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## Indian agriculture during COVID-19: A brief review of impact and recovery

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### Abstract

The agriculture sector represents a vital component of the Indian economy both in terms of its contribution to GDP and is a source of employment to majority of Indian population. 68 per cent of total Indian population lives in rural areas and depend directly or indirectly on agricultural operations. There is uniform distribution of villages in India and every state constitutes more than 50% of rural population (GOI, 2019). Currently, this sector is showcasing immense opportunities, with India being one of the world's largest producers in agriculture. Pandemics have annihilated human beings in multitudes compared to all the major warfares in the past (Adda, 2016). SARS-CoV-2 virus popularly known as COVID-19 or coronavirus affects human health by means of zoonotic transmission (Bhattacharya *et al.* 2021). After reporting its first case on January 30, 2020, India is the second worst affected country in the world with more than 43 million cases reported till date (Worldometer, 2022). But not only on health, it has had a devastating impact on socio-economic activities of all the sectors. The major affected areas are trade, global supply chains, agriculture, transportation, tourism, automotive industry, electronic industry, etc. As a consequence of COVID -19, the deadliest pandemic in the modern history, many countries introduced complete or partial lockdown. India a ted quite early by introducing a 21-day nationwide first such lockdown starting from 25 March, 2020 which is rated greater than 80 in the global stringency index as a plan of action for flattening the curve of COVID-19 infection. In wake of this lockdown, migrant workers throughout the country were left with no income. In this paper, the implications of COVID -19, all the allied sectors of agriculture have been emphasized. Secondary data sources are used. Published data from various journals, books, magazines and websites. The analysis of issues and challenges faced by these sectors by projecting how the economy changed due to COVID-19 has been stressed out. How Indian agriculture recovered by means of initiatives taken and how it fulfilled the responsibility to feed thousands of mouths who lost their livelihood has been discussed in this paper.

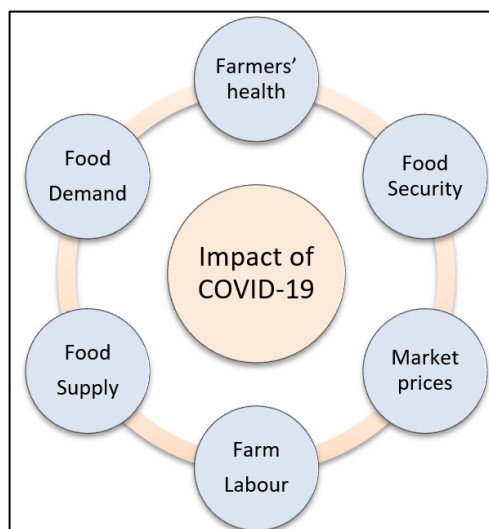
**Keywords:** Agriculture, COVID-19, food security, input supply, labour

### Introduction

India is regarded as a powerhouse of agriculture. Agriculture is a source of employment to more than 50% of the Indian work force (India economic survey, 2018) [2]. Agriculture is comprised of varied fields of crop production, horticulture, engineering, veterinary, poultry, fisheries, agro-forestry, post-harvest technology, storage, agricultural marketing, agricultural extension, agri-entrepreneurship, agricultural education and research and lot more.

Quarantine, closing of borders and value chain disruptions led to restriction of food access, while as inadequacy of financial means and inputs retarded production capabilities. The major issues in agriculture are related to lack of access to markets, non-availability of labour and transportation.

Food and Agricultural Organization (FAO, 2020) outlined that the affected sectors in agriculture due to COVID-19 include food demand, food supply, food security, agricultural marketing, farm input and output prices, farm labour, farmers' health and many more disruptions. These affected areas are depicted in the following figure:



**Fig:** COVID-19 affected areas in agriculture

### Impact on Agricultural Labour

Non-availability of agricultural labour has particularly damaged work functions in several parts like planting, harvesting, post-harvest functioning and many more farming operations. In India, for rice crop establishment, more than 95% of area under paddy cultivation is depends on manual labour. Due to lockdown, a huge reverse exodus with an estimate of around 1 million labours especially from Punjab and Haryana to their home states of Bihar and Uttar Pradesh (Chaba and Damodara, 2020) [3]. Scarcity of labour also affected harvesting of winter (November-March) crops such as wheat and pulses in North-western plain of India (Dev, 2020) [10]. The scarcity of immigrant agricultural labour led to drastic rise in everyday wages for crops.

