

# Effects of Covid-19 on Agro-Food Industry and Transitions towards Food Security in India

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## Effects of Covid-19 on Agro-Food Industry and Transitions towards Food Security in India

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### ABSTRACT

Global pandemics, pestilences, and sickness episodes have tormented mankind for a very long time. Notwithstanding, the scale and spread of pandemics and pestilences expanded definitely in late history. Presently, COVID-19 pandemic (respiratory sickness) brought about by SARS-CoV-2 infection assaulting dismay all throughout the planet. The infectious nature of the illness influenced the worldwide and neighborhood economies and social orders. Countries are compelled to carry out careful step like limitation of portability to stop the spread of sickness, which unfathomably influencing the major financial areas including food and farming industry. The careful steps, for example, travel limitations upset the food creation, conveyance, and store network. The effect is broadly seen on animals and hydroponics cultivating, which undermines the food security and calls for sure fire strategy intercessions from the public authority. This part researches the difficulties presented by COVID-19 pandemic on horticultural area and food industry in India and decide the conceivable mitigation measures. The investigation introduced the suggestion to call for government support in reinforce approaches to help horticultural area exercises to accomplish changes towards food security during and post-pandemic period.

**Keywords:** - Agriculture • Coronavirus • COVID-19 • Food security • Harvest • Travel limitations • Mitigation • Pandemic • Social removing

### 1 Introduction

Worldwide pandemics and illness flare-ups have tormented mankind for a long time. In any case, the scale and spread of pandemics and pestilences expanded radically in ongoing history, as there are a few episodes of various size of pandemics and plagues, for example, Spanish Flu, HIV/AIDS, MERS and so on . Every one of the pandemics or plagues catastrophically affects the financial development and human advancement across the world (Hanashima and Tomobe 2012). At present, the world is seeing the COVID-19 pandemic brought about by a novel Covid (SARS-Cov-2) (Wang et al. 2020), which is not the same as MERS-CoV and SARS-CoV. Coronavirus is respira-conservative ailment brought about by SARS-CoV-2 (new type of Covid) and is irresistible infection that has influenced human exercises and social advancement on worldwide scale. As per World Health Organization (WHO), the first confirmed instance of new Covid was accounted for in Wuhan, China (the focal point of COVID-19 episode) on December 31, 2019 (WHO 2020a). After the first few revealed cases, the COVID-19 disease spreads all throughout the planet at a disturbing rate because of the curiosity of the infection. This is ending up being one of the greatest worldwide wellbeing

emergencies as of late. On March 11, 2020, the WHO proclaimed the illness as a worldwide pandemic (Cucinotta and Vanelli 2020). Figure 12.1 presents the around the world confirmed cases and passings because of the crown pandemic (information utilized till June 25, 2020). The association of Economic Co-activity and Development (OCED) predicts that yearly worldwide GDP development is projected to drop to 2.4% in 2020 and has cautioned that it might reach to 1.5% due to dragging out of the pandemic (OECD 2020). The International Labor Organization

Table Major global pandemics and epidemics during the twentieth and twenty-first century

Pandemic	Virus	Time period	Reference
Spanish flu	H1N1 strain of influenza A	1918–1919	Johnson and Mueller (2002)
Asian flu	H2N2 strain of influenza A	1957–1958	CDC (2020a)
Hong Kong flu	H3N2 strain of influenza A	1968–1970	CDC (2020b)
HIV/AIDS	Human immunodeficiency virus	1981–till now	WHO (2020b)
SARS	Corona virus (SARS-CoV)	2002–2003	Cherry and Krogstad (2004)
Swine flu	H1N1 strain of influenza A	2009–2010	Coburn et al. (2009)
MERS	Corona virus (MERS-CoV)	2015–till now	CDC (2015)
COVID-19	SARS-CoV-2	2019–till now	WHO (2020c)

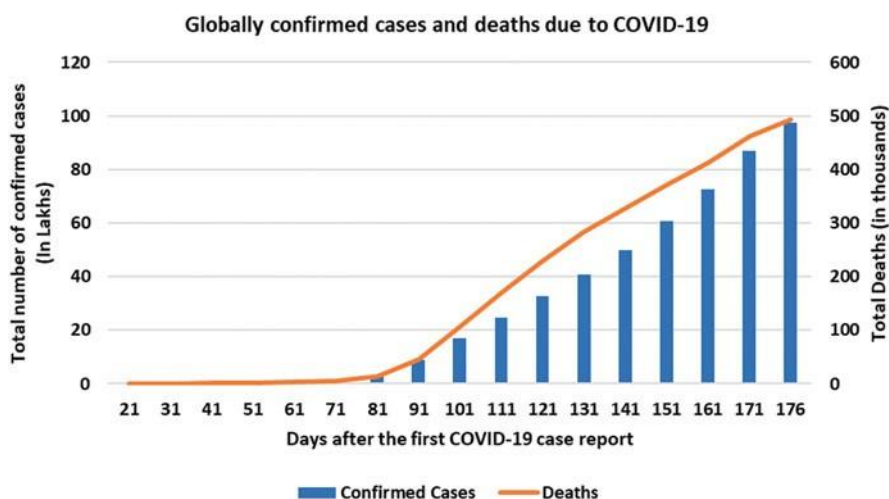


Fig. Globally total COVID-19 infection cases and deaths (data used up to June 25, 2020). (Source: WHO (2020c))

