



## Where to Next?

# Impact of COVID-19 on Food Systems in India

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January 2021

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## 1.0 Executive Summary

In 2020, COVID-19 and associated lockdowns have affected the entire Indian economy. This report provides a synthesis of evidence gathered on the impact of COVID-19 on food systems across the country, drawing from a number of reports as well as eight primary data collection efforts. The analysis is broken down by stakeholder to allow decision-makers better understand how COVID-19's pernicious effects have been felt across the wide-range of actors that make up food systems across the country. The impacts from COVID-19 stem from the underlying health impacts of the infectious disease, as well as government-imposed restrictions on activities and movement.

The findings presented here are sourced from a wide range of studies that each had their own key focus areas and goals. Accordingly, while we have sought to present evidence which we believe to be high-quality, the referenced studies have varying levels of reliability. The lockdown in India imposed significant challenges on data collection and necessitating phone surveys and samples that were not always representative. To overcome this challenge, this report cross-references findings from multiple sources where possible. A summary of the referenced primary data collection sources can be found in Section 2.0.

### Key Impacts of COVID-19 on Stakeholders in Food System

#### Overall Production and Prices

- The total quantity of food arrivals to Mandis (state-regulated agricultural markets) fell by 64% and prices for food products at Mandis rose by an average of 10% in the month following the initial national lockdown on March 24, 2020. Many Mandis temporarily closed in the month following the initial lockdown, and from late April Mandis began to resume functioning. However their reopening was slow and scattered. (Lowe et al, 2020)
- Prices for food products at Mandis fell to levels lower than those observed in 2018 and 2019, after the initial spike in the month following the lockdown. Perishable food products observed larger price drops than other food products. (Lowe et al, 2020; Mahajan and Tomar, 2020)
- The total quantity of food arrivals to Mandis rebounded to rates comparable to 2018 and 2019 by June 2020 (three months after the initial lockdown). However, the total quantity of food arrivals to Mandis subsequently fell in August and September and these quantities were lower than what was recorded in 2018 and 2019. (Lowe et al, 2020; Pinto et al, 2020)
- Total quantities harvested for the 2019-2020 rabi season were large, with an all-time record for maize harvested in a rabi season and increased total food grain production when compared with 2019. Government procurement policies helped ensure that demand for staple crops stayed strong after the rabi harvest however price realization was lower as these goods were sold at minimum sales price ("MSP"). Additionally, costs for inputs rose thereby reducing on average farmer profit. (Narayanan & Saha, 2020a; Ramakur and Tanitkar, 2020)

### Input Markets

- COVID-19 led to increases in input prices and challenges to input access. (IDinsight, 2020; Jaacks et al, 2020; Kumari, 2020)
- Average prices for fertilizer were higher and total expenditure of fertilizer were lower for 2020 Kharif season when compared to the 2019 Kharif season. On average, farmers with more land reduced total consumption of fertilizer more than farmers with less land. (IDinsight, 2020; Rawal and Kumar, 2020; Pinto et al, 2020)

### Income and Output Markets

- COVID-19 has had an outsized, negative impact on smallholder farmers, many of whom have seen a significant decline in income. Declines in farmer income were at least in part driven by lower price realization for agricultural products driven by sales at MSP combined with higher input costs. (IDinsight, 2020; Carriappi et al, 2020; Lahoti et al, 2020)
- COVID-19 has created challenges surrounding transportation and storage of products. These challenges have disproportionately affected smallholder farmers of perishable food products (such as livestock and dairy farmers) who do not have access to their own cold-storage and transport infrastructure. (Rawal & Kumar, 2020; Kumari, 2020)
- Smallholder farmers have reported a reduction in agricultural borrowing and depletion of existing personal savings. Many farmers have reported reducing food consumption in order to cover living expenses. (IDinsight, 2020)

### Informal Village Middlemen and Traders

- Government policies imposing transportation restrictions resulted in a general localization of food systems. The localization of food system has caused significant loss of jobs for informal village middlemen and traders who generally purchase food products from farmers for resale. (Lahoti et al, 2020; Lowe et al, 2020)
- Travel and movement restrictions made it difficult for intermediaries and traders to transport agricultural produce over state borders and oftentimes even over district or village boundaries. This has prevented traders from selling produce in more lucrative markets, forcing them to sell locally, generally at lower prices. (Narayanan and Saha, 2020)
- The shutdown of weekly haats (open-air, local markets) and Mandis severely impacted many village intermediaries and traders who rely on these markets for their incomes. (Mahajan and Tomar, 2020)

