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Review on Impact of COVID-19 on the Indian agricultural systems

Rumi Brahma

Asst. Professor (contractual), Dept. of economics, Gossaigaon college, Gossaigaon, Assam

Abstract: When India's government enforces a full quarantine of the country in response to the COVID-19 epidemic on March 24, 2020, it had major unintended consequences for farmers and local supply networks. This was exacerbated by the fact that, as is typical of developing nations, India's economy is heavily focused on agriculture, with only minimal industrialization of its agricultural systems. COVID-19 is already proliferating in developing nations, posing a serious threat to mental livelihoods and the economy. The most significant and critical part of long-term development is food security. Agriculture is the main source of the economy and provides a living for a substantial portion of the population in developing nations. As a result, upheavals in food security and agriculture have far repercussions for these countries. Furthermore, the partial suspension of rural areas and procuring choices, along with a lack of product availability, resulted in a food crisis and sharply higher costs, which disproportionately impacted urban dwellers and the poor. Because of the importance of both sectors, this article examines the impact of COVID-19 on agricultural production and farming in depth. It recommends adaptive and mitigating strategies that can be used to keep livelihoods afloat. It examines the different repercussions of the COVID-19 shutdown for Indian farming systems, including the economy, as well as state and national government emergency actions.

Keywords: Covid 19, Indian economy, Developing nations, Agriculture, farming.

1. INTRODUCTION

Coronaviruses (CoVs) have been linked to major illness outbreaks in East Asia and the Middle East over the last two decades. In 2002 and 2012, severe acute respiratory syndrome (SARS) and the Middle East respiratory disease (MERS) first appeared. A novel CoVs, severe acute respiratory syndrome CoVs 2 (SARS-CoV-2), has just arisen in late 2019, producing CoVs disease 2019 (COVID-19), posing a global health hazard and triggering an ongoing epidemic in many countries and territories Dhama et al., (2020a). The different the various HCoVs in terms of epidemiology and pathology, as well as virus development and recombine occurrences that have led to human epidemics on time. Su, S., Wong, et al(2016). At home, keep yourself apart from other people and animals. About People must try to stay in a specific room and away from other people in your house as often as feasible. You should also use a separate bathroom if one is available. About Animals don't handle your pets or other animals. VDI, C. (2020) According to the World Food Program (WFP), 265 million people might be confronted by acute food insecurity by the year 2020, up from 135 million inhabitants before the emergency. Food Security Information Network. (2020) It discussed managing COVID-19's effects on food shortages. FAO's contribution to the COVID-19 Global Humanitarian Appeal centered on achieving sustainable critical food systems to avert prospective food crises, anticipating the secondary effects of the pandemic and related confinement initiatives on the world's most vulnerable people, and anticipating the secondary impacts of the global epidemic and associated quarantine initiatives on the people of the vulnerable area. FAO. (2020).

2. INDIAN AGRICULTURAL SYSTEMS

Sharma, A. R., et al(2012) discussed Conservation agriculture(CA) as a means of increasing production and reducing resources usage efficiency in India: Prospect and Research Work Efforts in India to build, enhance, and distribute agriculture CA-based innovations have been ongoing for than two decades, and have achieved tremendous progress despite several setbacks. But, in the Indian lowlands, the main focus was on no-till wheat under rice-wheat rotation. For CA implementation, there are many more benefits than drawbacks, but the balance between the both is already a mystery to both consumers and marketers. Meena, M., Singh, K. M., & Swanson, B. (2015) discussed the review of Indian Government Agricultural Services and Lessons Learnt. To develop an efficient and appropriate extension system, expansion administrators and legislators should concentrate on the skills that can lead, to weaknesses, opportunities, and threats. Programs must be made more relevant to local concerns and

