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Impact of COVID 19 on Livestock (Animal Health and Dairy/Poultry/ Meat/Feed Industry)



NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI
May 2023

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Preface

Livestock plays multi-functional roles in the Indian agrarian economy both at the micro and macro levels. Apart from providing supplementary income to farmers in the predominantly mixed-farming system prevalent in the country, livestock serves as a source of insurance, investment, energy, and power in agricultural and household operations, as well as food and nutrition security. The distribution of livestock assets is far more equitable than that of land, and as such, the contribution of livestock to rural poverty reduction is more significant than that of the crop sector. At the national level, growth in the livestock sector has been significantly higher than that of the agricultural sector as a whole. With increasing per capita income, urbanization, and changing lifestyles associated with economic development, consumption of livestock products is increasing at a rapid rate, and evidence is emerging that a shift in dietary patterns in favour of livestock food products is taking place. This provides ample opportunity for growth in the household incomes of resource-poor rural households.

The COVID-19 pandemic-induced lockdown had not only disrupted supply chains, but also changed the landscape of economic activities, including food production, processing, distribution, trade, and consumption. The livestock sector, in particular, confronted with both unprecedented demand and supply shocks. The effects of COVID-19 on the sector, though yet to be quantified, are expected to be among the worst hit sub-sectors because of the perishable nature of its products. To assess and take stock of the adverse economic impact that COVID-19 has had on the Indian livestock sector and analyse the lessons learned, the National Academy of Agricultural Sciences organized a brainstorming session on the 'Impact of COVID 19 on Livestock, in hybrid mode on June 24, 2022.

This policy paper is an outcome of the discussion during this brainstorming session. It presents an in-depth analysis of evidences on the impact of the pandemic on Indian dairy and poultry sectors, breeding and healthcare services, the feed sector, and exports. It also provides a framework to chart the way forward so as to overcome the rippling effects of the pandemic and to be better prepared to counter such pandemic outbreaks in future.

I, on behalf of the Academy, thank Drs RK Singh and D. Bardhan for synthesising the opinions, comments, and suggestions of the participants in the form of this document. I also thank Drs Vijay Kumar and Amit Kumar Tripathy for their critical inputs. My sincere thanks to Drs PS Birthal, Malavika Dadlani and VK Baranwal for their editorial support.

May, 2023
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(Himanshu Pathak)
President, NAAS

Impact of COVID 19 on Livestock (Animal Health and Dairy/Poultry/ Meat/Feed Industry)

1. LIVESTOCK IN INDIAN AGRARIAN ECONOMY: AN INTRODUCTION

Livestock makes a multifaceted contribution to the socio-economic status of rural people. It plays an important role at the micro-level for resource-poor rural households as a source of insurance, investment, energy, and power in agricultural and household operations, food and nutrition security, and income and wealth. The livestock wealth of our country is one of the highest in the world. According to the 20th Livestock Census (GoI, 2019), the total livestock population in the country is 535.82 million, registering an increase of about 4.5% during the last inter-census period (2012–2019). The value of livestock has increased in recent years, with milk being the single largest agricultural commodity. During different sub-periods in the last three decades, growth in the livestock sector (ranging from 3.5% p.a. in 2000-2004 to 7.5% p.a. during 2012-2020) has been significantly higher than that of the agricultural sector as a whole (ranging between 1% p.a. during 2000-2004 and

