

# A Review on Post Covid – 19 Impact on Indian Agriculture Activity And Food Safety

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**Abstract-** *The novel covid-19 pandemic has speedily spreads across the world. India is no exception. As India is developing country and India's economy is based on farming. On 24 March 2020 Indian govt. declared complete lockdown of country and it was immense economic shock and it had adversely affected on farmers and food supply chain. This lockdown is going on still with some restrictions in one form /other. Due to this some food supply chain business activities and supply of food products are in danger. This paper talks about effect of covid-19 on socioeconomic influence and impact of lockdown restrictions on food supply chain. These paper also concise suggestions needed to control and reduce impact of pandemic. In conclusion the supply chain should rejoinder and overcome the crucial condition in food supply chain.*

**Keywords-** Food Safety, Agricultural losses, Impact of Covid-19.

## I. INTRODUCTION

Although the COVID-19 health crisis has not yet translated into a full-scale food crisis, the upstream food supply chains (including planting, crop processing, harvesting and sales) of the countries in the region have been disrupted [1]. This impact is particularly serious in the supply chain of perishable foods, such as fresh fruits and vegetables, meat and fish, putting diet quality at high risk. Countries have taken many short-term measures to reduce the impact of the COVID-19 lockdown on the food supply chain, including providing financial and financial support, support for products, inputs, and credit, and allowing the movement of labor and transportation related to agriculture and fisheries activity.

Rebuilding the food system begins with upstream crop production. It needs to connect farmers with input suppliers, information and service providers (including extension, credit, and finance), use digital innovation, smart agricultural technology, and improve farmer's digital literacy and greater supply chain flexibility. Under appropriate circumstances, increasing the degree of mechanization and automation can also reduce work constraints, just like

COVID-19[2]. Promoting food production in the local market (short value chain), adopting community-led local ecological agricultural production methods, expanding small-scale home gardens and underutilized indigenous crops, is to improve food security and rebuild a more resilient food system other methods. Using digital technology to empower small farmers can also help increase the efficient use of inputs (fertilizer, water, energy) and reduce the environmental footprint (helping climate-smart agriculture). Rethinking agricultural policy after COVID-19 requires a coherent strategy that combines technology investment, digital literacy support, and trade logistics improvement to achieve close connections between farmers and input markets, and between farmers and the entire supply chain market connectivity and traceability. Strengthening rural livelihoods will require combining social protection and social safety net interventions with measures to support food production, while ensuring that occupational safety and health measures are in place. The impact of COVID-19 on the livestock industry has not yet been greatly quantified, but current observations indicate that the value chain of the livestock industry has been disrupted [3]. As the market is closed, demand decreases, or export markets are lost [4]. In addition, rumors and misunderstandings linking animal products to the spread of COVID-19 have led to a significant decline in the consumption of animal products, causing huge losses to the livestock industry in Asia [5-6].

To compare the effect of the COVID-19 lockdown and its cascading implications for farms and investigate to the micro-monetary situation, a smartphone survey became completed of 570 farmers unfold throughout fifty seven districts (out of 75) in Uttar Pradesh in the course of the duration 25 March to ten May 2020. The farmers have been randomly sampled from fifty seven operational villages with KrishiVigyan Kendra (KVK) agricultural extension facilities to constitute the geographical east (sixteen districts), west (17 districts), center (sixteen districts) and Bundelkhand (7 districts) components of the state respectively. During those pre-dependent interviews (the survey questionnaire is supplied as supplementary information), decided on farmers have been requested to describe how the lockdown had affected their farm operations, in addition to their funding in and the