### Micro, Small and Medium-Sized Enterprises (MSMEs)

- Transportation costs for MSMEs increased significantly, with urban MSMEs reporting a larger increase than peri urban and rural MSMEs. A majority of rural MSMEs have also reported

traveling and picking up supplies themselves when in the past they have not. (Narayanan & Saha, 2020b; Mehrotra et al, 2020)

- The closure of Mandis and weekly haats has led to MSMEs paying more to stock their shelves. The increased cost is disproportionately felt by MSMEs who rely more heavily on local markets than larger organizations who often have their own supply chains in place and their own transportation infrastructure. (Narayanan & Saha, 2020b; Mehrotra et al, 2020)

#### Vulnerable Populations and Women

- Marginalized and vulnerable individuals including women, lower-caste groups, Adivasis and Muslims have been disproportionately, negatively impacted by the pandemic. The impact of job losses and food insecurity was higher for Muslims, Dalits, women and those with lower levels of education. (Lahotia et al, 2020; Thakur, 2020)
- Women's diet quality and access to nutrition has been negatively impacted by the pandemic. (Dhawan et al, 2020)

#### **Opportunities for Further Investigation**

There is still significant uncertainty on the potential persistent impacts of COVID-19 on food systems in India, especially in light of potential future waves of infection, as has been observed across the world. This synthesis highlights areas for further investigation that will be relevant in minimising the risk of persistent negative impacts of COVID-19 on food systems in India including:

- **Women and Vulnerable Population:** A deeper investigation into how COVID-19 has impacted women and vulnerable populations including an investigation into: job opportunities, access to credit, economic empowerment, intra-household consumption decisions and food security.
- **Livestock and Dairy Farming:** Research to understand the extent to which livestock and dairy farmers in this sector are suffering. Anecdotal and qualitative reports have highlighted that these farmers have been disproportionately affected by COVID-19, however there is a lack of robust, quantitative data to verify these claims.
- **MSMEs:** Research into the impacts of COVID-19 on MSMEs that are involved in agricultural processing with a specific emphasis on disaggregating data by gender and focusing on women owned and operated MSMEs.
- **Farmer Producer Organizations (FPOs):** Data on how FPOs been impacted by COVID-19, what role FPOs have taken, and what additional support can be provided to FPOs to bolster smallholder farmers' outcomes.

## 2.0 Summary of Data Collection Efforts Focused on Food Systems and COVID-19

| Reference             | Study Name  | Key Focus Areas   | Dates of Data Collection  | Sample Size   | Location                        |
|-----------------------|---|---|---|---|---------------------------------|
| Cariappa et al (2020) | Pandemic Led Food Price Anomalies and Supply Chain Disruption: Evidence from COVID-19 Incidence in India                                      | Food Prices and Supply Chains   | 24 May – 23 June  | 729 consumers and 225 farmers   | 8 States                        |
| Dhawan et al (2020)   | Getting by on Rice & Salt: Rural Women’s Coping Strategies during India’s Coronavirus Lockdown, Insights from Chhattisgarh and Madhya Pradesh | Relief measures and Gender  | April   | 3,951 rural women   | Chhattisgarh and Madhya Pradesh |
| Dalberg (2020)        | Efficacy of Government entitlements for Low Income Families During COVID-19   | Financial, Access to Relief   | 5 April – 3 June  | 47,000 households   | 15 States                       |
| IDinsight (2020)      | COVID-19-Related Shocks in Rural India 2020   | Agriculture, Labor and Income, Consumption, Migration, Access to Relief and Health          | <i>Rd 1:</i> May<br><i>Rd 2:</i> July<br><i>Rd 3:</i> September | <i>Rd 1:</i> 4,576 Households<br><i>Rd 2:</i> 5,006 Households<br><i>Rd 3:</i> 5,200 Households | 6 States                        |
| Jaacks et al (2020)   | Impact of the COVID-19 Pandemic on Agriculture and Food Security in India   | Agricultural production, Livelihoods, Food Security, Dietary Diversity and access to Relief | 3 May - 15 May  | 1,429 agricultural households   | 12 States                       |
| Lahoti et al (2020)   | COVID-19 Livelihoods Survey   | Livelihoods and Access to Relief  | 13 April - 23 May   | ~5,000 self-employed, casual and regular wage workers   | 12 States                       |

|                            |   |                |                    |                   |                              |
|----------------------------|---|----------------|--------------------|-------------------|------------------------------|
| Mehrotra et al (2020)      | Impact of COVID-19 pandemic on micro, small, and medium enterprises (MSMEs) | Financial      | April              | 152 MSMEs         | Uncertain                    |
| Narayanan and Saha (2020b) | Urban Food Markets and the Lockdown in India                                | Food Retailers | 8 April – 18 April | 50 Food Retailers | 14 cities across the country |

