

Livestock Biodiversity of Odisha

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Biodiversity is about the existence of life in all forms, levels and combinations, and is expressed in three levels: genetic diversity, species diversity and eco-system diversity. The Animal genetic resources constitute an important component of biodiversity. But out of thousands species of animals, only 40 species were found useful for domestication by different settlements. Fewer than 14 of these 40 species account for as much as 90 % of global livestock production, of which, the major domestic animals are seven mammalian species like cattle, buffalo, goat, sheep, pig, horse and ass and four avian species like chicken, duck, geese and turkey.

Animal genetic resources represent an important component of global biodiversity in terms of food security and sustainability. In developing countries, they play an important role in the subsistence of many communities and sustainability of crop livestock system. It is estimated that domestic animal genetic resources contribute 30% of total human requirements for

food and agriculture, either directly or indirectly. They meet various requirements of human being like meat, milk, egg, fibre, fertiliser for crops, draught power, etc. Besides, it also reduces farmers' exposure to risk and generates employment. Livestock are closely linked to social and cultural lives of several million resource-poor farmers for whom animal ownership ensures varying degree of sustainable farming and economic stability.

Livestock diversity in India

Approximately 6 % of the total domestic animal biodiversity exists in India. The Food and Agriculture Organisation (FAO) data base indicates that India has 61 cattle breed, 19 buffalo breeds, 59 sheep breeds, 29 goat breeds, 3 pig breeds, 3 ass breeds, 6 horse breeds, 8 camel breeds, and 18 poultry breeds. The domestic animal diversity found in India vis-a-vis other regions of the world for some of the important species have been presented below.

Species	World (FAO)	Asia Pacific (FAO)	South Africa (FAO)	India (FAO)	India (ICAR)
Cattle	787	190	94	61	30
Buffalo	72	57	33	19	10
Sheep	910	226	110	59	42

Goat	351	126	70	29	22
Pig	353	157	8	3	3
Ass	77	17	5	3	3
Horse	384	72	25	6	6
Camel	56	14	9	8	8
Poultry	606	72	27	18	18

(Source : National Bureau of Animal Genetic Resources (NBAGR), Karnal, India)

Over the years, indigenous breeds of livestock have been selected by different stakeholders for traits like disease resistance, poor roughage base, feed efficiency, ability to withstand migration and periodic draughts as well as for diverse other reasons such as fighting and racing abilities and physical characteristics such as colour, size and gait. Locally adopted breeds may produce less compared to highly specialised breeds but they are definitely more efficient in use of natural resources unfit for human consumption and more suitable for exploitation of higher production in medium and low input production system. They retain significant genetic diversity to cope with changing environment and market needs.

The important factors that contributed to diversity of animal genetic resources in India are: migration, settlement pattern and sharing of genetic resources by human beings resulting in widespread distribution of most important livestock species, market forces, food habit, changing lifestyle, preferences of local population for production and services.

Livestock Diversity in Odisha

Odisha with its varied culture base inherited from ancient times is endowed with large rivers and dense forest that have helped development of various livestock and poultry species with wide diversity. Its rich animal genetic

resource base has been further strengthened by import of various animals by the maritime community of the ancient Kalinga Empire. The historical treatise and sculptures on temples and other archaeological monuments in Odisha give the evidence that the different types of animals such as European draught horses and other precious domestic animals were brought from other countries to Odisha in medieval ages. Besides, various tribal ethnic groups have traditionally preserved varieties of crop as well as livestock population over thousands of years. Recent import of exotic and improved animal breeds by missionaries and government agencies has further strengthened the livestock resources in Odisha.

Livestock production has been an integral part of rural livelihood system in Odisha all through the known history of the state. The predominant farming system in the State is the mixed crop livestock farming system and over 90 % of all farms of all categories conform to this farming system. The livestock wealth in Odisha is equitably distributed in all sections of the society, and constitute a natural resource base with immense livelihood implication. Like agriculture, livestock production system is endeavour of small and marginal farmers. More than 80 % of the rural households own livestock of one species or other or a combination of them to get milk, meat, egg, skin, bone, manure and draught power and

employment for their own purpose or to maintain their livelihood.