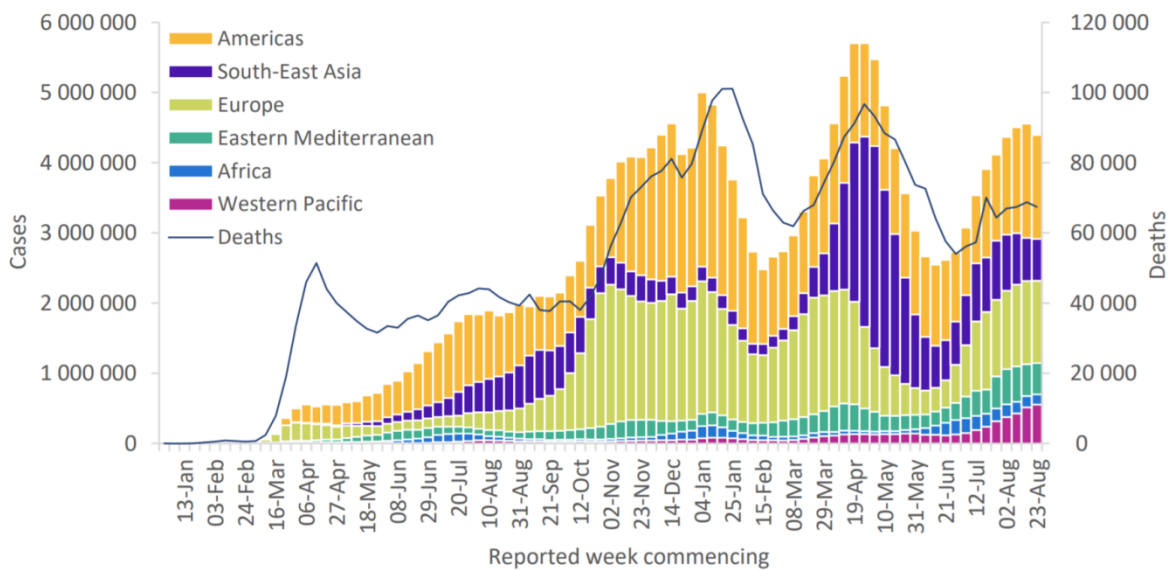
expressed that the COVID pandemic is the greatest emergency as far as worldwide unemployment since the Second World War (ILO 2020a). Numerous specialists have effectively called COVID-19 pandemic a "dark swan" for the world economy because of the enduring and significant effect on the economy. Here, we will contend that because of incessant event of pandemics, pestilences and episode as of late (Table 12.1) supportive of vides us opportunity to anticipate the worldwide scale

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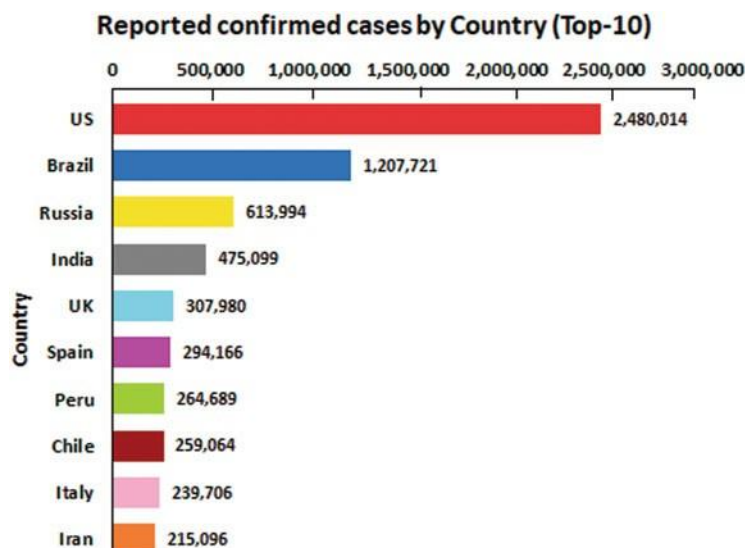
contortion in economy and readiness. Anyway, the inquiry emerges how pre-arranged would we say we are?

To comprehend the readiness, we investigated agricultural nation as a contextual analysis. India went up against the first confirmed instance of the COVID-19 on January 30, 2020. From that point forward, the quantity of cases has intensified significantly. In the underlying stage, India recorded less cases contrasted with other created nations like the United States, Brazil, Italy, Spain, and so on. To contain the spread of Covid, the public authority of India announced a three-week cross country travel limitation from March 25 to April 14, 2020, which was then reached out till May 3, 2020 and afterward further stretched out to May 31, 2020 to accomplish good control of the Covid. All superfluous offices like instructive organizations, strict spots, government offices, transportation, and retail foundations the nation over were shut. At present, the WHO detailed 9.73 million confirmed cases and 492,390 deaths all around the world (information utilized something like June 25, 2020). Figure 12.2 addresses the main ten country-wise absolute confirmed cases across the world. Notwithstanding, on account of India, the absolute confirmed cases arrived at 4,75,099 and announced 15,301 passing's by June 25, 2020. Figure 12.3 presents the state-wise all out number of confirmed cases in India. Beam et al. (2020) have asserted that by July, the quantity of Covid cases will ascend past five hundred thousand in India. She put together her realities with respect to her investigation of the 5 days that is May

**Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 29 August 2021\*\***

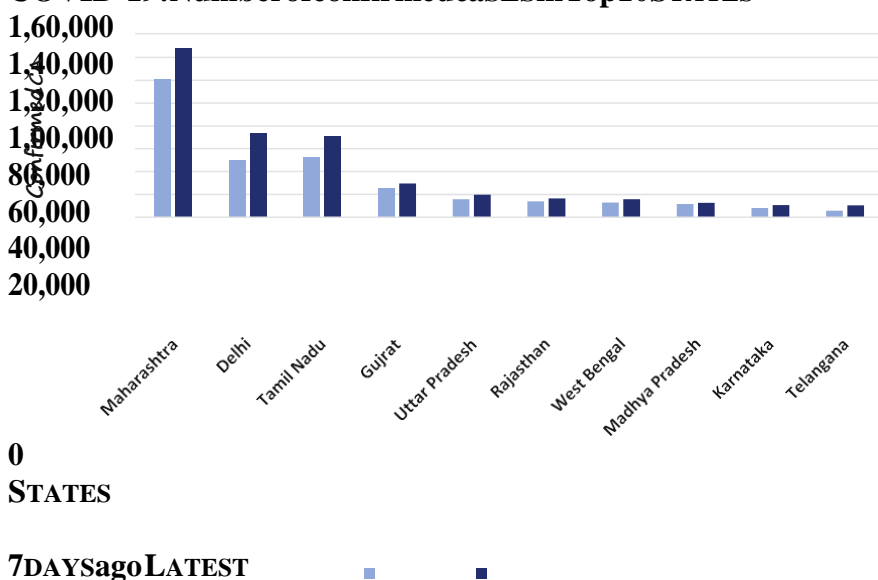


**Fig. Country-wise confirmed cases across the world (World overview: Data used up to 29 August 2021). (Data Source: WHO (2021<https://covid19.who.int/table>))**



**Fig. Country-wise confirmed cases across the world (Top 10 countries: Data used up to June 25, 2020). (Data Source: WHO (2020c))**

**COVID-19: Number of confirmed cases in Top 10 STATES**



**Fig. State-wise confirmed cases in India (Top 10 states: Data used up to June 25, 2020). (Data Source: (Ministry of Health and Family Welfare))**

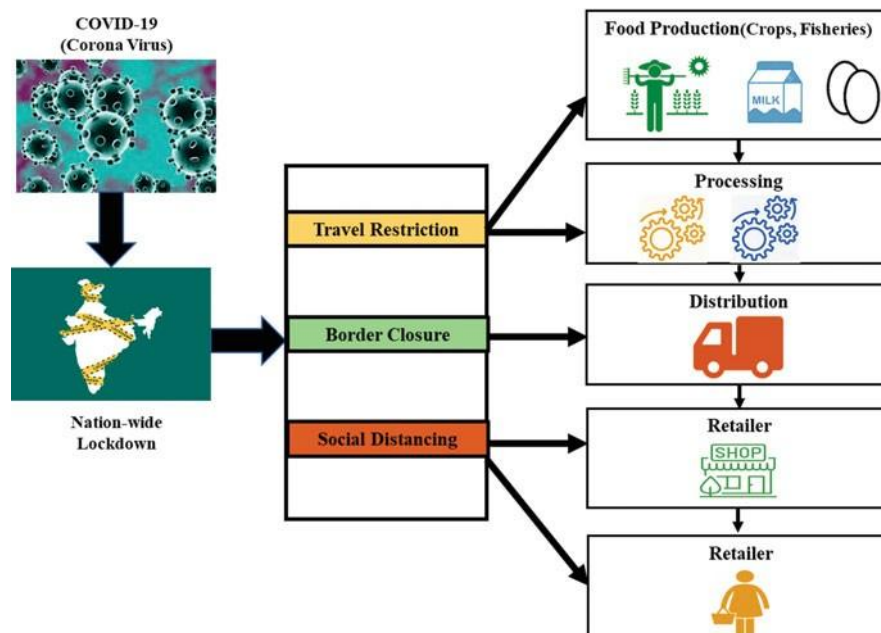
20 to May 25, 2020. Besides, she likewise said that the number would cross 2.1 million in the deteriorating circumstance. From past pandemics, it has been discovered that frenzy and isolate guidelines significantly affected the financial development and human turn of events (Arndt and Lewis 2001; Bermejo 2004). Be that as it may, it additionally influences rural exercises due to diminished accessibility of horticultural industry laborers, diminished requests for agrarian fares, effects of longer lead times in supply, restricted transportation and coordination’s administrations, diminished stock limit, severe market conventions, decreased normal yearly precipitation (Goyal and Ojha (2012); Goyal and Ojha (2014); Sharma and Goyal (2018)) and universally the increment biosecurity guidelines. Burgui (2020) and Sar et al. (2010) tracked down that a flare-up of infectious illnesses will bring about unhealthiness and craving due to significant sway on horticultural related exercises. Around the world, horticulture is one of the pivotal areas in human development and effect on food security of district and countries (Kogo et al. 2020; Lopez-Ridaura et al. 2019; Das et al.