### 3.0 Background on Food System in India

The Indian agricultural economy is made up of complex market linkages connecting approximately 263 million agricultural workers, directly or indirectly, to over a billion domestic Indian consumers and many other global consumers (Ministry of Agriculture & Farmers Welfare, 2020). India's agricultural sector and food system provide livelihoods for over 42 percent of the workforce (Plecher, 2020) and contributes approximately 15% of India's total GDP (The Global Economy, 2020) and is particularly vital for the countries rural economy.

Agricultural growth has been fairly volatile over the past decade, ranging from 5.8% in 2005-06 to 0.4% in 2009-10 and -0.2% in 2014-15 (Deshpande, 2017). The complex food supply chains that make up the sector have prepared themselves to absorb and minimize exogenous shocks, often from terrible natural disasters (Pillay & Kumar, 2018). However, vulnerable actors often face outsized negative impacts, particularly smallholder farmers and women, even though the larger supply chains may survive times of crisis (Jaacks et al, 2020).

The Indian food system is highly disaggregated with 85% of products being dependent on small and medium sized enterprises often clustered tightly their peri-urban and urban communities. Whilst governments are involved in many aspects of the food system, 96% of total product is dependent on the private sector (Reardon et al., 2020).

#### Input Providers

Food systems begin with farmers interacting with input markets. Farmers purchase seeds, equipment and fertilizer from agro-input dealers, water and electricity from government or private sellers, knowledge and expertise often from agricultural extension services or other farmers, and labour and credit from village middlemen, financial institutions or other financing servicers. For those who operate in the dairy or livestock industries, their input requirements differ however they still interact with a wide variety of input providers. In this capacity, farmers provide the demand within the input markets.

#### Farmers

Farmers leverage labour, capital and technology through their production process to transform their inputs into saleable agricultural products. Farmers accordingly move to the supply side of the agricultural markets in which they operate. Farmers often agglomerate within farmer producer organizations (FPOs) and farmer producer corporations (FPCs). These groups aim to leverage bargaining power and greater information symmetry to sell products at better prices and terms than if farmers were to sell their products to the agricultural markets individually.

Many farmers, particularly landless farmers and smallholder farmers operate at subsistence or near subsistence levels and as such consume the outputs from their activities or informally bargain their outputs at the hyperlocal level. Those farmers who enter the market with their products have the option

of either selling their outputs at the farm gate, agglomerating that outputs with other farmers, or selling to State-regulated agricultural markets (Mandis).

#### Informal Village Middlemen

Sales of goods at the farm gate involve interaction between farmers and unlicensed buyers generally known as village middlemen. The number of intermediary informal village middlemen that exist between the farmer and end consumer varies widely depending on the context of the geography and product. Generally, these village middlemen act as aggregators, particularly where farmers have not consolidated into FPOs.

#### Mandis

Farmers also have the option of selling their products through Mandis, which were designed by the Central government to provide a competitive marketplace for the sale of agricultural products. Mandis act in collaboration with government procurement policies for goods listed on the essential commodity list. Recent estimates indicate that approximately two-fifths of the agricultural marketable surplus in India is traded in Mandis, while the remainder is sold in private markets outside these regulated marketing yards (Economics and Political Weekly Editorial, 2020). The implication of the recent farm bills on Mandis and essential commodity government procurement may have significant implications on the role of Mandis in food systems, which shall be described in more detail below.

#### MSMEs and Traders

Close to 90% of the Indian market is served by small-scale stores (called kirana stores) and informal players such as push-cart and street vendors; about 8% by supermarkets and other modern outlets; and 2% by online merchants (Narayanan, 2020). These micro, small and medium enterprises play a vital role within the food system of India. Many daily wage laborers and those who are self-employed operate such enterprises including small restaurants, food stalls, haats and kiranas. Additionally, many formal and informal traders are actors within these food systems.