According to the 18th and 19th Livestock Census, the livestock population of the state is as follows:

Species	18 th Census-2007	19 th Census-2012
Cattle	12.30 million	11.62 million
Buffalo	1.18 million	0.72 million
Sheep	1.81 million	1.58 million
Goat	7.12 million	6.51 million
Pig	0.61 million	0.28 million
Total Livestock	23.05 million	20.73 million
Poultry	20.6 million	19.89 million

The State has a strong agricultural and livestock base rich in biodiversity. The sheep and goat found in Odisha are known for their resistance to common endoparasites. They are also highly prolific and possess exceptional quality to survive in water logging condition. Similarly, some of the cattle and buffalo breeds found in Odisha have good qualities for growth reproduction and survivability under summer and saline harsh conditions. Wild types of buffaloes have been found in different regions of State. Odisha possesses rich source of fowl germplasm, which has been patronised since ages by tribes of Koraput, Kalahandi, Mayurbhanj, Keonjhar, Phulbani, Sundergarh and other hill districts.

Biodiversity of Livestock in Odisha:

A brief description of indigenous livestock and poultry breeds, strains and populations found in Odisha that have been developed by the communities is given here :

A) Cattle germplasm Characteristics

i) Motu Breed: Small, milk and drought breed, live on scanty grazing under the

open condition throughout the year and are regular breeders.

ii) Birnjharpuri Cattle Breed: A smaller upgraded Haryana type animal.

Compact body with good draught capacity.

iii) Ghoomsoori Cattle Breed: Small size, hardy draft breed of Ganjam, Phulbani districts, Odisha extending into Srikakulam district of Andhra Pradesh.

iv) Kharial Breed: Small sized compact and draught purpose breed.

B) Buffalo Germplasm

i) Parlakhimendi Breed: Medium sized, swamp type to look, milch breed. They are best road graziers, regular breeders.

ii) Manda Breed: Medium sized, breed on hills and forests, hardy and live without housing facilities, best drought ability. Prospectus to improve milk yield is existing. They are having highest fat of South Odisha breeds. Very small population existing.

iii) Jirangi Breed: Small sized, hardy draught purpose, fast working animals

bred on hills and high altitude with high fat % in milk.

iv) Kalahandi Breed: Medium sized, very hardy slow working, draught type breed. Well known for longevity.

v) Kujang Breed: Medium sized, relatively less compact, stand on flood and graze on the river banks, medium milking breed

vi) Arni of Koraput: Wild, large sized, breeds well with local buffaloes. It is under threat of extinction in Odisha.

vii) Chilika Breed: Large, compact body, depend on Chilika lake weed, low milk producing, high fat buffaloes, Salt water tolerant and good swimmer.

C) Goat Germplasm

i) Black Bengal Goat : Small, highly prolific, early prolific, early maturing goat, stands well to water logging conditions. The breed thrives well on grass grazing. Chevron and skin is valued.

ii) Malkangiri Goat: Early maturing, prolific, kidding twice in 14 months, mostly twins, heavy chevon goats.

iii) Raigarh Goat: Early maturing, prolific, kidding twice in 14 months, mostly twins sometimes triplets, good milk goat and good chevon quality.

iv) Ganjam breed: Leggy, low prolificacy, late maturing, annual single kidding, slow growing goat with aggressive grazing habit. Goatish odour present.

v) Narayanapatna breed: A mutton type prolific breed, twin kidding, 14 to 15 month two kiddings, large goat with good udder and teats.

vi) Koraput Hill Goat: Early maturity, prolific, kidding twice in 14 months, mostly give twins, fastest growing goats for chevon production.

vii) Ganjam Hill Goat: Very similar to Koraput Hill Goat, but slightly compact (Gua Chelli) with good udder.

D) Sheep Germplasm

i) Kuzi Sheep Breed: Woolly, little breed, highly prolific and best adopt to coast region.

ii) Ganjam Sheep Breed: Hairy, short tail, medium type, less prolific annual single lambing, mutton sheep solely live on road side grazing (in rains).

iii) Koraput Sheep Breed: Coarse wool to hairy, short tail, small to medium size, annual single lambing sheep for mutton.

iv) Machkund strain: Coarse wool, short tail, small size, highly prolific strain, early maturity, Koraput sheep twice lambing in 14 months, some twins and very rarely triplets, mutton type sheep solely live on grazing.

v) Dharamagarh Sheep : Course wool, short tail, small size, annual lambing sheep, withstand high ambient temperature and draught.

vi) Kathargad–Dasmantpur Strain: Early maturing, high twining sheep of Koraput found in Kathargarh.

vii) Erka Sheep Breed: Hairy, medium in size, red coat, highly prolific (early maturing, two lambing in 14 months, mostly twins and about 5 per cent triplets claimed by farmers). Found around Chilika Lake and in Khurda District.

viii) Bolangir Sheep Breed/ Dharamgarh Sheep : Course wool, short tail, small size, annual lambing sheep, resistant to high ambient temperature and draught.

ix) Chotanagapuri Sheep : Coarse long wool type, small size, annual single lambing found in Mayurbhanj and Keonjhar districts.