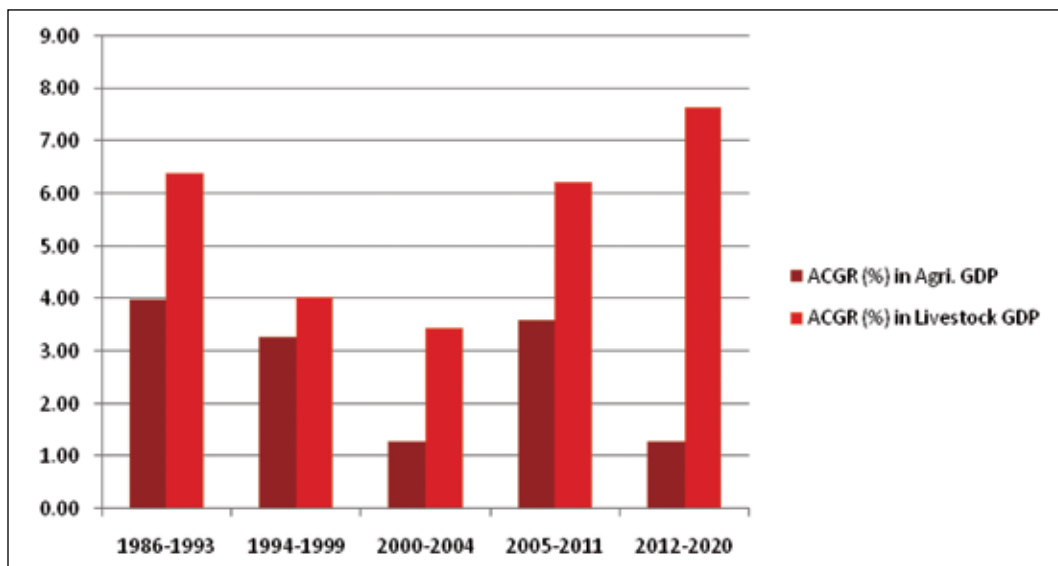


Fig. 1. ACGR (%) in agriculture *vis-a-vis* livestock GDP

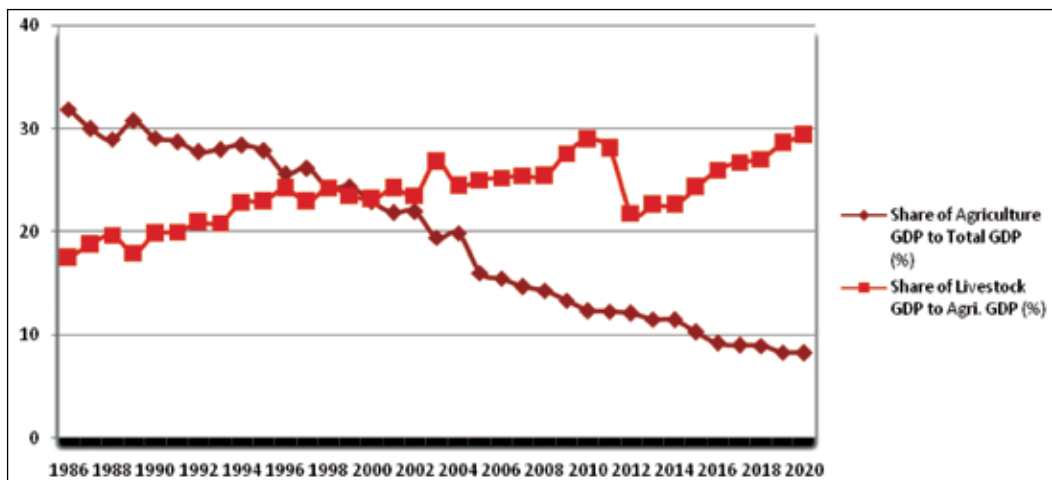


Fig. 2. Share (%) of agriculture GDP to total GDP & share of livestock to agriculture GDP

3.5% during 2005-2011). As of 2019–20, livestock contributes 29% to the country's agricultural GDP (at 2011–12 prices) (BAHS, 2020).

Livestock provides a cushion to the agricultural sector, both at the micro and macro levels. A large proportion of farmers (~70%) in our country are marginal depending mostly on the income from livestock, which increased by more than 200% (BIRTHAL, 2018). As of 2019, landless agricultural labourers, marginal farmers, and small farmers own 69% of total livestock (measured in livestock units), implying a more equitable distribution of livestock holdings than land capital (Situation Assessment of Agricultural Households, NSS 77th Round, 2021). Thus,