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(2020)). FAO has projected that almost 60% of the worldwide populace relies upon the horticulture and food industry for their reality (Zavatta 2014). ILO guaranteed that out of the complete manager populace worldwide in 2019, 26.85% of were utilized in the rural area (WorldBank 2019). It is probably the biggest area and spine of the India's economy. The three significant motivations to call the horticulture business as the foundation of the Indian economy, first it's anything but an imperative part in the nation's (GDP); second, it assists with utilizing a significant lump of country's casual specialists; and finally, the advancement of other Indus attempts relies upon the rural business. During the COVID-19 pandemic, look at the effect of pandemic on farming and related exercises. Investigate that how farming areas will react to the circumstances emerge from pandemic on worldwide and public scale. Additionally, government dynamic to work on the state of horticulture related areas will influence what's to come. This part explores the difficulties presented by COVID-19 pandemic on farming area in India and decide the conceivable alleviation measures for recuperation. The introduced suggestion in the part will reinforce arrangements reactions to support the farming area exercises to advances towards food security during and the readiness in post-pandemic period.

## Impact of COVID-19 on Agricultural Sector

Coronavirus prudent steps embraced by the Indian government have seriously affected the inventory network organizations of farming area, disturbed the worth chain between horticultural maker and customer. The FAO (2020a) guaranteed that the COVID-19 pandemic has seriously upset the rural area by affecting on food interest and supply during the period. These adverse consequences of pandemic may prompt food uncertainty (Siche 2020) in creating economies like India.



**Fig. COVID-19 affecting each phase of the food supply chain especially transport and distribution**

## Impact on Agricultural Production and Food Supply

A few nations have reported cross country travel limitations by forcing several limitations like home isolate, business conclusion, travel boycotts, and so forth to contain the spread of the crown disease. These limitations have influenced agricultural exercises particularly on the food inventory network (Fig. 12.4). Additionally, FAO (2020a) likewise guaranteed that the limitations on portability cause work deficiencies which may hamper food preparing and cultivating exercises. For instance, mandis

(food market) are shut in a few pieces of India during the movement limitations, in this manner upsetting the food store network from creation to utilization focuses (Narayanan 2020). World exchange is accepted to decay by 13–22% because of crown pandemic (WTO 2020). Different horticultural creation areas like animals, fisheries, and crops have been influenced by COVID-19. For instance, March–April is the best an ideal opportunity for the offer of rabi crop, be that as it may, the gathering interaction will be deferred because of the flight of transient laborers to their homes. In China, the pandemic contrarily affects domesticated animals cultivating because of absence of work and deficient admittance to creature feedstock (Zhang 2020). Travel limitations and specialist deficiencies have prompted a large number of compartments of frozen chicken, pork, and meat stacking up at a portion of China's significant ports. In the event that such travel limitations proceed for quite a while, there will be no bring forth of eggs and rearing stock as asserted by the Global Poultry Council (Vorotnikov 2020). Fish is a crucial wellspring of energy and records for almost 20% of creature protein for 3,000,000 individuals (FAO 2020a). Work lack and social removing have influenced fishing exercises in a few pieces of Europe, Asia, and Africa (FAO 2020b). Fish ranchers witness difficulty in hydroponics creation because of the shortfall of fish seeds just as they couldn't sell their collect. On account of horticultural items, ranchers need to store their unsold transient item for quite a while which prompts lessening the food quality, alongside an increment in the expense of creation (FAO 2020b). The stock of dairy and milk items has been amazingly influenced during the Covid pandemic. Conclusion of ice cream parlor shops, inns and cafés, and coffeehouses has decreased milk deals during the movement limitations travel limitations, particularly in India. The takeoff of transient laborers to the wide open may likewise diminish the interest for milk in metropolitan regions. Consequently, dairy ranchers are compelled to dump their milk because of surprising decrease in milk prerequisites. Forstadt (2020) gauges that American dairy ranchers are unloading roughly 4,000,000 gallons of milk each day. In addition, the circumstance is more uncommon in Nepal with the end goal that dairy items worth two billion (NPR) has effectively been ruined, while items in stock worth five billion (NPR) show up on the edge of disintegration (NepaliSansar 2020). Because of the disturbance of worldwide exchange, ranchers experience the ill effects of absence of farming information sources like manure, seed, and pesticide. Around the world, China is a significant manure maker just as exporter, nonetheless, the shutdown in China has seriously affected global compost deals (Marlow 2020). For instance, India requires approximately 25 million quintals of horticultural info (seed) in the Kharif season (Singh 2020). Subsequently, the planting of harvests like spring wheat, maize, canola, grain, open field vegetables, maize can't be done because of the pandemic circumstance. On the off chance that the pandemic proceeds for a more extended time frame, the planting of Kharif and Zaid season harvests may be influenced. Thus, import-subordinate countries are destined to be influenced during COVID-19 (Cullen 2020). Because of the disturbing pace of COVID disease, work deficiencies and their medical issues have been the significant issue in the agricul-tural industry particularly in immature and agricultural nations where agri-social specialists are denied of sufficient social security and wellbeing administrations. Notwithstanding, such laborers were constrained to work in rural fields without favorable to tections during the pandemic. Henceforth, these horticultural specialists are at high danger of disease (ILO 2020a).

Portability limitation has made a deficiency of occasional and ranch laborers (Brelie and Petit 2020). The pandemic outcomes in a fast expansion in the joblessness rate across the world. ILO projected that pandemic has affected the 2.7 billion specialists (roughly 81% of the worldwide labor force) because of part or full conclusion of the working environment (ILO 2020b). To beat these uncommon conditions, governments and NGOs are assuming a significant part to keep up with standard food supply chains. As of now, FAO has assumed the liability to keep up with coherence of the food supply (FAO 2020c). Regardless of that horticulture and the food production network are viewed as a fundamental assistance; they were to a great extent influenced during the underlying period of movement limitations. Anyway later, recuperation is being seen partially. Accordingly, the

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costs of vegetables and grain goes down which had fundamentally gone up during the period March–April. Along these lines, in spite of the limitations that legislatures have forced on the portability of work in rural frameworks, in spite of the fact that for certain issues, the stock of fundamental products is ordinarily guaranteed.