### Impact on Environment

Non-availability of farm labour coupled with social distancing restrictions, delayed paddy harvesting led to devastating shifts in residue burning to later fall periods where poor air quality is favoured by weather conditions (Balwinder Singh *et al.* 2019). Rice residue burning during the peak pollution period (November- Mid December) is a prime source of fine particulate matter (PM<sub>2.5</sub>) in the region. This has a bad effect on rural and urban areas, including the national capital New Delhi (Cusworth *et al.* 2018) [5] with an increase of 3-folds in acute respiratory illness observed in the most fire-affected areas (Chakrabarti *et al.* 2019) [6].

### Impact of Covid-19 on Food Supply

Since its outbreak, there has been significant disruptions in food supply chains leading to poverty, hunger and food insecurity. Various limitations in the existing food supply chains like, integrated food processing sectors and bumper production of agricultural commodities. The outbreak of this pandemic called for a more balanced approach ensuring the food security of country during such crisis.

Restrictions on transportation disrupted the food supply chains, hampered the uninterrupted flow flow of inputs and outputs of agricultural operations (Carberry and Padhee, 2020) [11] and hiked food prices (Kalsi *et al.* 2020) [7].

### Impact on Food Security

During the COVID-19 lockdown, scarcity of agricultural labour, raw material, etc. made the functioning of food processing plants difficult and afflicted availability of

processed food to the masses. Supply of perishable items was affected at worse, thus, challenging the food security and nutritional security of different sections of the society (Harris *et al.* 2020) [16]. Rice and wheat provide 60-70% and 50-55% protein intake in India (Bishwajit *et al.* 2013) [4], thus any decrease in their production directly or indirectly affects the food security of resource-poor households.

COVID-19 forced consumers to alter their consumption patterns. Consumers prioritized what they really needed. Individuals' income decreased during the lockdown (Ray, 2020) [8]. A survey of 2259 migrant youth revealed that 32% of them reduced their daily food intake (Imbert, 2020) [13]. The behaviour pattern of customers changed by reducing the consumption of non-essential commodities, visit to marketplaces, etc. (Cariappa *et al.* 2020) [17]

### Cushion to Indian Economy by Agriculture

Indian farmers are doing everything they can do and change how they work in order to prevent the crisis of COVID-19

Despite all odds, agricultural sector cushioned the economy during the tough times as positive growth was registered by agricultural sector post pandemic (Quarter 1: April to June 3.4% FY 2020-2021) but less than its immediate past quarter growth rate of 5.9% witnessing a decline by 2.5% due to COVID-19 impact (ET, 2020)

Huge buffer stocks of rice and wheat enabled the Indian food system to mitigate the effect of COVID-19 (Padhee and Pingali, 2020) [14].

### Initiatives taken by GOI during Covid-19

India as a country has stood firmly to mitigate the unprecedented challenge posed by COVID-19, with both governmental and non-governmental support. Government's key focus remained on providing as safety net to the vulnerable sections of society

Ministry of Agriculture and Farmers Welfare (MOA & FW) (Annual Report, 2020-2021) undertook several initiatives to provide timely benefits to farmers and other stakeholders during the pandemic. Several meetings were conducted with the states with the states to ensure continuity in supply chain within states/ UTs. Subsidies were expedited and loan repayment was deferred in order to relieve the farmers of financial burden. Enormous exemptions were made for smooth continuity of the food supply chain operations from farm to consumer's plate to ensure that country didn't perceive any constraint of food shortage. Such exemptions were transportation of essential commodities, cold storage and warehousing services, manufacturing units of food packaging material, veterinary hospitals, APMC yards, inter-state movement of planting material/bee colonies, etc.