#### Government Procurement

Reardon et al (2020) estimate that almost 80% of India's food consumption is of non-grain food products. Non-grain food is comprised of largely perishable products such as fruits, vegetables, dairy, livestock, and edible oils. These food products require significantly more complex cold storage and food handling requirements. Furthermore, these food products have shorter shelf lives meaning that any exogenous shock has the risk of detrimentally affecting direct consumption.

To minimize the risk of exogenous shocks to food systems, both Central and State governments have put in place a public distribution system (PDS). This system seeks to distribute food grains to vulnerable individuals and is managed by State government through fair price shops (FPS). These food grains are sourced through government public procurement programs and are regulated by the Central Government under the Essential Commodities Act, 1955 (1955). Under this system the government procures certain food grains under pre-established minimum support prices (MSPs).

## 4.0 COVID-19 Related Regulatory and Non-Regulatory Changes

Policy makers at all levels of the public sector took drastic measures to minimize the impacts stemming from the ongoing COVID-19 pandemic on public health. However, the impact of these measures on economic output can be seen by the 23.9% decline in GDP in the second quarter of 2020 when compared to same period in 2019 (Nag, 2020).

When the Central Government announced the initial 21-day national lockdown on March 24 there were deep fears that the agricultural sector would be crippled (Krishnamurthy 2020a). Many worried that the transportation restrictions in particular would bring to a crashing halt the otherwise highly intertwined and labour-intensive food systems that deliver agricultural goods across the country (BBC, 2020).

### Distribution Policies

The Central government pronounced policy focused on the distribution of essential food items to consumers at the same time as the announcement of the initial national lockdown on March 24<sup>th</sup> 2020. However, there was little guidance provided with these policies which led to uncertainty around how actors within supply chains were categorized for the purposes of bringing essential foods to consumers.

The Central government released a series of announcements that provided more clarity around how food system actors should interpret policies regarding the distribution of essential food items over the course of the first 16 days of the lockdown (through to April 10<sup>th</sup>). This included announcements permitting procurement agencies and Mandis to purchase certain agricultural products, definitions of transportation documentation requirements for those engaging in maintaining the flow of agricultural goods and the operational requirements for various agricultural processors and support actors such as flour millers, ferry workers and transportation support personnel.

The initial focus of COVID-19 Central government policies during the lockdown period was on the distribution of agricultural products to consumers as opposed to support and maintenance of existing food production systems (Narayanan & Saha, 2020a). The Indian food system is highly intermediated, and it is therefore not surprising that drastic changes in food prices and quantities were observed during the initial lockdown period (Lowe et al, 2020).

### Relief Policies

The Central government also released a raft of measures targeted at ensuring the provision of food stuffs and cash transfers to the population (US Department of Agriculture, 2020). The initial relief policies included: an expansive ration program covering approximately 800 million people which included the provision of 5kg of rice or wheat per person per month for three months (through to June 2020), cash transfer to other vulnerable groups such as women, senior citizens and the disable particularly in rural villages, and cash transfers to land holding farmers through the PM KISAN scheme (Ministry of Finance, 2020).

The Central government supplemented the initial relief policies with a raft of policies targeted at migrant and rural workers, including: provision of free food grains and a boost to the support and

funding under the MNGREA Scheme focused at providing increased employment and wages to migrant laborers who had returned to rural areas due to the national lockdown (The Economic Times, 2020).

IDinsight (2020) found that 90 percent of all respondents with ration cards received rice, wheat or pulses for free from PDS shops in June in the States where data was captured (see Figure 1 below). This figure is encouraging, but there is scope to improve and reach the estimated 400 million Indians excluded from the scheme, many of whom are living in poverty (Khera and Somanchi, 2020).

