

There is no conflict of interest.

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