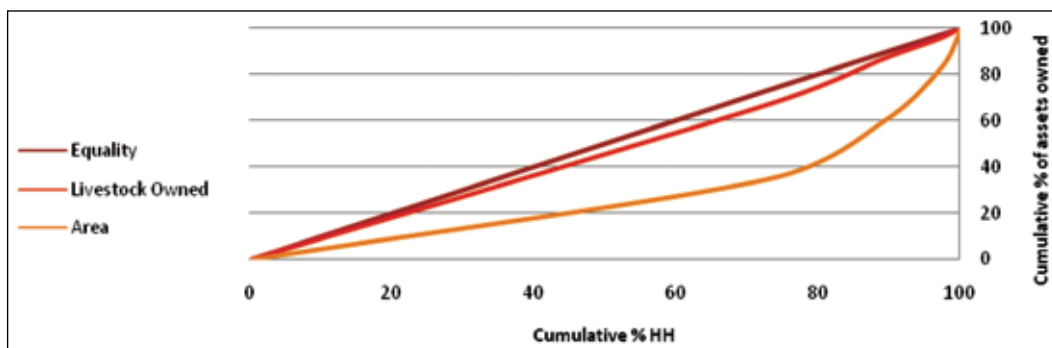


Fig. 3. Lorenz Curve for distribution of cultivable land area & livestock by farm-size categories (2019)

the contribution of livestock to rural poverty reduction is more significant than that of the crop sector.

As of 2019, livestock contributed 15% to the average monthly income of rural households, which increased from 13% in 2013 (Situation Assessment of Agricultural Households, NSS 77th Round, 2021). With increasing per capita income, urbanization, and changing lifestyles associated with economic development, a shift in dietary patterns is seen and consumption of livestock products is increasing at a rapid rate.

2. COVID 19: THE DISEASE

Corona viruses are one of the most important human and animal pathogens. At the end of 2019, a novel coronavirus was identified as the cause of a cluster of pneumonia cases in Wuhan, a city in the Hubei Province of China. It rapidly spread, resulting in an epidemic throughout China, followed by an increasing number of cases in other countries throughout the world. In February 2020, the World Health Organization designated the disease COVID-19, and declared it a pandemic on March 11. The virus that causes COVID-19 is designated severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2 (Li et al., 2020). The SARS-CoV-2 has already affected millions of people around the world (Malik et al., 2020; Sharun, 2020). Although SARS-CoV-2 is mainly transmitted by droplets or aerosols, transmission through other routes can also not be ruled out (Sharun et al., 2020; Dhama et al., 2021). The COVID-19 pandemic has already affected the human lifestyle, including our consumption patterns, especially during the lockdown period (Attwood & Hajat, 2020; Mayasari et al., 2020). Although several factors have contributed to the changes in our dietary patterns during the COVID-19 lockdown period, the main reason could be attributed to the restrictions imposed on the movement of people during the lockdown (Attwood & Hajat, 2020). As per one estimate, the COVID-19 induced economic lockdown has caused a loss of Rs .2711.2 thousand million in value terms to the livestock sector (Swain et al., 2020).

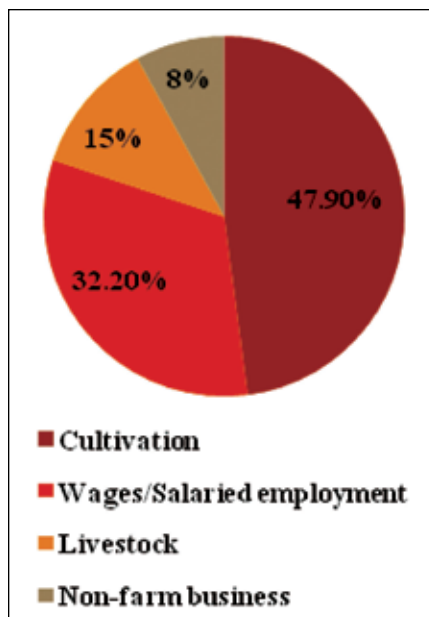


Fig. 4. Distribution of average monthly income per agricultural household by sources

The COVID-19 induced lockdown has disrupted supply chains and changed the landscape of economic activities, including food production, processing, distribution, trade, and consumption. The livestock sector, in particular, is confronted with both unprecedented demand and supply shocks. The effects of COVID-19 on the sector, though yet to be quantified, are expected to be among the worst hit sub-sectors because of the perishable nature of its products.

Considering the severity of the impact that COVID-19 has had on the livestock sector, the **National Academy of Agricultural Sciences (NAAS), New Delhi, organized a one-day brainstorming session on June 24, 2022**, to assimilate the lessons learned and efforts needed to mitigate the adverse impacts of the disease so prepare for future emergencies and outbreaks of similar diseases.

