

# COVID-19: Impact on Indian Agriculture

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**Abstract---** *The COVID-19 infectious disease has brought the world to a social and economic standstill. The number of infected persons has crossed two million and is constantly increasing. Many countries have instituted lockdowns to encounter the spread of the infection among the general population. This lockdown has had an impact on every aspect of economic activity. This paper attempts to understand the impact of the lockdown specifically on Indian agriculture and some of its allied sectors. Despite being exempt from the lockdown restrictions, agriculture has been adversely impacted. Dairy, poultry, floriculture, seed production, and several other related industries have been witnessing losses. With the onset of the pandemic in India coinciding with the harvesting for the rabi crop, farmers are struggling with issues like shortage of labor and transport options. The sector is not in a position to absorb the many losses due to a decrease in harvesting, processing, transportation or decrease in demand.*

**Keywords---** COVID-19, Coronavirus, Pandemic, Agriculture, Lockdown.

## I. INTRODUCTION

The COVID-19 is a communicable disease caused by a type of coronavirus that spreads on contact with droplets released by infected persons through cough, sneezes or exhalation. Since the first case was identified in Wuhan in China in December 2019, it has spread to most countries of the world. A timeline of important global events related to this disease is presented in Fig. 1.0 (AlJazeera, 2020). At the time of writing this article, there were very few countries like Comoros, Kiribati, Lesotho, Micronesia, and Nauru that had not yet reported a single case of COVID-19 (Jagran English, 2020). The global explosion of cases has caused unforeseen disruption in the economic and social activities of people worldwide. Unfortunately, no vaccine or specific treatments have been discovered for this infection as yet.

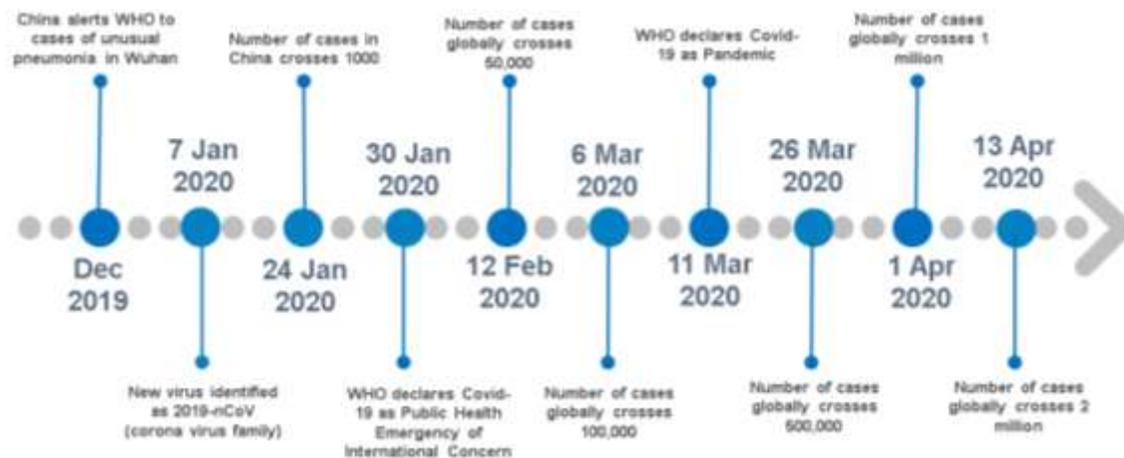


Fig. 1.0: Timeline of events related to COVID-19

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The first case of COVID-19 was reported in India on January 30, 2020, from among students who had returned from Wuhan in China. Within exactly two months of the first reported case, there were over 1000 cases in India. Within the first two weeks of April, nearly 2500 additional cases were reported. By mid-April, about 170 districts were identified as COVID hotspots (where the number of cases showed a high rate of increase), 47 as cluster outbreaks (where the infection spread in clusters) and 207 districts as having the potential to turn into hotspots (Jagran English, 2020). The state of Maharashtra had the highest number of active cases and most of the hotspots were present in southern India. The increase in the total number of cases, new cases and total deaths in India over a 3 month period is shown in Fig. 2.0 (Worldometer, 2020).