### Farmers' Welfare

Around 93.6 million farm families have been benefitted under the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme during COVID-19. An amount of ₹ 40,466 crore was released to benefit PM-KISAN beneficiaries.

### Agricultural Marketing

To facilitate direct marketing from farmers, FPOs, Cooperatives, advisory was issued to the state governments to limit regulations under state APMC Act. "KISAN RATH" was launched by MOA & FW in April, 2020. It is mobile application to facilitate farmers and traders in searching for means of transport for movement of agricultural produce.

Directorate of Marketing and Inspection (DMI) field officers coordinated with Mandi Boards of states to spread awareness about sanitation, social distancing and other safety measures to contain COVID-19 spread.

### Agricultural Credit

Pradhan Mantri Fasal Bima Yojana (PMFBY) was made more farmer friendly, efficient and voluntary for the farmers. During the lockdown period, around 7 million farmers benefitted from the scheme and claims worth ₹ 8,741.30 crore were transferred to the beneficiaries (ET, 2021)

### Integrated Nutrient Management

#### a. Fertilizers

Authorization to wholesalers and retailers (whose validity was expiring during COVID-19 period) was extended by a period of 3 months to facilitate availability of fertilizers. The government ensured that fertilizers are available to the farmers even during the lockdown, as a result of which India Fertilizers Market was US \$ 18.11 Billion in the year 2020

#### b. Organic farming

- Under Paramparagat Krishi Vikas Yojana (PKVY), direct sale or doorstep delivery of fruits, vegetables in Punjab, Tamil Nadu and Maharashtra by organic farmers/clusters through the use of online apps and mobile vans.
- Parcel train facility transported 17 tons of organic mangoes to Delhi and Siliguri from Andhra Pradesh and 4 tons of vegetables from Palanpur, Gujarat to NCR by Sikkim State Cooperative Supply and Marketing Federation (SIMFED).
- DA&FW coordinated with Uttar Pradesh and Haryana officials for facilitating direct supply of organic fruits and vegetables in NCR.

### Seeds

The seed division ensured the availability of 15.3 million quintals of seed among farmers against the requirement of 15 million quintals for Kharif 2020. Authorization to seed dealers (whose validity was expiring in the lockdown) was automatically extended. To ensure availability of quality seed, consent was granted to permit seed certification and processing activities during lockdown.

### Agricultural Mechanization

Mechanical options for farm operations were highly encouraged on seeing the shortage of labour. Access to machinery shops, spare parts, etc and intra and inter- state transportation of agricultural machinery was facilitated by the government during the lockdown.

### Extension Services

The department ensured that adherence to hygiene and social distancing was followed in letter and spirit during the agricultural operations. For mass awareness, a short video film was developed on social distancing which was aired on Doordarshan, DD Kisan and social media handle of the department. In April 2020, All India Agri Transport Call Centre was set up for inter-state coordination for movement of vegetables, fruits and agricultural inputs. Guidelines and advisories issued by ICAR indicating exemptions for continuity in supply chain of essential commodities for farmers during lockdown were sent to officials of Agricultural Technology Management Agency (ATMA).

### Information and Communication Technology

Maximum meetings during COVID-19 times were conducted virtually. IT team of Digital agriculture division developed a portal for Agriculture Infrastructure Fund Scheme. Several webinars on Farmer Producer Organizations, Contract Farming, AgriStartUps, etc. were conducted during this period. Use of jaivikkheti.in app was encouraged highly to ensure sale of organic products to consumers online.

### Economics

Agriculture is the only sector that recorded positive growth during the COVID-19 situation. Government announced an increase in Minimum Support Price (MSP) on June 1st, 2020 for mandated Kharif crops of 2020-2021 and on September 20th, 2020 for mandated rabi crops.

### Conclusion

In general, COVID-19 affected the development trajectories of various sectors of agriculture. It had a blended impact on the sector while bringing to light some persevering issues that Indian agriculture faces, which would not have expected to address with immediate attention. As every challenge contains within it the seeds of opportunity, COVID-19 helped the agriculture sector of India make consequential growth in adjusting and changing circumstances and making the most of opportunities.

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