Sector-specific presentations were made on the impact of COVID-19 on livestock, viz., dairy, poultry, fisheries, feed and meat industries, breeding, and health issues. Specific policy inputs were also presented on managing veterinary services, supply chain solutions, challenges in veterinary science education, and the role of extension services in mitigating the impact of the pandemic. A Panel Discussion was held wherein relevant inputs were received with regard to way forward to address the adverse impact of COVID-19 across supply chains and also to prepare for the future occurrence of pandemics.

2.1 Impact of COVID 19 on the Indian livestock sector

2.1.1 Impact on the dairy sector

The lockdown, imposed in May, 2021, led to a sharp dip in the procurement of milk by dairy firms and hoteliers, affecting 1.5 million dairy farmers. In Odisha, for instance, several milk purchasing firms, including Odisha State Cooperative Milk Producers' Federation Limited (OMFED), either stopped lifting the products or reduced the share of products they used to buy. The volume of milk procured by OMFED came down from 5.45 lakh litres per day before the lockdown to 2-3.75 lakh litres a day during the lockdown (Mohanty, 2021). Farmers with a larger scale of operation also found that buyers of their products diminished drastically during the lockdown.

With the incidence of COVID-19, the Indian dairy industry suffered significantly due to the reduced overall demand of about 25–30% in the country, at least during the first month after the lockdown, that is, since March 25, 2020 (Shasidhar, 2020). The closure of roadside tea stalls, eateries, restaurants, and hotels during the

lockdown brought down about 15% of total milk consumption in the country to almost a complete halt. Distress sales of milk by the farmers brought about a 50% reduction in price in rural areas with no milk cooperative societies (Bajwa, 2020; Jha, 2020). Under government guidelines, continued procurement during lockdown by larger cooperatives in states like Karnataka and Gujarat led to surplus production of skimmed milk powder, with the potential impact of downward pressure where the prices of the same product had already declined by Rs. 80–90 per kg, in line with international prices. Further, in several cases, the procurement of milk happened with a reduction of about Rs 3–5 per litre of the procurement price (Biswal et al., 2020).

2.1.2 Impact on the Poultry sector

The incidence of the COVID-19 pandemic during 2020 had an unprecedented impact on poultry sector. The post-COVID-19 lockdown further reduced the demand for the poultry meat across the country due to several logistic factors. Hurdles in the interstate movement of the products in several parts of the country was one of the major causes of adverse impacts on this sector. The closure of restaurants, including those of the fast-food eateries or quick-service restaurants, further impacted the demand. Due to its perishability, the disruption of transport chains and the closure of several wholesale markets and malls in the cities severely affected the supply chains. The rumours about the adverse impact of the consumption of poultry meat also contributed to the decrease in demand resulting in distress sales.

Distress sales of products led to a significant decline in prices. As per an estimate, the COVID-19 scare and lockdown impacted 10 lakh broiler poultry farmers and 2 lakh layer farmers, and by the end of April 2020, the losses due to the same were estimated at Rs 27,000 crores (Singh, 2020). In certain places, the price of live poultry birds came down to as low as Rs 10–30/kg during the lockdown. With the subsequent relaxation of transport chains, although there has been a certain recovery on the demand front, the supply-demand gaps remained, affecting largely the industrial poultry sector. A decline in price to the extent of 70% for chicken has been reported (Singh et al., 2020). In terms of employment, about 4 crore labourers are dependent on the poultry industry in India, and the sector contributes Rs 1.3 lakh crores directly to the country's gross domestic product (GDP). Thus, the adverse impact of COVID 19 on this sector has serious implications for the livelihood of a vast section of the workforce in the country.

2.2 Impact on healthcare & breeding services

Limited access to the veterinary dispensary or even veterinarians, as well as problems with the transportation of animals to the polyclinic at the time of need, led to a high level of morbidity and at times the death of the animals. This limited health care would, in the long run, greatly impact the reproductive efficiency and productivity of the animals. The routine vaccination program carried out by the governments for Foot and Mouth Disease (FMD) at 6-monthly intervals, and HS annually for both cattle and buffalos, could not be undertaken in any state during this period, which may have a high ramification in controlling the disease outbreaks in the coming time. Similarly, the halt of a surveillance program for important livestock and poultry diseases would cause a major setback in disease forecasting.