### **Impact on Food Demand**

Request can be defined as the shopper's capacity and eagerness to purchase products in a given time (Gottheil 2013). The food request has been influenced during the pandemic because of the vulnerability of things to come and the decrease in pay and consumption limit. Nonetheless, the circumstance could decline if the COVID-19 pandemic goes on for quite a while (FAO 2020c). The movement limitations made a few customers alarm and go to the market for food stocks and accordingly make a shortage of essential items. This accumulating has brought about higher food costs, lack of fundamentals and frenzy in customer purchasing conduct. Siche (2020) asserted that costs of essential labor and products are projected to be consistent, in any case, an expansion in the cost of high-esteem items, for example, bundled meat and frozen treats may happen. In the current condition, creature protein area is seriously hit during this pandemic because of deception that chickens' can be the transporters of COVID-19. A huge number of poultry ranchers particularly from Orissa, Maharashtra, Andhra Pradesh, and Karnataka are constrained to dump their items. As China is a critical market in worldwide exchange, their experience shows an off take in web based business and online interest in the drink and food area because of movement limitations rules (FAO 2020a). During such travel limitations, contactless food appropriation administrations are supported by clients, for instance, the utilization of robots for food conveyance in China (Yang and Reuter 2020) (Fig. 12.5). This would be incredibly beneficial for worldwide reaction to COVID-19. In addition, it would build social separating, accordingly lessening the spread of COVID-19 and saving lives (Skorup and Haaland 2020). Because of COVID-19 the diminished in food request was identified from the consumer conduct in different setting which made unevenness between supply sur-in addition to and deficit for specific food sources. The explanation for this is the time taken in Transformation to the new shopper conduct change during the pandemic time frame and vulnerability brought about by upheld travel limitations and isolate guidelines. The vulnerability made a genuine danger food security as limit of deliver and disseminates the food items, affected purchasing power and intensified prudent strides to guarantee the sanitation at various conveying levels. This vulnerability requires the local area oversaw agribusiness that straightforwardly furnishes produce to purchaser with less or no problem of dispersion channel and taking care of.



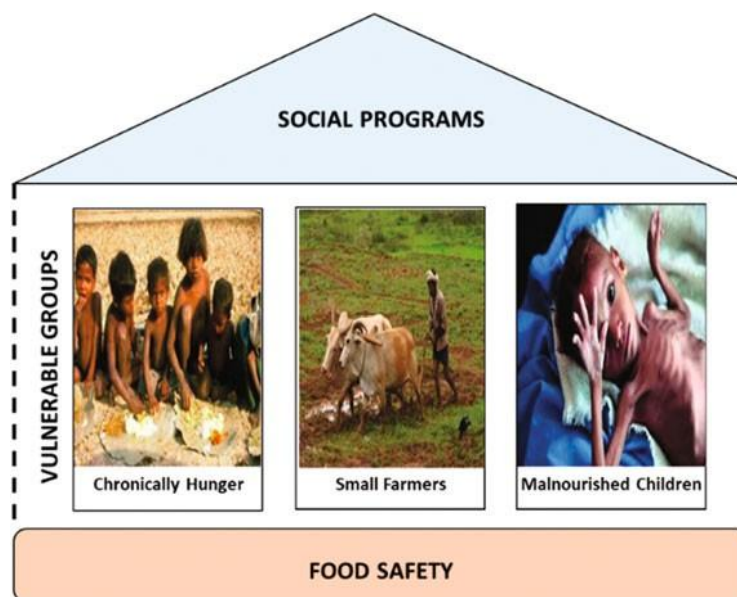
**Fig. Non-contact food delivery using a drone**

### **Impact on Food Security**

Food request means the openness and accessibility of a satisfactory measure of nutritious food in a steady way. Notwithstanding, the above objective is incredibly difficult under philanthropic

emergencies like disturbance in food creation, food supply, and global exchange, subsequently, food uncertainty may happen. As per FAO, fishers and little ranchers may confront difficulty in selling their products that would bring about a decrease in their pay and purchasing limit. Coronavirus expands food instability which will influence the most defenseless (Fig. 12.6) and least fortunate segments of the general public (FAO 2020a). Arrangements should focus on holding the food supply network in coherence across the world and ought to relieve the impacts of COVID-19 across the farming area. Social insurance tasks will be filled in as an answer that decreases the effect of transient cataclysms.

**Fig. Vulnerable groups to a food crisis**



Three weak gatherings of the populace will be influenced most during the pandemic. The first weak gathering affects individuals who don't burn-through appropriate caloric energy and experience constant craving. In the current situation, 820 million individuals manage constant craving while 113 million arrangement with serious weakness (FAO et al. 2019). Subsequently, any interruption in their food access and jobs during the pandemic influences these populaces harshly. In the event that COVID-19 spreads over such gatherings with restricted wellbeing limit, the results could be perilous. Another gathering incorporates little ranchers, those could be limited from dealing with their field and arriving at business sectors to purchase seeds or exchange their merchandise. The third gathering includes kids from helpless families (around ten million in number), who are primarily reliant upon social projects for their sustenance; be that as it may, any break in these projects makes their food and sustenance in danger and lessens their ability to manage infection disease (FAO 2020d). Henceforth, every country needs to proceed with social food plans, considering the proper insurances to contain the spread of the Covid.