profitability of fundamental Rabi crops, including wheat (530 facts points), mustard (530 facts points), lentils (four hundred facts points), chickpeas (430 facts points) and area peas (290 facts points). Likewise, the effects on investments in and the profitability of fundamental bovines, in particular livestock and buffalo (every with 460 facts points), have been also surveyed. The signs accumulated in the course of the farmers' interviews protected their funding in special inputs, exertions wages, transportation, bagging and the entire price of production, in addition to the returns in appreciate of yield, the marketplace charge of the produce, gross returns, net returns and the benefit-price ratio for each decided on Rabi crop-growers and farm animal's enterprises. Changes in evaluation with regular conditions have been eventually quantified through evaluating signs drawn from the effects of the interviews representing the preliminary lockdown duration (March-May 2020) with the effects of a comparable survey completed with the identical organization of respondents (farmers) and the usage of the identical survey device in the course of the identical duration of remaining year (March-May 2019). An evaluation and evaluation of the accumulated facts for 2020 and 2019 respectively the usage of descriptive facts is supplied in subsection 3.5.1 of the effects and dialogue section [7].

As indicated above, the modified situations because of COVID-19 have affected meals systems, deliver chains and for this reason meals protection at different tiers and in loads of ways. Evidence supplied with the aid of using Narayanan (2020) [8] shows that, while the preliminary lockdown turned into imposed in March, the fact that APMC (Agricultural Product Market Committee) mandis closed in numerous states turned into a major cause for the disruptions to meals supplies, from manufacturing devices to intake centers. The decline in regional monetary growth, following with inside the wake of the decline nationally, is truly an extra chance to meals protection. While the Food Bank of India had greater than 3 instances the minimum operational buffer in inventory on the time of the lockdown, deliver and get entry to though emerge as important issues. In particular, lengthy deliver chains have been seriously affected, in particular at the start of the lockdown, while delivery turned into seriously restricted. The media advised tales of drivers leaving behind vans complete of produce with inside the center of interstate highways. Consequently, markets began out jogging quick of supplies, as a result of meals rotting in transit or by no means making it to the factor of sale [9].

To guarantee food security throughout the lockdown, the Asian nation authorities created a mechanism to closely monitor true and permit prompt and timely action [10]. As a result, India has to this point for the most part been able to

ensure a swish provided of food to its giant population of over 1.3 million. The mechanisms concerned embrace the choice of keeping agricultural markets open, despite recommendations from alternative quarters. When, as mentioned above, nearly 50–60% of economic activities in India came to a halt during and when the lockdown, daily wage-earners, their families and low-income households were quickly exposed to the chance of starvation in some places. The response to the current (see below) was to implement relief measures that concerned the free distribution of five kilogram of staple food (wheat and rice) per person per month for 3 months in conjunction with a amount of pulses [11]. This was additionally to the regular provide of constant quantity of wheat and rice at the extremely sponsored costs of INR 2 and INR 3 per kg respectively, already in place. As these measures along provided concerning 80% of the staple food consumption of a median family [12], they may be expected to mitigate the chance of starvation caused by the loss of financial gain for an outsized a part of India's vulnerable population.

Immediately after the creation of the lockdown, the Indian Minister of Finance introduced economic help amounting to INR 1.7 lakh crore (24 billion US\$) aimed toward shielding inclined communities and people beneath Neath the poverty line from the unfavorable effects of the pandemic, protecting approximately 800 million human beings nationwide. This will in part appear thru the PM KISAN (Pradhan Mantri Kisan Samman Nidhi) scheme, which in 2020–21 will front-load a coins installment of INR 2000 to all farmers, with the primary installment to be paid out through April 2020. This scheme will provide INR 2000 to Indian farmers 3 times after each fourth month. The Government of India additionally raised the wage fees for employees engaged below the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA)/National Rural Employment Generation Scheme (NREGS), one of the world's biggest wage-guarantee schemes. To make certain meals for all and to reinforce the rural sector, the Indian Ministry of Finance released some of different tasks such Follow –

Table No. 1 Ministry of Finance released some of different tasks [13]

March 30, 2020	Allocation of additional food grains under the PM GaribKalyan Anna Yojana scheme
April 9, 2020	The Food Corporation of India (FCI) provides food grains to non- NFSA beneficiaries with state ration cards at a rate of 5 kg/ person/ month
May 15, 2020	Measures are announced for the agricultural sector under the Aatmanirbhar Bharat Mission
June 30, 2020	The PM GaribKalyan Anna Yojana scheme is extended for another five months, till November 2020
July 9, 2020	The distribution period for free food grains under the AtmaNirbhar Bharat Mission for migrant laborers is extended till August 31, 2020
August 23, 2020	Government directs states and union territories to include all eligible disabled persons under the National Food Security Act 2013