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governmental policies as rapidly as possible. Robert, M., et al(2017) discuss the conceptual framework of production environments on Indian farmers with adaptable decision-making processes. Farm ecosystems are multi-dimensional structures that interact dynamically and continuously around farmers' administration tactics. This intricacy is heightened in India's quasi-regions, where tiny farms face strong competition for resources and markets, particularly inconsistent access to water from rainfall and irrigation. Hence, suggested the conceptual framework NAMASTE to represent such strategies, which was designed and supported by data obtained in the Berambadi basin in southern India. Hakkim, V. A., et al(2016) discusses the Future of Indian Agriculture is Precision Farming or Precision Agriculture. Precision farming, also known as precision agriculture, is a data and tech farm management system that identifies, analyses, and manages spatial and temporal variability within fields for high effectiveness, profit growth, sustainable development, and land protection while lowering production costs. As the general public's environmental awareness grows, we'll need to change agricultural management practices to ensure the long-term preservation of natural resources such as water, oxygen, and soil quality while being economically viable. Raina, R. S. (2003) discussed Organizations and programs that support agro policy and research reform in India. Agriculture policies must allow for an examination of agricultural research centers. This is critical for innovative agricultural systems to improve their ability to form meaningful collaboration, adapt from and react to complicated social and technological circumstances, and evolve as a dynamically overall approach for long-term development.

3. IMPACT OF COVID-19 ON INDIAN AGRICULTURAL SYSTEMS

Workie, E., et al(2020) discusses a review of the research from poor nations on the impact of the COVID-19 pandemic on food and nutrition security, farming, and lifestyle. As the number of people infected with COVID-19 rises all around the world, agri-food supply systems are expected to be severely impacted. Even though there may be enough foods in the supply chain operations at the start of the crisis, despair by the public, who anticipates supply shortages during lockdowns, leads to an imbalance in food supplies. This disequilibrium may emerge as a result of agriculturists being unwell or as a result of market disruptions caused by virus-containment methods. Reduced demand as a result of lower purchasing power will influence manufacturers' capacity to invest in their products, thus diminishing food supplies. For example, during March 2020, shipments of grains excluding rice fell by 33.42 percent, rice fell by 28.28 percent, meat and poultry products fell by 45.48 percent, and oil meals fell by 69.85 percent from India. Kumar, P., et al(2021) discusses the impact of the COVID-19 shutdown on India's agricultural sector at different levels: A scenario in Uttar Pradesh. To identify and describe the various multi-level implications of the COVID-19 lockdown and related effects on agricultural systems in the state of Uttar Pradesh, India, using quantitive evidence from various source materials, taking into consideration the associated disaster response of the state and national governments in India. Štreimikienė, D., et al(2021) discussed Agriculture's negative effects of the covid-19 pandemic: a systematic literature review in the contexts of fragility, resiliency, and dangers. Farm resilience, agricultural commodities supply and demand, labor regulation, food security, and safety, general economic and sociological consequences, and global trade difficulties are all part of the study of the covid-19 pandemic's implications on agriculture. Cariappa, A. A., et al(2021) discussed Food Losses and Waste Management Implications of COVID-19-Induced Lockdown Impacts on Agricultural Commodities Prices and Consumer Characteristics in India. The virus outbreak shutdown limited access to food markets and most customers (75.31 percent) saw a price hike throughout COVID zones with varying levels of occurrence, resulting in food loss in the supply chain and wastage at the consumer level. Consumer livelihoods were affected in a range of ways, from mild (59.53%) to severe (3.3%), with 92 percent reporting a change in shopping habits. After the lockdown, the Kruskal-Wallis test on consumption behavior change showed a substantial shift among customers reporting changed incomes, primarily for the worse. Even though agricultural-related operations were allowed to continue during the shutdown, farmers experienced difficulty in selling their winter crop, except wheat, which was boosted by a record state acquisition in 2020. Islam, M., et al(2020) Several nations have incorporated farmers and allied employees into the govt's resource use system. Import and export of important products must be given special attention to maintaining the balance of global trade. Kapoor, P. (2021). Discussed that under Light of Covid-19, Indian writers speak out locally and globally politics in their theories of cultures and sympathy. Even though India is working hard to develop the Covid-19 vaccine for the greater good, research conducted by the Indian Council of Medical Research (ICMR) has been shown to have errors prompted by political bias. Rembold, F., et al(2019) discussed A new worldwide alert system to detect anomalous hot areas in agricultural output for food security analyses is being developed as soon as possible. Farm monitoring is essential not only for detecting short-term crop production shortages due to weather unpredictability but also for facilitating longer-term rural development, particularly in areas of high risk of food insecurity. As a consequence, there are a variety of regional and global monitoring devices. Verma, A. K., & Prakash, S. (2020) discussed COVID-19's effect on the environment and Societies. The COVID-19 pandemic's aftermath has effectively restored the ecosystem to a great extent, indicating that it will have a favorable impact on global climate change. It, of course, has an impact on human behavior and the surrounding ecosystem which includes the agriculture system. It