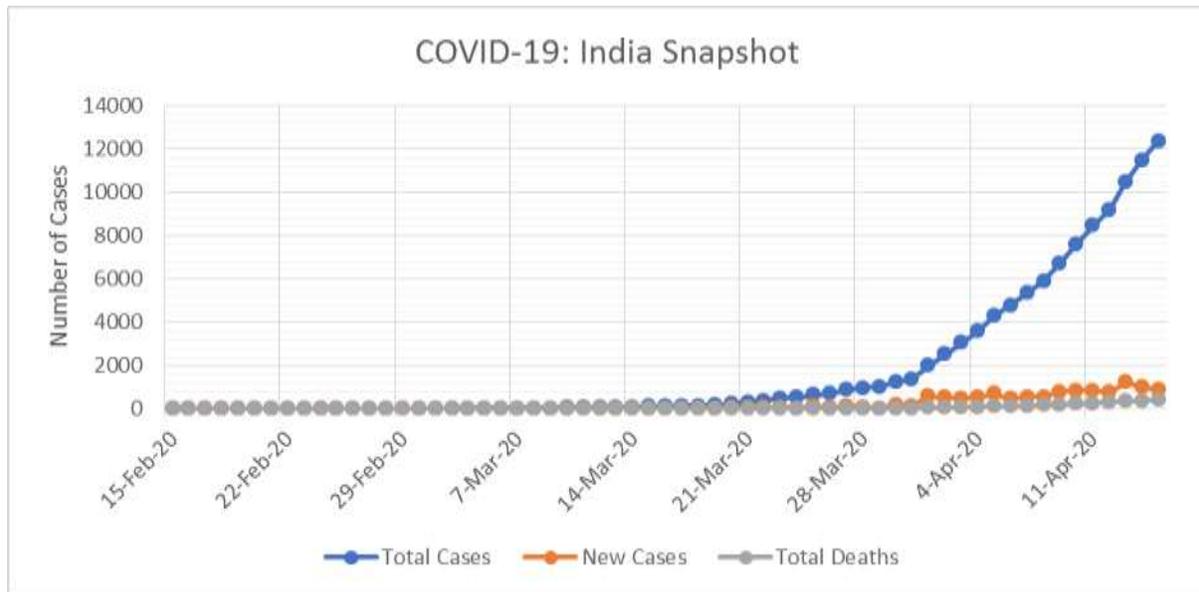


Fig. 2.0: Total Number of COVID-19 Cases, New Cases, and Deaths in India

### ***Impact of Epidemic/Pandemic on Economy***

The COVID-19 is a typical black swan event in that it is exceptionally rare and has immense repercussions on the global political, social, technological and economic arenas. The world has witnessed pandemics such as the Plague of Justinian, the Bubonic Plague, smallpox and cholera in the past, and more recently SARS, MERS, and Ebola. While the older pandemics greatly diminished huge sections of the populations, eventually people understood the benefits of isolation and learned to reduce casualties. The problem with present-day epidemics and pandemics is the fact that due to globalization and interconnectedness, impacts are magnified and a domino effect is witnessed in all spheres and all parts of the globe.

In general, epidemics and pandemics affect huge swathes of the population, most often rendering young and/or healthy people incapable of economic activity. With soaring fatality rates, economic growth shifts from being the main focus. In the case of the Spanish Flu that started in 1918 and went on till 1920, an estimated third of the world's population was infected and about 50 million people died. Those areas which implemented non-pharmaceutical interventions (NPIs) such as the closure of public spaces and areas with large gatherings such as schools and places of worship, social distancing, quarantine of infected and suspected cases and shortened business

hours, witnessed a substantial relative hike in economic activity post the pandemic. Other areas, saw a higher drop in employment, low manufacturing output, decreased consumption of goods and bank assets and higher loan defaults by businesses and individuals (Correia & Luck, 2020).