### **Strategies and Precautionary Measures: Indian Context**

The public authority of second crowded nation of the world, India had to make a prompt security move to contain the spread of the pandemic among the metropolitan and rustic spreads. As the greater part of the populace is ordered as powerless due to economic conditions, accordingly, food frailty was identified as a significant issue focused on over spread of disease during the pandemic. When the total travel limitations were pronounced by the public authority of India, the specialists moved forward to execute alleviation methodologies to ensure the jobs of the weak populace.



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## Impact of Travel Restrictions

The abrupt travel limitations over India with 1.3 billion individuals was a reasonable move to control the spread of the pandemic. In any case, the nearby food frameworks were intruded. The most exceedingly terrible piece of the movement limitations was that it concurred with India's pinnacle collecting season of different occasional yields. Summer products of the soil were completely developed and prepared to pick; grain, paddy, and wheat crops were set for collect; be that as it may, all the difficult work was squandered because of the surprising closure of the country. The casual area contains around 91% of the all-out labor force, including traveler, agrarian, and a few different specialists. Be that as it may, their work is altogether founded on day by day compensation. These specialists and their families will be the most influenced during the pandemic. After the movement limitations declaration, the informal laborers went hungry and started strolling back home with their families with no methods for transport. The endurance of transitory specialists in the city was implausible without the accessibility of food, sanctuary, and normal pay. This mass relocation of the laborers to their towns stopped the agrarian exercises. Different primer reports show that total closure has upset both gathering and post-collecting exercises the nation over. A couple of occurrences are featured underneath:

- The travel limitations seriously hamper the guard gather of wheat particularly in Northern India because of absence of laborers and transportation bottlenecks.
- Farmers in the western piece of Pune have developed grapes in wealth, nonetheless, they needed to look for understudy volunteers to collect their yields because of the lack of farmworkers. Without insufficient storerooms, the ranchers were constrained to sell their homestead items at an extremely low cost.
- Vegetables. Conclusion of lines and transportation offices made it harder for the exchange to occur.
  - Asia's driving onion exchange market winning in Maharashtra discovered it difficult to move the newly reaped onion the nation over because of the deficiency of laborers and drivers.
  - The meat and poultry industry were severely hit because of the phony bits of hearsay that chickens are transporters of COVID-19. A huge number of poultry ranchers particularly in Orissa, Maharashtra, Andhra Pradesh, and Karnataka were constrained to dump their items. The diminishing interest for creature protein came about in an unbelievable decrease in their costs prompting a deficiency of INR 22.5 million for the business.
  - The guard reap of ringer peppers and cucumbers in Haryana began to get spoiled because of the inaccessibility of purchasers and retailers on the lookout. During the underlying period of the closure, individuals were reluctant to purchase food sources and vegetables because of dread of Covid disease.
  - Intercropped peppers are left immaculate in most espresso homes because of a lack of laborers.
  - India's driving espresso delivering state for example Karnataka couldn't sell espresso because of the inaccessibility of venders and purchasers on the lookout. Huge loads of restored espresso worth USD 52 million were kept in storage facilities because of the disturbance in the inventory network.
  - Food costs climb strongly the nation over because of the versatility limitation on transportation offices. The significant explanations for the lack of food in the market were accumulating and alarm purchasing among the shoppers.
  - Shopkeepers exploited the closure circumstance and rehearsed dark promoting by selling fundamental products at a silly cost on existing stocks.
  - Processed food varieties like rolls, noodles, snacks were popular during the movement limitations. Nonetheless, all food fabricating exercises abruptly halted, henceforth, organizations like Parle, ITC, Britannia, and Nestle are running at low limit.

- Markets become shaky because of the selling of non-marked merchandise at more cost. Indeed, even the public authority gave confirmation about food security, nonetheless, on the ground, crowds raced to store fundamental wares.

Developments, for example, portable vegetable trucks were broadly perceived, especially in the territory of Kerala, where they give vegetables and organic products on family doorsteps. This progression was taken by neighborhood merchants because of the inaccessibility of customers on the lookout. While agro online business didn't prevail in India during the Covid pandemic. This shows the computerized lack of education among clients and their lack of engagement to purchase essential merchandise on the web.

### **Social Mitigation Strategies**

The Kerala government was the first who made a quick move to reduce the danger of starvation and craving of the least fortunate populace. A few alleviation activities are talked about underneath:

- The government pronounced free proportion including 35 kg rice to beneath destitution lines (BPL) families for multi month. Roughly, 11.3% of the complete populace of the state took benefit from the plan. Furthermore, 15 kg of rice is additionally made accessible to others through the public appropriation framework (PDS).

- Kerala government has additionally done the circulation of food packs containing 17 fundamental products worth INR 1000 to each family beginning from the first seven day stretch of April 2020. The food packs were conveyed through the apportion shops under the PDS plot. The plan was supported by the Kerala Chief Minister Distress Relief Fund and has dispensed around USD 45 million. Specialists have executed this plan during the underlying period of the pandemic and plan to proceed with the plan as indicated by the seriousness of the circumstance from there on.

- Another significant alleviation activity was setting up local area kitchens in different pieces of the state to guarantee food security. The Kerala government was the first to give prepared food to the most unfortunate populace. Area specialists were delegated to manage the undertaking while the nearby volunteers took responsibility in circulation.