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examines the many beneficial benefits of lockdown on the environment and society, including ecology. Adhikari, J., et al(2021) discussed the Impacts of COVID-19 on Nepal's agriculture and food systems: Implications for the Development Goals. Many lower-income people, particularly disadvantaged indigenous tribes, seek work in India or Nepalese cities, and the lower and upper-middle classes seek labor in Malaysia, the Gulf, and other affluent nations. A large part (30%) of cultivated land, especially in the hills and mountains, has been abandoned from farming due to youth emigration and the use of remittances to buy grocery items. Acosta, A., et al (2021)discussed the Immediate effects of COVID-19 on the global dairy sector. Extracellular shocks to agriculture and value chains can be explained using animal-disease outbreaks, the effects of other epidemic diseases on agriculture, and food inflation dynamics. Finally, new research has looked at the effects of COVID-19 on farming systems within the first 6 months, and it's vital to know how this epidemic has affected the cattle industry and how various farmers. Weersink, A., et al(2021) The COVID-19 situation has highlighted the necessity of being able to attract and keep a continuous supply of efficient, healthy, and well-trained workers in the agricultural industry. Modak, T. S., et al(2020) discussed the impact of Covid 19. Non-agricultural employment, which was critical during the lean agricultural season, has virtually disappeared. Workers, including craftsmen, were obliged to seek a job in agriculture due to a lack of non-farm jobs. Because of the lockout, workers who would normally relocate for work now are vying for farm laborers. Timilsina, B., et al(2020) The Food and Agriculture Organization, which has a locust monitoring and warning system, had previously warned about a locust swarm incursion in India and Pakistan two and a half months ago, but instead of treating it as a fatal pandemic, they disregarded it. Kaur, N., et al(2021) discussed the impact of three farmer bills on agriculture in India during covid-19. In March 2020, India announced Lockdown -Phase 1, in which the government imposed certain restrictions. Three farmers' bills'2020 were proposed during the same period, further exacerbating the dilemma. There are advantages and disadvantages to everything. Similarly, the proposed farm bills may not be effective in the future. If a pandemic occurs in the future, the government will have no stock yield left in their mandi boards, and the private sector will play its selfish role, resulting in higher prices for produce, increased demands, and less availability. Ramakumar, R. (2020).discussed an examination of agriculture and the Covid-19 pandemic, with a focus on India. The production and delivery of products and services are interrupted, if not completely halted, during a lockdown. The suppl y of goods and services is insufficient to fulfill the
current demand. Simultaneously, as economic units close, people lose their employment and wages. Individuals do not go o ut to purchase products and services when there are lockdown drills in place. As a result of a decrease in expenditure, aggre gated efficient response decreases. Demand shutdowns, spillover effects, and financial sector speculation have all contribute d to the recent international true crisis. Demand and supply both declined during the Covid-19 lockout, which was unusual. This was not an ordinary occurrence; such a confluence of macro-economic variables has only happened a few times in history. Abu Hatab, A., et al(2021) discussed COVID-19, Livestock Systems and Food Security in Developing Countries, as an open-access systematic review. The majority of research on livestock supply chain resilience focuses on the 'absorption' and recovery phases of resilience, with only a small percentage of studies looking into actions taken by supply chain actors to 'plan' or 'adapt' livestock systems to reduce vulnerability and improve overall resilience. Furthermore, due to the epidemic, food security has been narrowly defined, with the bulk of publications focused on 'availability' and 'accessible' to food, and other aspects of food security, such as utilization, stability, and sustainability, have been largely ignored. Arumugam, S., et al(2021) discussed Global Agriculture, Livelihood opportunities, and Agriculture And food Impacts of the Covid-19 Pandemic. COVID- 19 significant effects on food supply chains, agricultural commodity access to markets, food and nutritional security, labor availability and migration, farm system restoration, inputs into outputs integration, and the importance of data technology in agriculture, as well as lessons learned from these effects. This report also recommends coping and mitigating strategies that could help enhance and sustain livelihoods. Moreover, investigators, governmental entities, agricultural departments, and policymakers will benefit from this collective analysis to speed up an efficient reaction to the Covid-19 outbreak. Kumar, S., et al (2020) discussed the COVID-19 outbreak has had a social and economic impact in India. COVID-19 has an impact on a variety of agricultural and supply chain processes. According to early reports, the scarcity of migrant workers is affecting key harvest methods, particularly in northwestern India, where wheat and pulses are grown. Because of transportation issues and other considerations, there will be challenges in the supply chain. Wheat, vegetables, and other crops have seen lower prices, but buyers are still paying more. Varshney, D., Roy, D., & Meenakshi, J. V. (2020).discussed Assessing the roles of commodity features, disease burden, and market reforms in the impact of COVID-19 on market economies. These effects can be considered as the net result of the customer, wholesaler, and retailer behavior to farmers. Farm revenues are seasonally by nature, and the prices and quantities traded of commodities whose harvest dates begin in late March are a crucial predictor of producers' liquidity and how the epidemic is affecting their employment. Biswal, J., et al(2020) discussed The impact of COVID-19 and the related lockdown on India's livestock and poultry industries. The COVID-19 epidemic and the resulting long-term lockdown have had a severe negative impact on various industries, including agricultural and other linked sub-sectors in India and other countries. The pandemic and its associated lockdown have not