The impact of COVID 19 on the availability of agro inputs during the lockdown period has been discussed in the following paragraphs. The overall availability of agro-inputs was reported to have declined in 58% of the sample districts and 38% of the total districts surveyed reported no change in the availability of agro-inputs, whereas only 4% districts reported an increase in the availability of agro-inputs. The feedback on availability and prices of various agro-inputs viz. seeds, fertilizers, pesticides, rentals agricultural machinery, fodder/cattle feed, etc. were obtained to gain greater insights into the agriculture sector during the lockdown period. The overall magnitude of change in the availability of the agro-inputs in each category (All-India level) has been depicted in Fig. 3.6. The aggregate availability of agro-inputs at all-India level was reported to have declined across all subsectors. The sharpest decline was in the availability of fertilizers (11.2%) followed by fodder/cattle feed (10.8%) and rental agricultural machinery (10.6%). Significant decline was also reported in the availability of pesticides (9.8%) and seeds (9.1%). The reasons for decline in availability of inputs were disruption in supply due to restrictions on movement of vehicles, closure of shops and markets, etc. [15]



Fig. No. 1 10-factor approach to reinforce the agricultural zone

10-factor approach to reinforce the agricultural zone put up COVID-19 Our aforementioned dialogue at the effect of COVID- 19 at the Indian agricultural machine enabled us to reach at a 10-factor approach for strengthening the world in opposition to the disaster and sustainability issues (Workie et al., 2020) posed via way of means of the pandemic [14].

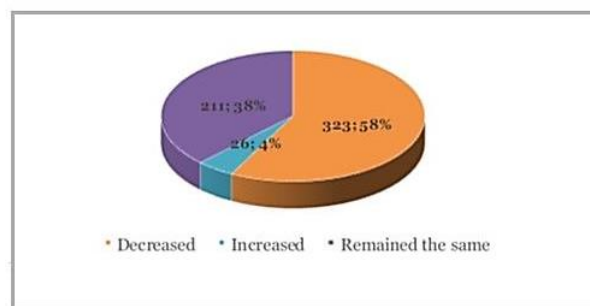


Figure No. 2 Change in the availability of Agri-Inputs shown by districts [15]

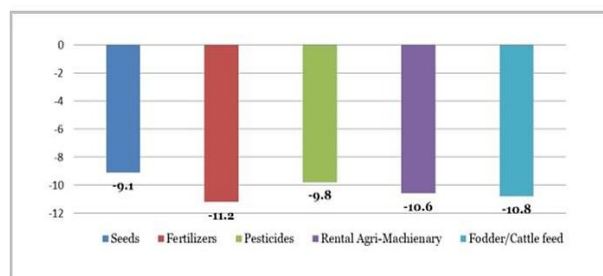


Figure No. 3 Decrease in availability of Agro-inputs in % [15]

In spite of these we've been raised relating to negative implications of COVID-19 pandemic on the farm economy. This is often the height of rabbi season in Republic of India and crops like wheat, gram, lentil, mustard, and so forth (Including paddy in irrigated tracts) are at harvestable stage or virtually reaching maturity. This is often additionally the time once the farm harvests reach the market yards for