- The government has taught rustic childcare communities (Anganwadi) to give nutritious suppers to youngsters younger than 6. As indicated by the directions, the Anganwadi staff is selected to convey crude materials to their families week by week.

Followed by Kerala's drive, the focal government declared 1.7 trillion (INR) alleviation bundle, to guarantee food security to the weak areas. The decla-apportion includes the arrival of INR 2000 straightforwardly to the rancher's ledger under the PM-KISAN conspire. Besides, the public authority likewise expanded the compensation for laborers associated with the NREGS, world's biggest pay ensure plot. Particularly for the weak gatherings, the unique plan called Pradhan Mantri Garib Kalyan Yojana has been reported. Further, grain allotments (5 kg wheat or rice per head, 1 kg of heartbeat for every family as well as free cooking gas) to recorded beneficiaries were likewise announced by the Indian government for the following 3 months after the cross country travel limitations. Food and money arrangement to transient laborers has been proclaimed by utilizing the different asset called PM-CARES (Prime Minister Citizen Assistance and Relief in Emergency Situations) reserve. The above models were likewise carried out by different states in India like Haryana, Andhra Pradesh, Karnataka, and Tamil Nadu to adapt to appetite and starvation.

Notwithstanding the legislative relief projects, the food-based exploration lab in South India named as Defense Food Research Laboratory (DFRL) assumed the liability to take care of the country under outrageous conditions, for example, conflicts and fiascos. During the pandemic, the research center has been working 24 h to take care of the wellbeing laborers the nation over. Further, the food conveyance application was additionally embraced by the Karnataka government to convey 1,000,000 dinners to the most unfortunate populace in Bengaluru. Private areas likewise approached with government creator ties to help the weak segment. Organizations, for example, SRK and Wipro bunches subsidized almost 60,000 suppers each day to the helpless populace through government

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containers. Free dinners were given in Amma flasks, Tamil Nadu and Anna Purna Canteen, Hyderabad for the transient laborers, and understudies who were abandoned.

## Mitigation Measures: Indian Context

As the agribusiness and food industry was significantly upset, the Indian Council of Agricultural Research (ICAR) assumed the liability for controlling the agrarian exercises under the Ministry of Agriculture and Farmers Welfare and executed the accompanying measures:

- ICAR specialists have conveyed state-wise yield specific warnings to the ranchers seeing reaping just as post-collecting activities.
- Assessment of all conceivable effect of the pandemic on horticulture and food areas and exhorted alleviation measures to lessen its impacts on the food framework.
- Detailed rules were given for sifting and reaping of rabi crops like grain and wheat.
- Local field offices were informed to screen the free development concerning ranch items and their connected hardware.
- Experts likewise prescribed ranchers to postpone wheat reap which was going to give record gather after the rainstorm. The public authority of India asserted that storehouses of FCI are overflowing with a support load of 71 million tons of wheat and rice to guarantee food security. Other moderation exercises by the public authority are displayed underneath:
- An official declaration was made to help the poultry ranchers by giving Rs 100 for every bird as financial help as pay for zero business.
- Food wellbeing assessors were encouraged to inspect short-lived merchandise like meat, fish items, and vegetables at neighborhood levels to stay away from defilement and contaminated. Additionally, the Reserve Bank of India (RBI) has likewise announced some relief intends to control the weight of obligation adjusting during the pandemic. Farming advances have been settled on a suspension/freeze for 90 days (up to 31 May) with a 3% concession on credits up to INR 300,000 for account holders.

## Policy Recommendations

The movement limitations bring about the interruption of all financial action. Particularly in metropolitan regions, there is broad loss of occupations and livelihoods for poor people and casual specialists. Place for Monitoring Indian Economy assesses that the joblessness rate in India increased from 8.4% on March 15, 2020, to 23% on April 5, 2020. Additionally, on account of metropolitan regions, it will ascend to 30.9% as of April 5. This movement limitations have left casual specialists to battle to address every day issues of food with restricted admittance to food items. The best strategy to help these laborers is to utilize social wellbeing nets to settle their lives with cash and food. The public authority of India reported 1.7 trillion (INR) alleviation bundle, intended to give security nets to rural laborers during upheld COVID-19 travel limitations. Nonetheless, the announced financial plan is lacking contrasted with the gigantic issue existing during shut down. As indicated by Duflo and Banerjee (2020), the public authority ought to have been a lot bolder towards this social exchange conspire. This financial plan is just 0.85% of the nation's GDP and much lower contrasted with bundles conveyed by some Asian and European nations. As indicated by specialists, India should spend at least 4–5% of GDP to check the impact of movement limitations.

The public authority and policymakers should take some alleviation measures to equip to manage the monetary emergency, henceforth; a consolidated exertion of both local and state governments is basic.

- Supply chain: Proper spotlight ought to be given on the smooth working of post-gather exercises, showcasing of retail, creation, stockpiling, discount, and transport. Also, stockpiling and

god owns ought to be intensified. In the event that movement limitations are broadened, home conveyance and E-trade ought to be advanced by the public authority.