Breed improvement through Artificial Insemination (AI) is an important strategy for increasing milk yield. Realizing the importance of AI for the genetic upgradation of the breeds, the Nationwide AI Program (NAIP) was launched by the Prime Minister of India in September, 2019 that aimed to inseminate over 120 lakh breedable bovines within six months. However, like many other activities, AI services were also affected by the imposition of lockdown during the COVID-19 pandemic. In one study, it has been estimated that the total loss per missed conception owing to the non-performance of AI on account of the COVID-19 lockdown was Rs. 989 crores at the national level in the months of April & May, 2020 (Bhandari and Lal, 2021).

2.3 Impact on feed industry

The most important inputs for livestock raising are feed and fodder. The Rs 350 billion worth of feed industry is reeling under an unprecedented crisis as it continues to face the aftermath of restrictions on logistics imposed under the lockdown. In addition, the prices of raw materials, primarily soya meal, have gone up by nearly 10–15 percent during April, which could be because of low supply caused by fewer plants in operation. The problem for the industry has compounded as additional costs of logistics and raw materials cannot be passed on to the end users, the farming community engaged in the rearing of cattle, poultry, and fisheries.

Demand for poultry feed in the country has fallen over 30% during the lockdown. India's poultry feed industry is currently operating at 50% capacity, and many feed plants are likely to face closure, which will put manufacturers in fiscal distress and ultimately hamper the poultry sector, which is already in crisis. The USD 16 billion poultry feed industry has seen a drop of USD 2 billion during the lockdown period, and this will continue for the next few months.

2.4 Impact on exports

India is the second-largest exporter of bovine meat worldwide, with annual exports of buffalo meat worth US\$ 3,610 million. The exporters have been severely affected, with no fresh orders from key markets for the import of buffalo meat. During April 2020, there has been a 56% reduction in the export of livestock products. Prices are falling as exports have dried up due to contracting export demand. Availability of containers and higher freight rates have been some of the major challenges, as trucks and manpower are not available to transport shipments. Another common challenge faced by the exporters is dealing with demands from importers that their products are not infected by the coronavirus. Recent reports have cited the seizure of five large containers of buffalo meat imported from India after the same was found to be infected with Coronavirus.

3. THE LESSONS FROM THE PANDEMIC AND MITIGATION OPTIONS

3.1 Marketing of Livestock & Livestock Products

One of the major challenges in the livestock sector is the inefficient marketing of livestock and livestock products. Animals are kept mainly as a supplementary source of income. As such, the average livestock holding per household is quite low.

Milk production in India is mainly in the hands of rural producers. Marketing of milk remains largely in the informal/unorganized sector; 80 percent of the milk produced by rural producers is handled by the unorganized sector, and only 20 percent is handled by the organized sector. Nationally, about 40 percent of milk output is estimated to be consumed by producers themselves, and 60 percent is marketed. Thirty six percent of this is marketed through informal traditional chains and 24 percent through organized formal ones (World Bank, 2011). Milk is a highly perishable product mostly produced at locations scattered at distances from consumer markets. Cooperatives and private collectors are the main players in the formal sector. Milk processing is mainly carried out by this sector (production of butter, ghee, cheese, ice cream, yoghurt, etc.).

Low scale of operations (only 8% of rural households have more than 4 milch animals) leads to the non-realization of desired economies of scale in production and marketing. The problem has been exacerbated by the onslaught of COVID 19. India produces about 560 million liters of milk daily, of which only 310–315 million liters become available in the market. In many regions, large, organized networks of cooperatives procure milk from dairy farmers. Nationally, dairy cooperatives procure about 51 million liters of milk per day, and the organized private sector and

informal milk market agents manage the rest, which are not adequately equipped to handle situations like Covid 19 pandemic.

Similarly, the marketing of meat is mostly unorganized in India. The role of the government or any of its agencies in controlling the production and marketing of meat and meat products is negligible. The marketing of meat, starting from the procurement of animals in the villages to the ultimate disposal of meat to consumers at retail shops, is entirely in the hands of middlemen. Organized slaughter constitutes a very negligible proportion of total slaughters. Most of the meat sold to consumers is fresh and unpackaged. Meat, mostly various meat products, is processed and packed only in some organized meat factories (Gadekar and Shinde, 2011). Lack of safe handling of meat and meat products at different stages of processing and marketing, is predominant, especially, in the unorganized market.