reassuring procure operations by selected government agencies. Moreover, any severe disruption to the provision of putrescible fruits and vegetables, dairy farm products, fish, then on Having mobilized to fulfill the increasing demand from a bulging middle class in addition as urban and rural consumers, might produce irreparable injury to any or all actors within the provide The migration of chain. employees from fewer elements to their native places has also triggered panic buttons, as they're of the essence for each gathering operations and post-harvest handling of turn out in storage and selling centers. The Union Home Ministry, during a real important move, has notified to exclude movement of farmers, farm laborers and harvest home and sowing-related machines from the view of imprisonment. Creating the food grains, fruits and veggies and different essential things accessible to consumers, each in rural and concrete area, is that the most crucial challenge for presidency machinery throughout the lockdown period. Sleek functioning of the availability chain, with adequate safety measures for the individuals involved, is of predominant importance. Transportation of public distribution system (PDS) items to walk delivery agents, by both rail and road, must be ensured by many Government agencies. The distribution of the commodities of a vulnerable population, whereas maintaining prescribed pointers and protocol, significantly of social distancing, should be effectively supervised. because the in progress imprisonment coincides with the Rabi harvest home season, farmers across the country hunt to the govt. to confirm uninterrupted harvesting of the crops further as sleek procure. The Union Home Ministry's circular waiving restrictions on the inter- and intra-State movements of farmers/laborers, as well as harvesting and operations. Connected farm machines, is so a panty the correct direction. Whereas making certain accessibility of laborers for vital farm operations, their safety (from any COVID infection) and welfare should be prioritized by the govt. systems. The sale of dairy farm products; fish; poultry, and so on has even been hit throughout the imprisonment amount because the uptake by the organized business players has been affected because of shortage of labor force and transport issues. Because the weather has been terribly erratic over the past few months in several parts, harvested manufacture must conjointly be protected against such hazards [16].

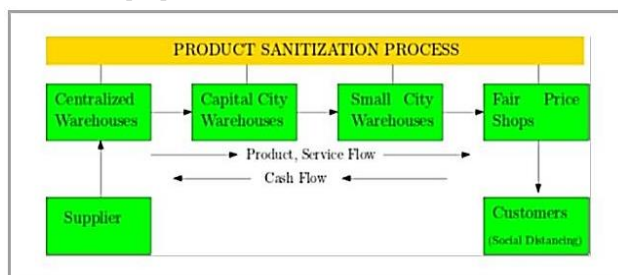


Figure No. 4 Product Sanitization Process

## II. LITERATURE REVIEW

**Chetan. K et.al** takes special effort in this paper. The authors states that the situation caused due to this pandemic, which has profound impacts on food system. They further mentions that this situation will remain with us for some time and COVID-19 will also lead to important changes in food and agro based systems. According to them, the next agricultural process will be interrupted due to the kharif season. India needs 250,000 quintiles of seed for this season, but with various hurdles put in place this has not been purchased so far. Further they explain that it is not just the end of the impact but it is the starting point. They suggest that the government must step in at the right time so that the largest sector of the economy is not left behind in these difficult times [18]. **Pavan Kumar et.al** talks about the national level impact of COVID-19 on India and Indian economy. As India is the world's second largest producer of several dry fruits, crops, pulses and numerous vegetables. Further they adds up that lockdown has been proven quite harsh on agriculture and allied sector in majority of district. Ruby crops are least affected crops as they were on verge of completion. The COVID-19 crisis has adversely affected India's Agro Food System. Amid of COVID-19 crisis, agriculture activities in India were exempt from restrictions. Author mentions that, the government has taken much initiative to help farmers by implementing various policies [19].

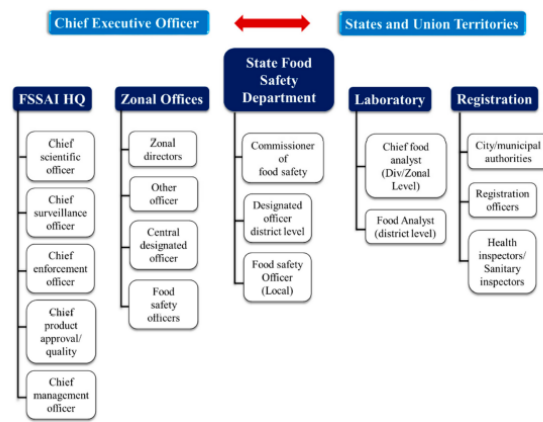
**Abhijit Bermenet.al** tells us about the post covid-19 scenario and its effect on food supply chain. They say that this pandemic has produced author era and we are facing its problem in day to day life. They speak about the scope and approach of food industry. According to them, the food supply chain facilities should concern more about health of the employee and should change working condition. They say that the chances of spreading of covid virus through food are insignificant, but precautions must be taken. As public distribution system is already designing a reviving strategy numerical and statically approach can be received to convey further investigation [20].