E) Pig Germplasm

i) Koraput 'Burudi' Breed : Small sized pot bellied, prolific, least back fat pigs, solely thrive on scavenging or very little feeding.

ii) Pondi or Jhinga Breed: Medium size, twisted tail, high back fat, prolific breed. Home fed and semi scavenging ability to thrive.

iii) Wild pigs: Piglets collected from forest and house reared until one to two years age.

iv) Ganjam Golla Breed: Medium size, black skin, strong snout, barrel shaped abdomen, prolific grazing type of pigs.

F) Poultry Germplasm

i) Kalahandi Breed : Smallest, early maturing, prolific, high hatchability, fast growing birds living on scrap feeding. Good predator escaping ability.

ii) Vezaguda Breed : Medium size, quick growing, prolific, high hatchability, game type bird.

iii) Dhinki Breed : Large size, quick growing, least feathers, less prolific and low hatchability birds and are individual home fed.

iv) Hazra Breed : Medium to large size, quick growing, prolific poultry breed in Mayurbhanj district. The breast muscle is prominent.

v) Phulbani Breed : Medium in size, high prolific mostly with rose comb found in Phulbani district.

G) Duck Germplasm:

i) Koraput and Kalahandi: Have distinct white, black and white, Khaki duck with bluish black colour types. Known for good laying.

ii) Muscovy Ducks: Black, black and white and white feather type are seen. They are used for meat and tribals produce hybrids by crossing with other ducks for more meat.

iii) Rajahansa or Geese : Large, white plumage or with brownish or Khaki patches over wings.

Nearly one-third of world's livestock breeds are currently at risk of disappearing and the extinction rate is now estimated at about 6 breeds per month. Loss in biodiversity of animal genetic resources is more in developed countries than in developing countries due to use of few high producing breeds. The important factors affecting domestic animal biodiversity are : i) introduction of exotic germplasm for breeding programme, ii) reliance on few selected breeds known for high productivity under intensive system of management, iii) fluctuating market demand, iv) degradation of agro-ecosystem, v) outbreak of dreaded diseases, vi) Occurrence of natural disaster, and vii) war and political instability in a region.

Population of many of the important indigenous breeds of livestock of India and Odisha are declining at very fast. Some of them are at the verge of extinction. Concerted efforts are required to be taken at all levels to conserve the animal genetic resources so that it may yield the greatest sustainable benefit to present generation, while maintaining its potential to meet the needs and aspiration of future generation.

The following strategies are suggested for the conservation of livestock resources in the state.

1. Conduct research, documentation and study on the indigenous animals and birds of the State.
2. Increase awareness level of the value of local breeds and their significance as a reservoir for certain genetic traits.
3. Evaluate the economic and other benefits of local breeds in the context of village situation.
4. Give emphasis on improving the competitiveness of local breeds by means of selective breeding rather than cross breeding.
5. Involve community and Panchayati Raj Institution (PRI) in conservation of local breeds.
6. Make planning under Comprehensive District Agriculture Plan (C-DAP) for conservation of local livestock breed.
7. Conduct census on local breed so that the correct picture could be generated and effective breeding programme can be framed.
8. Develop a state level data bank on livestock genetic resources with network facility to hook-up with national and international data bank.
9. Promote establishment of animal trusts, animal welfare bodies, breeder society, animal lover society and similar other bodies for protection and conservation of indigenous animal and they should be supported technically and financially.

10. Strengthen College of Veterinary Science and Animal Husbandry under Orissa University of Agriculture and Technology (OUAT) to conduct research on indigenous breeds and develop awareness materials on the conservation of animal genetic resources.
11. State Government must initiate all measures to achieve the objective of conservation and improvement of native germplasm as advocated in "Odisha Bovine Breeding Policy, 2015". Government of Odisha must take proactively necessary steps in consultation with research institutions for survey and characterisation of native livestock for establishment of their uniqueness in terms of their confirmation, production and reproduction performances.

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