Marketing of live animals is not only predominantly informal, but is also characterized by the lack of adequate regulations and government supervision. Organized and regulated markets are far and few. Livestock that is marketed consists of draught animals, dairy cows, slaughter stocks, and small ruminants. Livestock is sold and bought at fairs, shandies, and daily and weekly markets. Fairs and shandies have the farmers themselves as sellers, hence being called primary markets. Agencies involved in live animal marketing include breeders, itinerant traders, wholesale merchants, butchers, milkmen, and even ancillary entities like cart drivers, transporters, etc. COVID-19 disrupted the entire live animal value chain, adversely affecting all the actors in it, as well as the processes of price discovery and price determination. To assess the impact of COVID 19 on the livestock sector, it is to be understood that livestock product marketing is different in many aspects from that of crop or horticultural produce. Hence developing effective networks of safe collection and handling points; hygienic storage facilities; primary and/or advanced processing units; cold chains and marketing outlets is needed to mitigate such situations.

3.2 Foreign exchange earnings

Meat and meat products from India are finding wider acceptance in the world market, mainly because the Indian meat is internationally priced competitively (Gadekar and Shinde, 2011). India has immense potential for foreign exchange earnings through the export of meat due to sufficient production resources and a huge livestock population (Ali, 2007). According to the Directorate General, Commercial Intelligence, and Statistics (DGCIS, Principal Commodities Data April–February 2019–20) (APEDA, 2020), India has exported about 10 lakh metric tonnes of buffalo meat valued at Rs 21261 crores (US\$3011 million). In addition to

that, India has also exported about 13730 metric tonnes of sheep and goat meat, valued at \$88 million. The emerging global market opportunities for the Indian meat industry have significantly induced private investment in meat processing through state-of-the-art technology in integrated plants. In one study, it has been observed that out of the total meat produced, 71% is shipped directly to importing countries and the rest to local markets; retailers take away 87% and restaurants 13% of the meat intended for domestic sales (Bardhan et al., 2019). In fact, buffalo meat contributes about 89% of the total value of livestock products exported from the country (Faslu et al., 2021). The onslaught of COVID-19 has a significant impact on the trade of buffalo meat and foreign exchange earnings and thus affecting the multiple stakeholders involved in export-oriented value chains (producers, traders, butchers, wholesale meat dealers, and retailers) (FICCI, 2013).

3.3 Consumption patterns

Livestock products are an important component of diets, and their share in food expenditure has been continuously increasing. As per the latest consumption survey, these products, on an average, account for about 34% of the food expenditure in India. Livestock food products are highly elastic, *i.e.*, highly responsive to changes in income and population. The proportionate increase in consumption of livestock food products is always higher than that of income and population. Consumption of livestock food products is mostly an urban phenomenon. The consumption of milk, meat, and eggs is mostly concentrated in urban areas. There is a clear-cut divide between urban and rural areas in regard to both livestock production and consumption. Livestock production remains a rural phenomenon, and consumption of livestock food products is an urban one. The demand in urban centres is due to the high concentration of people with higher incomes.

3.4 Animal health infrastructure

Poor livestock health resulting from multiple endemic diseases is of primary concern, especially, for resource poor farmers in the country. India has built up a vast network of veterinary polyclinics, veterinary dispensaries, veterinary hospitals, veterinary aid centers, and AI Centres. The number of veterinary institutions in India, consisting of Veterinary Polyclinics, Veterinary Hospitals, Veterinary Dispensaries, Veterinary Aid Centers, and AI Centres, increased from 1.04 lakh in 2006 to 1.64 lakh in 2018. However, the share of veterinary polyclinics, hospitals, and dispensaries to the total number of veterinary institutions (excluding AI Centres), as an indicator of the quality of animal healthcare services increased from 52 percent in 2006 to 57 percent in 2018.

The number of animal health institutes per lakh of total cattle units increased from 40 to 66 during 2006–2018 in the country. However, even though the vast AHDS network has expanded substantially, the same cannot be equated with high-quality animal health service supplies (Bardhan et al., 2018). A fairly large number of Veterinary Aid Centres and Animal Disease Diagnostic Laboratories are deficient in animal health inputs and supplies, including trained veterinary personnel. As a result, there are still significant losses incurred due to transboundary animal diseases in the country.