- Proper execution: The public authority has given legitimate travel limitations rules that have excluded cultivating activities. Be that as it may, because of ill-advised execution, the data in regards to rules have not arrived at the police work force and nearby specialists. Subsequently, the food production network has been influenced. There is a requirement for appropriate execution of the rules.
- Procurement measures: There should be legitimate and proceeded with market admittance to the ranchers. This should be a blend of government acquisition and private markets. The public authority should assist ranchers with perishables items as they deal with issues like lacking stockpiling, constrained to sell their products at a lower cost. A few states have effectively reported their acquirement plans.
- Relaxation in APMC guidelines: APMC guidelines ought to be accommodating which preclude buy and deal outside market locale. Ranchers ought to be permitted to sell their transient produce like natural products, fish, meat, vegetables, milk and so on external the directed business sectors.
- Milk and poultry industry: The public authority should put more accentuation on dairy ranchers and little poultry ranchers as they need more assistance since their market access difficulties are vital. For industry, rebuilding or ban of credits might be required.
- Safety of agrarian populace: Proper testing offices, social separating during gathering, showcasing, acquisition, and bundling, and so forth should be guaranteed to shield horticultural laborers and ranchers from Covid contamination. All actions will assist with lessening spread of the sickness.
- Avoid trade boycotts: The significant store network should be well useful to guarantee food security. For instance, around two to three million passing's happened in Bengal during 1943 starvation because of ill-advised food supply. Be that as it may, it was not because of deficiency of food accessibility. The public authority ought to empower exchange and business by staying away from import and fare limitations. After the movement limitations, fares of rural merchandise must be preceded.
- Food security: The public authority ought to remember horticultural laborers and ranchers for their help bundle just as in friendly assurance programs during the emergency. At present, the PM-KISAN conspire declared by the focal government incorporates just landowners. Nonetheless, the sharecroppers ought to likewise be remembered for this plan. There ought to be a prompt extension of the Pradhan Mantri Fasal Bima Yojana (PMFBY) to guarantee remuneration installments to ranchers influenced by the Covid-19 pandemic. The Government ought to consider postponing the interest expenses of all exceptional harvest advances and guarantee a new flow of credit to little and peripheral ranchers for the kharif period of 2020.

Some extra alleviation estimates should be shrouded in the public authority's help bundle:

- Cash Transfers: The specialists should help casual laborers through cash transfers straightforwardly to their record. The public authority had effectively given INR 500 every month to 200 million ladies straightforwardly to their ledger through the Jan Dhan financial program. In any case, this is insufficient to fight against the pandemic. The public authority should give at least INR 3000 every month for the following 3 months as help. Khera (2020) proposed to utilize the NEFT framework as opposed to utilizing the Aadhar Payment Bridge framework to keep away from bombed installments. Expansion partner, note that a portion of the weak gatherings and casual laborers don't have Jan Dhan accounts. Henceforth, have an ideal money move program to figure out the designated beneficiaries, sums, and spans.
- Food and healthful security: as of now, the public authority stockpiles are bountiful with 71 million tons of wheat and rice. Hence, it is the best an ideal opportunity to announce that something like 10 kg free apportion for each head each month should be given for the following 3 months.

# Effects of Covid-19 on Agro-Food Industry and Transitions towards Food Security in India

Many state governments have effectively declared free fundamental apportions. The nourishment level of helpless works was low even before the pandemic. Be that as it may, it will drop further without occupations and earnings during shut down. Thus, there is a critical need to guarantee a diversified diet including beats, jagger, oil, and so forth for them. Government projects like early afternoon dinners, Anganwadis, and Integrated Child Development Services should give apportions to beneficiaries at home. A few state governments have effectively begun such inventive projects to help and help casual specialists. In Kerala, the public authority is disseminating suppers at the doorsteps of beneficiaries.

- Migrant laborers: Migrant specialists have confronted outrageous difficulties during the movement limitations and consequently, there have been a few ideas to help them. The public authority should utilize government schools and universities, panchayat bhavans, local area corridors, region central command, block offices, anganwadis, and so on to orchestrate free prepared food, disinfection, and clinical consideration for these individuals. Benefits of social assurance projects, for example, the Ujjwala conspire, Public Distribution System (PDS) are made accessible to them (Kapur and Subramanian 2020). Even after the movement limitations, the public authority should organize a deliberate return of the traveler laborers to their work environments.

## Conclusion

The part explores the difficulties presented by COVID-19 pandemic on the food frailty in India and dissected the public authority reaction to handle the circumstance. The examination further explained that overall COVID-19 pandemic significantly affected the social turn of events and financial exercises. The rural business and food frameworks are seriously influenced by the pandemic and generally standpoint for the business is not extremely reassuring. In non-industrial nations like India, where the farming records for the significant portion of GDP, the self-disengagement, travel limitations, isolate guidelines and revulsion conduct brings about low saves of food staples and instigated vulnerability in food security. The examination of government reaction to the circumstance brought about expansion in food interest because of movement limitations and diminished buying limit of buyer. The vast majority of the occasional, traveler, and casual ranch works are losing their positions that additionally influenced the food interest. The production network has been incredibly influenced by the pandemic, which causes the food weakness for the most weak section of populace. The difficulties looked by area contains diminished accessibility of agrarian industry laborers, diminished requests for horticultural fares, effects of longer lead times in agro-food supply, restricted transportation and coordination's administrations, diminished stock limit, severe market conventions, and worldwide the increment biosecurity guidelines. India government's conceivable moderation measures are significant and helpful however not suffice to handle the circumstance. To accomplish the thorough arrangement and fortify the rural policies, we introduced the suggestion to reinforcing store network organization, expanding market access through decreasing taxes and expanding spending distribution for the area recovery. The introduced strategy suggestion calls for changes towards food security during and after COVID-19 pandemic.

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