Due to the high levels of interconnectedness and supply chains that span the globe, most economies of the world have been affected to various degrees by COVID-19. A study by Sforza and Steininger reports that one month's lockdown of even around 60% of the labor force could translate to a decrease of 14% in real income. Economic shock is intensified even in those countries where lockdowns are not implemented by a drop of around 0.2% in real income, as they rely on other countries in the supply chain process. Where lockdowns are implemented, this drop in real income is around 3% (Sforza & Steininger, 2020).

Other impacts are felt in the rising operating costs of healthcare systems, lower foreign direct investment, decreased tourism, banking, and insurance and tech-based businesses. The airline sector is experiencing a huge loss and many airlines might not make it post COVID-19. While many micro and small industries will have to close operations, as the pandemic prolongs, banks are faced with the case of nonperforming loans that could even threaten the collapse of the bank itself. Microfinance institutions will suffer as the poor are among the most affected by pandemics (Goodell, 2020).

However, there are some organizations that are doing well in the crisis. The take-out restaurant business, online meeting services, online entertainment streaming, over the top (OTT) services and e-commerce services are witnessing a steady increase in demand and are in fact, hiring additional workforce in several countries.

## **II. COVID-19 AND THE INDIAN ECONOMY**

India is one of the countries that will be greatly impacted by COVID-19. As a nation that does not spend a large percentage of the GDP on healthcare services, to suddenly prepare and test, isolate and contact-trace possible infections will be expensive. With many small and micro industries in the informal sector closed due to lockdown, millions of migrant workers have either returned to their home towns or are stuck without jobs, food, and shelter in the locations of their last job. Supply and distribution chains have been disrupted and only essential goods are allowed to be transported. Consumption has also seen a drop to cover only the essentials. The impact will intensify in magnitude depending on the longer prolongation of the crisis.

On a macroeconomic front, consumption, investment, and exports will see a deterioration for a short period. Many small and micro industries will cease operations and decrease the economic growth rate. Demand for electricity, oil, jewelry, cargo traffic, rail freight, tourism, hospitality, and airlines has already reduced. Revenue losses would lead to large-scale layoffs or retrenchment. Above and beyond this is the effect of the recession in other parts of the world that would affect the Indian industry (Dev & Sengupta, 2020).

### ***Impact on Indian Agriculture***

Agriculture and its allied activities cover a wide spectrum of enterprises in India. It includes the production of field crops, plantation crops, rearing of livestock, services such as baling, threshing, preparation for marketing, pest control, processing, transportation, rental from farm machinery, buildings for storage, dairy, apiculture, sericulture,

animal feed services, veterinary services and so on. Agriculture and its related sectors act as a major employment sink in India. Some estimates suggest that more than 50% of the workforce of the country is employed directly or indirectly by this sector. Even though non-farm incomes have been increasing, farm-related earning still forms a big portion of income for rural households. Since Independence, the contribution of agriculture and its allied sectors to the GDP has been showing a decreasing trend, down from almost 52% in 1950-51 to around 14% in 2019. However, even this translates to approximately 6000 billion rupees (Trading Economics, 2020) which is substantial. In general, the Indian agriculture sector:

- Is heavily reliant on labor,
- Involves lesser than 1% large-sized land holdings (>10 hectares) and about 67% marginal (<1 hectare) holdings (Business Standard, 2015),
- Includes many layers of middlemen and intermediaries in the supply chain,
- Suffers from insufficient storage and transportation facilities
- Cannot absorb losses in production rising from natural calamities or any other shocks

A study by the American Department of Homeland Security suggests that assuming steady demand in food and related transportation services, a shortage in agricultural labor of about 10% can be sustained for roughly a 7-week period. However, if the shortage in labor rises to around 40%, retail availability of food and related products will be severely affected and even post the disruption period, recovery to normal levels might take up to 4 months (Ruben, 2011). The situation in India with respect to the labor shortage is quite dire during the current period of COVID lockdown. Thousands of laborers are seasonal workers who are stuck in the locations of their last employment (usually urban areas) because of travel restrictions and are not available for the harvesting of the rabi crop (winter crop) which is typically done in April and May. Post this, farmland is usually prepared for the Kharif crop (monsoon crop) sowing in June. A recent announcement of permitting movement of harvesting equipment and procurement services within and between states is expected to ease the burden on farmers.