**AG Adeeth Cariappa et.al** states that the pandemic LED crisis has wreaked mayhem on each the Indian and global agricultural system. A worldwide food security crisis is in probably looming that can't be countered while not understanding the impacts of COVID-19 on the agricultural system, particularly of the developing countries. A number of food commerce nations viz., Kazakhstan, Myanmar, Russia and Vietnam have obligatory cereal trade restrictions like bans, quotas and licensing that are distorting the worldwide food offer. Disruptions in supply and/or worth chains end up in food wastage unleashing volatility in costs and having

implications to food and organic process security. For instance, East Pakistan witnessed a major level of food wastage in spoilable like milk and vegetables, and reduced consumption of non-vegetarian things like poultry merchandise and fish – a significant supply of macromolecule – because of information regarding the unfold of COVID-19. Asian nation too has witnessed a steep reduction in consumption of poultry meat for a few times due to a similar reason inflicting huge financial gain loss to poultry farmers [21].

**In FAO regional conference,** emphasize the situation caused due to this pandemic, which has profound impacts on food system. They further mentions that this situation will remain with us for some time and COVID-19 will also lead to important changes in food and agro based systems. COVID-19 has caused a widespread economic crisis across the region. The pandemic has had 4,444 profound impacts on the food system, including food security and nutrition, food and livestock. Pests, food supply chains and food trade in the region. National social protection systems responded to these impacts in 4,444 regions, helping to minimize the impact on vulnerable people. National responses to COVID-19 have also underscored the importance of building robust statistical systems that harness the full range of digital technologies to collect and analyze data over real time [22]. **As per the report,** At the level across India, agricultural production in nearly half (47%) of the sampled regions has been affected by the impact of COVID-19. On a scale, agricultural production (-2.7%) was not significantly impacted, mainly due to the fact that the harvest of rabbi crops such as wheat was almost complete by the end of April 2020. The poultry sector (-19.5%), followed by the fishery sector (-13.6%), and the sheep/goat/pig (S/G/P) sector (-8.5%). Due to COVID-19 results health-related concerns, in response to widespread concerns regarding the safety of non-vegetarian foods, especially poultry meat. Similarly, production in the dairy (-6.6%) and horticultural (-5.7%) subsectors also declined due to reduced demand for these products and disruptions in the supply chain [23].

#### Food Safety and Standards authority of India (FSSAI)



### III. CONCLUSION

The fact that India is a developing country with an agriculture-based economy is probably the main reason why, on a socio-economic level, the pre-existing health risks of COVID-19 have been greatly exaggerated and why India as a whole has been hit hard- and not just economically -by the pandemic. It can be concluded that the food supply chain has been shocked by pandemic, this results in shortage of food and increasing price of food products, closing food production, financial restrictions. If we observe carefully, experts in food sector have number of difficulties ahead e.g.- guaranteeing food handling, distinguish covid condition where food is created, prepared, conveyed, disinfecting surfaces and working condition sufficient other. The supply chain additionally should be acclimating enough to fight to difficulties in food supply chain. The present need is to increase the agricultural production so to minimize the shortage of food products and prevent the upsurge prices of agricultural products. Also correct sanitization and proper hygiene should be maintained for the frontline personnel's involved in the food distribution chain according to covid-19 guidelines issued by the government authorities.

### IV. ACKNOWLEDGEMENT

This aim of this article is to promote the awareness about world food safety day 2021. This article covers food problems arises during Covid-19 impact on agricultural processes in India, National and International work done and food supply chain. I would like to thank supervisor, Mr. Avesahemad Husainy for motivation to write this awareness article on the occasion of World food safety day-2021. Also I am very much thankful to all team members in this research paper for their contribution. Also thankful to CODEX ALIMENTARIUS, Food and Agricultural Organization of United Nations and World Health Organization for giving us opportunities to showcase our article paper behalf of World Food Safety Day-2021.

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