3.5 Feed and fodder availability

Feed and fodder availability is one of the most crucial determinants of sustainability in the livestock sector. While in many parts of the country sheep, goats, and indigenous cattle graze on pasture lands, forest areas, and barren and uncultivable land, the improved breeds of dairy animals, viz., crossbred cattle and buffaloes, are mainly stall-fed. While pasture lands, barren and uncultivable land, and forest areas help in sustaining the animal population that is primarily owned by marginal and small holders, land area under fodder crops becomes important when it comes to sustaining improved and high-yielding breeds and species of animals. Common property resources (pasture land, barren and uncultivable land, and forest area) to support the grazing of livestock have declined in the country during the last decade. The area under fodder crops declined in all the regions. The total area under cultivated fodder is only about 10.3 million hectares in the country, accounting for about 6 percent of the country's total land area. The fodder production in the country is not sufficient to meet the requirements of the growing livestock population, and the forages offered to animals are mostly of poor quality. Dry fodder, green fodder, and concentrate are deficient by 11%, 35%, and 28%, respectively (Birthal, 2018). Limited land for cultivation owing to the shift of land to other uses, viz., urbanization and industrialization further accentuates the problem of feed and fodder deficiency. The gap between demand and supply will further widen due to the consistent growth of livestock populations expected in the coming years.

3.6 Highly perishable nature

Livestock products are highly perishable, more than other agricultural commodities like cereals, other grain crops, and even most horticultural products. Due to their short shelf-life, these products get easily contaminated and hence need meticulous planning and more careful handling.

3.7 Overall, two lessons were learnt, one positive and the other negative.

Positive ; The pandemic has proved beyond doubt that the agri and allied sector is the indispensable sector which is guaranteed to continue as a constant source of employment and income for all time to come.

Negative ; Without adequate preparedness to cope up with eventualities like COVID 19, half of human population may perish for want of food. While field crops may withstand such pressure for about a month or so (depending on the crop stage), such pandemics will have a direct negative bearing on the animals from day 1 as they need immediate attention for survival.

Based on the foregoing analysis, following policy options are placed:

4. SUGGESTED POLICY OPTIONS

- ◆ The key message of the BSS was to use the learnings from COVID-19 to prepare policies for the country as a whole to mitigate the adverse impacts of such pandemics in the future. This requires addressing two important aspects, viz., understanding the impact of the disease spread in its various dimensions, and defining recommendations for the country as a whole. In this context, the policy -technology to be employed in mitigating some of the adverse impacts of the pandemic will be important.
- ◆ National Animal Disaster Management Team may be formed or a VET wing in National/ State Disaster Management Authorities may be created to ensure animal welfare measures in such pandemics. In addition to reaching out to the animals during pandemic situations which come once in decades, this team will also be effective during natural calamities like flood, droughts, epidemic etc.
- ◆ Public Distribution (PDS) type of systems during pandemic for one window supply of feed/ fodder, essential and life saving medicines etc may be put in place.
- ◆ Immediately on receiving pandemic threats, arrangement for vaccination of animals like pig, goat and poultry birds against enzootic diseases may be planned. African Swine fever in pig during this pandemic may be taken as an example.
- ◆ Strict vigilance at the International animal corridors or complete ban on animal movement during the pandemic may be ensured while creating animal health center facilities on the borders to check transboundary animal diseases.

- ◆ The off duty vets and para vets during such pandemic may be trained to assist in milk and other animal products supply chain management.
- ◆ Block/ district and Statewide VETCARE help line services may immediately be opened besides engaging the electronic and social media to pass on important animal advisories.
- ◆ Adequate cleanliness and hygiene in animal product handling installations may be ensured under the strict supervision of milk/ meat etc inspectors.
- ◆ All the vets and other vet service providers may be vaccinated against the pandemic on priority immediately on notification of such pandemics.
- ◆ Animal ADHAR cards per livestock owner may be taken up on priority with micro-chip/ jeo tagging identification of each animal for data generation and digitization of animal production and health system for big/ small data analytics with provision to use Blockchain technology for animal and their product traceability. Drone monitoring of animal health during pandemic may also be planned.
- ◆ All the State veterinary departments across the country may be infrastructurally, technologically and academically strengthened through continuing veterinary education, training and skill development programmes and they be linked to the One Health Mission.

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