There is also a perceptible fall in demand for agricultural produce as several establishments such as hostels, canteens, hotels, and restaurants are not functioning during the lockdown period. With not enough immediate clarity on the export of such produce, prices of perishable items such as vegetables have dropped by as much as 15-20% (Economic Times, 2020). Rumors about the association of poultry and COVID infection circulated on social media and at one point, there was a drop of around 70% in wholesale poultry prices. Approximately 20 million people are involved in the poultry industry in India and they have been badly affected. Poultry feed companies, equipment manufacturers of feeding and water systems, poultry related temperature conditioning systems and ventilators are others who have suffered huge losses due to misinformation. The consumption of meat and fish also saw a decrease (Economic Times, 2020).

The dairy sector has seen a dip in milk demand of around 25-30% because of the decrease in out-of-home consumption in restaurants, hotels, weddings and so on. The government has forced dairy cooperatives to continue to procure at pre-COVID levels to help sustain farmers, however procurement prices have fallen. Processed milk-based products such as lassi and ice cream have witnessed a demand drop despite the soaring summer temperatures

(Business Today, 2020). Approximately 70 million rural households are involved in the dairy business. Floriculture is yet another category that has been severely impacted. With flowers not considered essential, they are being destroyed as demand has diminished with weddings and religious gatherings coming down. Some of the flowers were slated for export, but with the pandemic ravaging Europe and America, demand is virtually non-existent (Ahmedabad Mirror, 2020).

Despite the government's assurance that agriculture-related activities would not be suspended as it is an essential service, it took a few days for the government intervention in this sector's supply chain to be implemented properly. Premium farm produces generally see a spike in demand during summer because of tourists and increased demand for summer treats such as ice creams, but goods such as strawberries and broccoli are not making it to the list of basic necessities in the average household in the current scenario. Also, supply chain disruptions meant that several farmers have been unable to recover even a part of the cost of the production of exotic fruits and vegetables (India Today, 2020). Despite permitting the functioning of wholesale markets and the transportation of food items, there is a dearth of trucks, drivers and workers in such markets. Drivers are scarce as they are scared of contracting the virus and also because of the lack of food options along the travel route. High-value perishable crop farmers are the hardest hit and insurance claims and loan assessments are getting deferred because of the pandemic (Livemint, 2020).

The Kharif season typically requires around 250 lakh quintals of seeds which are prepared between March and May. Seed firms, often working at very low-profit margins, are unable to function normally due to various reasons such as lower labor levels, higher wage requests, higher transportation charges, outsourced partners for drying, packaging and so on not functioning, harassment and even violence at local levels. The next season's preparatory work cannot be compromised on (Business Line, 2020).

### **III. RELIEF FOR THE AGRICULTURAL SECTOR**

Post the national lockdown, on 26 March 2020, the government announced a 1.76 lakh crore economic relief package (Pradhan Mantri Garib Kalyan Yojana) for the benefit of the Indian poor. About 60% of the population (around 80 crore people), many of whom are employed in agriculture and its allied sectors, were to get 5 kgs of rice or wheat and 1 kg of pulses per household on a monthly basis for 3 months. Cash was to be transferred to the beneficiaries directly for the purchase of essentials. Jan Dhan's account holders who are women (numbering around 20 crores) are to receive a monthly amount of Rs. 500 credited to their bank accounts. Free gas cylinders are to be provided to 80 million poor families for the next quarter. The Mahatma Gandhi National Rural Employment Guarantee Act beneficiaries (rural unskilled manual workers) are to receive an increased wage that is estimated to assist almost 136 million families. Under the PM KISAN scheme, an amount of Rs.2000 was to be disbursed exclusively to around 87 million farmers in April 2020 (Press Information Bureau, 2020).

