

Livestock and Forage Production Scenario in Odisha

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Introduction:

Odisha is endowed with large rivers, minerals and dense forests, which have led to the development of various livestock and poultry species with a wide diversity. The historical treatise and sculptures on temples and other archaeological monuments in Odisha give 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 the medieval ages. Its rich animal genetic resource base and biodiversity have been strengthened by the import of various animals by the maritime community of the ancient Kalinga empire. Besides, various tribal ethnic groups of the state have traditionally preserved varieties of the crop as well as livestock population over thousands of years. The recent import of exotic and improved animal breeds by missionaries and government agencies has further strengthened the livestock resources in Odisha.

The climate of Odisha is tropical, characterized by high temperature, high humidity, medium to high rainfall and short and mild winters. The actual rainfall received, vary from district to district. About 84% of rainfall is received during the period from June to September. Even though the quantum of rainfall is quite high, its distribution during the monsoon period is highly uneven and erratic. Flood, drought and cyclone visit regularly with varying intensity. Due to the frequent occurrence of these natural calamities, there is always a reduction in the yield of Kharif rice, the major crop of the state. In drought years, there is a considerable loss in the production of pulses and oilseeds both during Kharif and Rabi. In the present agricultural scenario, the marginal farmers, constituting more than 50% of the farmers, either own or rent a piece of land for cultivation. Because of the endemic poverty, they generally cultivate their crops with little inputs and hence crop production is low. In this backdrop, besides enhancing their capacity, an increase in productivity per unit land area and cropping intensity hold the key to agricultural development through livestock and forage production.

Importance of livestock for population in Odisha:

Livestock production has been an integral part of the rural livelihood system in Odisha. 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, the livestock production system is the 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.

Odisha has a strong agricultural and livestock base rich in biodiversity. The cattle and buffalo breeds found in Odisha have good qualities for growth reproduction and survivability under summer and saline harsh conditions. The cattle breeds in Odisha are Motu, Birnjharpur, Ghoomsoori and Kharial. The buffalo breeds are Parlakhimendi, Manda, Jirangi, Kalahandi, Kujang, Arni of Koraput and Chilika. Wild types of buffaloes have been found in different regions of Odisha. Black Bengal goat, Malkangiri goat, Raighar goat, Ganjam breed, Narayanapatna breed, Koraput hill goat and Ganjam hill goat are the goat breeds in Odisha. Kuzi sheep breed, Ganjam sheep breed, Koraput sheep breed, Machkund strain, Dharamagarh sheep, Kathargad– Dasmantpur strain, Erka sheep breed, Bolangir sheep breed/ Dharamgarh sheep and Chotanagapuri sheep are the sheep breeds in Odisha. The sheep and goats found in Odisha are known for their resistance to common endoparasites. They are highly prolific and possess the exceptional quality to survive in water logging conditions. The pig germplasm includes Koraput 'Burudi' breed, Pondi or Jhinga breed, wild pigs and GanjamGolla breed. Odisha possesses a rich source of fowl germplasm, which has been patronized for ages by tribals of Koraput, Kalahandi, Mayurbhanj, Keonjhar, Phulbani, Sundergarh and other hill districts. Kalahandi, Vezaguda, Dhinki, Hazra and Phulbani breeds are the poultry breeds in Odisha. Koraput and Kalahandi, Muscovy ducks and Rajahansa or geese are the duck germplasm in Odisha.

Major constraints:

Agriculture in Odisha relies upon mixed farming in which crops and livestock are two main enterprises. Farmers utilize their resources in such a way to fulfil their daily needs with maximum family income. Owing to land constraints small and marginal farmers are not able to grow forage crops in place of food crops. In turn, their livestock is not fed adequately. Thus, there is a need to integrate forage crops in the existing food based cropping systems to enhance forage availability in these areas without compromising the yield of food crops. Under irrigated conditions, the inclusion of fodder crops in existing sequences improves the soil productivity due to dense canopy, the addition of large amounts of stubble biomass and efficient utilization of applied nutrients.

It is estimated that the cultivation of forage crops during the gap period provides approximately 30-35 tonnes of green fodder per hectare. These systems are of particular interest to the farmers having small irrigated holdings who cannot divert land exclusively for fodder production. On large farm holdings, winter maize, late sown teosinte and fodder legumes like field bean and velvet bean can be grown. In East Zone, comprising of Bihar, Jharkhand, Odisha and West Bengal, a major source of dry fodder availability is food grains crop residue followed by forests and kitchen/horticultural/top feed/farm waste. There exists an overall deficit of 43.9% of dry fodder in the east zone and except Odisha, all other states in the region are deficit in dry fodder.

Forage production scenario:

Odisha is broadly divided into four physiographic zones namely - Coastal Plains, Central Tableland, Northern Plateau and the Eastern Ghats. These are further subdivided into ten agroclimatic zones such as North-western plateau, North-central Plateau, North-Eastern coastal plain, East and South-Eastern coastal plain, North-Eastern Ghat, Eastern Ghat highland, South-Eastern Ghat, Western undulating zone, Western-Central table land and Mid-Central table land. Soil types range from fertile alluvial deltaic soils in coastal plains, mixed red and black soils in Central tableland, red and yellow soils with low fertility in Northern Plateau to red, black and brown forest soils in the Eastern Ghat region. They differ widely from highly acidic to slightly alkaline and from light sandy to stiff clays. Soils are mainly acidic with the degree of acidity varying widely. Further, about 4 lakh ha is exposed to saline

inundation, 3.54 lakhs ha to flooding and 0.75 lakhs ha to waterlogging, particularly in the deltaic areas.