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only caused enormous distress to millions of poor and marginal farmers who are trying to save their crops and/or livestock to ensure their livelihoods, but it has also had an impact on the overall livestock, dairy, and other farmed animals production systems and value - chain, nourishment and universal healthcare, and workforce availability.

4. OBSERVATIONS AND RECOMMENDATIONS

Every hamlet has both long-term and short-term migrants. Permanent migrants live with a landowner for a set period, such as a year, and return to their home village once a year for a few weeks. Short-term migrants only visit their destination state during peak season and then return to their home state. Due to the lockout, fear of illnesses, and fear of police persecution, many migrant laborers left home or did not appear in March and April 2020. Farmers in many areas enlisted the help of native village laborers who had returned to the village owing to the lockdown from a neighboring city or town. In contrast to the unpredictability of private businesses and marketplaces, all communities reported that ration shops (PDS centers) in the village or nearby remained open during the lockdown. However, there were differences in food delivery among villages from the commencement of the lockdown.

5. CONCLUSION

COVID19's meteoric rise should serve as a wake-up call. The entire food system was put to the test as a result of this outbreak. It is past time to act, and farmers must be given top priority, as they work just as hard as cops and nurses to guarantee that the entire globe thrives. Digitizing agricultural tools will necessitate a significant shift. To guarantee that global food security is improved, we must create new methods that are less dependent on external factors like the environment and climate. As can be seen, we are all paying a significant price for using our ecosystem recklessly. It all starts with our kindergarten, which turns waste into cash. However, it may be advantageous to produce locally.

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