### **IV. PRECAUTIONS FOR AGRICULTURISTS**

While lockdown restrictions are necessary to contain or slow down the spread of the epidemic, farm operations have to be permitted to continue to feed the masses. Access to government and private markets and market,

government procurement, insurance, veterinary hospitals, ramping up supply chains to enable door delivery of goods and export assistance are the need of the hour. Besides the immediate losses already suffered by farmers, continued inefficient performance of the agricultural supply chain might result in a reduction in the area of Kharif crop planted, decline in crop variety to match those which will definitely have a market in times of distress and decline in livestock production. Rural health services will have to be increased to be more accessible to the farmer community. There is also the danger of insufficient access to real-time information about the pandemic and its spread in the local languages.

Agriculture in India is one of the sectors which has low regard for sanitation in the form of toilets on the field or facilities for handwashing. Even in the manually intensive way it is being practiced in India currently, crop production and post-production activities permit social distancing. The Indian Council of Agricultural Research has suggested precautions (All India Radio News, 2020) that may be instituted on farms such as:

- Using mechanization over manual work
- Preserving a distance of 3-4 feet between workers at all times, even during rest times, meals, loading and so on
- Avoiding too many workers operating simultaneously, preferably the minimum number of persons, at any point in time
- Employing only known persons to avoid likely carriers of infection
- Usage of protective equipment such as masks and frequent handwashing with soap
- Sanitizing machines, transport vehicles, packaging materials
- Wearing face masks while threshing, cleaning and in other activities to avoid respiratory difficulties
- Using gunny bags treated in neem solution
- Delaying wheat harvesting by 10-15 days

Farmers have to safeguard themselves from getting infected as the typical smallholder farmer may have to face lowered production due to illness, loss of time spent on caring for self or others sick in the family and diversion of cash and savings into medical expenses instead of farm-related activities. Death may result in further loss of production and loss or fragmentation of landholding. Besides this, in India, there have been cases of social ostracism of COVID patients and their close relatives (Pune Mirror, 2020) (The Hindu, 2020). In the past, pandemics such as HIV/AIDS have caused changes in agricultural cropping patterns with farming households moving towards crops that require lesser attention and care in the production, especially in the areas of high incidence. Also, such areas see a lag in the adoption of technology. In the long term, if there is a large scale spread of the pandemic among the rural agriculturists, it will impact the food security situation at the regional and national levels.

## V. CONCLUSION

The Government of India adopted an early response route to fight the COVID-19 pandemic. The institution of a prolonged lockdown has helped to bring down the doubling rate in a country that has a high population density. However, the economic impacts are many and quite severe. Very specifically agriculture, despite being exempt from the impositions of the lockdown, has not escaped some debilitating effects. Hasty and improper implementation has

led to disruptions in agricultural supply chains that have reduced the chances of profits. In many allied sectors such as dairy processing, poultry, floriculture, seed preparation and so on, the early impacts have been disastrous. As more information is being revealed about these sectors, steps are being taken to work on them, albeit with a higher focus on the absolute essentials for basic living.

While the immediate impacts are easy to identify, the long term repercussions are dependent on various factors such as length of the lockdown and necessary extensions, how soon other countries are able to contain the spread of the virus, the speed at which a cure and/or vaccine for COVID-19 is discovered, manufactured and distributed, the innovativeness of the Indian farmer in managing agricultural work on limited labor and resources while taking suitable precautions, the resumption of supply chains, the reopening of demand for agricultural and allied sector produce and the continuance and effectiveness of stimulus packages proposed by the government. Agricultural policies and structural reforms will be required to post the pandemic and crop insurance and loan structures will have to be reworked.

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