Important forage crops of Odisha:

The forage production of a region is governed by the agroclimatic zones. The tropical climate of Odisha is characterized by high temperature, high humidity, medium to high rainfall, short and mild winter. The normal rainfall is 1451.2 mm. Most of the rainfall received in the state is concentrated over a period of three months of the monsoon season. Systematic forage crop breeding programmes at the research institutions under the Indian Council of Agricultural Research (ICAR) and Orissa University of Agriculture and Technology have led to the development and release of a large number of improved varieties in different forage crops suitable for different agro-ecological zones. These varieties resulted in a substantial increase in the productivity and production of forages in Odisha.

Climate	Soil	Intensive forage crop rotation in eastern region
Sub-humid	Red acidic Soil	Pearl millet + Cowpea - Maize + Cowpea – Oats Maize + Cowpea - Sorghum + Cowpea - Berseem + Mustard
Sub-humid	Alluvial soil	Maize + Cowpea - Dinanath grass – Oats Maize + Rice bean -Berseem + Mustard
Humid	Acidic soil	NB hybrid (perennial) Maize + Cowpea - Maize + Cowpea - Maize + Cowpea

Technological interventions for enhancing forage resources:

The agriculture sector in Odisha has an impeccable track record of meeting the challenges of serious food shortages despite the rapid growth of the population. This can be construed to have been achieved through a favorable interplay of infrastructure, technology, extension, policy support with strong and meaningful political will. The new initiative taken by the state government in collaboration with International Livestock Research Institute (ILRI) bridges the gap between the requirement of green fodder and its availability in Odisha. The international expertise of ILRI is useful for Odisha in increasing fodder production through a scientific approach and the use of modern technology. The farmers across the state have taken up integrated farming to derive sustained income to maintain their families. There is a current emphasis on technology which should reach the farmers through better coordination between research institutions and field functionaries. While indicating the Perspective Plan (2010 – 2020) of the state agricultural department, it is expected that the department implements the roadmap laid down in the perspective plan in a systematic manner.

ILRI takes up a comprehensive situation analysis on feed and fodder availability in the state, agro-climatic zone-wise resource mapping and nutrition analysis. There is a lot of emphasis on green fodder production and balanced feeding for the livestock in the state, which will help in preventing many diseases and the use of crop residues that will be brought to the state for the benefit of dairy farmers. The inclusion of forage crops in existing non-food crops may be an important aspect of fodder production. Dual-purpose crops, short-duration fodder varieties, irrigation facility, sufficient fertilizers, organic manures, pesticides, tillage implements and farm labourers are required for livestock and fodder production in Odisha. Small and medium farmers having 2-3 milch animals of milk shed pockets of Odisha can be benefitted through diversification of farm due to tropical climatic suitability.

There are a number of plants and their species that can supply the green herbage to small and large ruminants. These species are either cut or lopped for animal feeding. A dual-purpose crop offers greater avenues for forage production and inter/mixed cropping by manipulating its geometry. Thus, the crops possessing dual-purpose characters for fodder and food availability will be greatly helpful for boosting forage production in the state without affecting the grain yield of crops. Non-conventional crops like turnip and sugar beet offer a



good choice with the development of higher biomass producing genotypes. Innovative farming practices are the key ways by which farmers can enhance forage production for the livestock. Good management practices may enhance profitability, improve farm energy, boost air and soil quality. The livestock sector plays a vital role to meet food and nutritional security, particularly in the context of global warming and climate change. A lot of emphasis is on the improvement of native germplasm such as Binjharpuri cattle in Odisha, which has high disease resistance capacity along with better production potential in terms of draught power and milk yield. Livestock provides draught power, rural transport, manure, fuel, milk and meat. Most often, livestock is the only source of cash income for subsistence farms and also serves as insurance in the event of crop failure. Further, the global energy crisis will lead to the utilization of livestock-based bioenergy as well as waste recycling for organic manure and organic forage production for quality animal products. There is a shift in the composition of livestock towards small ruminants due to natural resource degradation in arid and semi-arid regions and high growth in the meat sector. Black Bengal goats are prominent in Odisha.

Conclusion:

The livestock sector is playing a crucial role in the overall growth of the agriculture sector and gross domestic product of the state. The projected target for agriculture growth in five years plan cannot be met without substantial growth in this sector. Deficit of the feed and fodder availability of the desired quality is a major bottleneck restricting growth at the desired level. It has been established that the cost of milk production can be significantly lowered by improving the feeding system based on green fodder and replacing ingredients of concentrate with leaf meal and enriched complete feed block. But, cultivated fodder is limited to less than 4.5 percent of the area under cultivation in the country. The present area under fodder crops in India is around 8.6 million hectares. Availability of fodder resources has been estimated to be around 60% in the nineties had further reduced to around 50% of the total requirement. Further increase in the acreage of the fodder crops is not possible due to increased competition between various land uses for the cultivable land. The only way to meet the fodder needs of livestock is to look for increased productivity per unit land area and also through the integration of fodder crops in the cropping system. This needed breakthrough in increasing productivity and sustaining the availability of green forages is

possible through tailor-made technological intervention in specific niches. Such prospect offers an opportunity for the integration of the fodder-based production technology based on SWOT (Strength, Weakness, Opportunity and Threat) analysis of its resource base in Odisha. Thus, there is a dire need for a compilation of forage production technology suitable for the arable land encompassing the details of the required ingredient of the production system and clientele of the specific technology in the enhancement of livestock and forage production in Odisha.

References

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