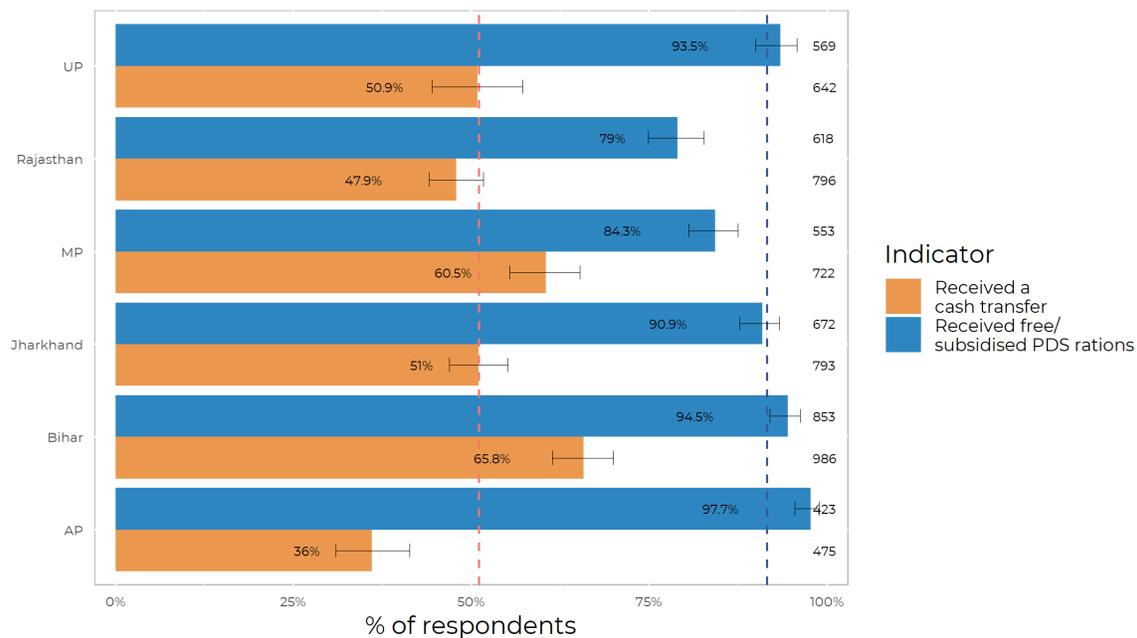


Figure 1: Percentage of households receiving relief in June, by type of relief and State

### Agricultural Market Reforms

On May 15<sup>th</sup>, the Central government announced a series of agricultural market reforms (OpIndia, 2020) in the form of ordinances, which were later passed into law on by the Lok Sabha (India’s Lower House of Parliament) on September 15 and the Rajya Sabha (India’s Upper House of Parliament) on September 22, 2020. The Government argued that the purpose of these changes was to facilitate the seamless flow of farm produce across the country, increase the price realization for farmers on crops through the privatization of agricultural markets and to enable the supply of food to consumers at competitive prices (Economics and Political Weekly Editorial, 2020).

The three Bills that the government amended were: The Farmers’ Produce Trade and Commerce (Promotion and Facilitation) Bill 2020 (FPTC), The Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Bill 2020 (FAPAFS), and The Essential Commodities (Amendment) Bill 2020 (ECA). More specifically, relevant changes include:

- FPTC: promotion of barrier free inter-state and intra state trade and commerce outside the physical premises of markets;
- FAPAFS: regulation of farming agreements between farmers and buyers including dispute settlement mechanisms and the enabling of a framework for contract farming; and
- ECA: deregulation of food stuffs such as cereals, pulses, oilseeds, edible oils, onions and potatoes such that they are no longer exposed to stock limits. Additionally, provision of choice to farmers to sell to private buyers through the removal of restrictions on requirements to sell products through Mandi.

It is uncertain what the implication of these reforms on the welfare of farmers and other actors shall be. Firstly, the role and relevance of Mandis is heterogeneous across states. Certain states such as Bihar removed requirements for sale to state-regulated markets many years ago, and other States only enforce these requirements superficially. Secondly, the regulatory and implementation capacity within State governments is highly differential. Thirdly, certain food products (such as dairy and fully or semi-processed food products) already operate through private agricultural markets completely and as such may not be heavily impacted by the regulations. Finally, many political economy implications follow these reforms that will influence how the reforms are implemented. The political economy challenges are continuing to play out as farmer protests extend across much of India.

A core philosophy sitting behind the agricultural market reforms is a push towards privatization of markets and a desire to disintermediate food systems. This has a goal of reducing deadweight loss and frictions in the system that lead to higher consumer prices and lower realized prices for farmers. The capacity of smallholder farmers to engage in private markets on an equal footing with sufficient bargaining power shall drive the success of the new farm bills in reaching their stated goals.

#### State Government COVID-19 Policies

States were given increased responsibility in battling the spread of the virus and the consequential health and economic consequences after the initial lockdown imposed by the Central government was lifted.

Evidence presented by Lowe et al (2020) suggests that the early disruptions to the food systems were highly correlated with the incidence of COVID-19 at the State level. However, within States there was not a similarly statistical relationship between the incidence of COVID-19 and disruptions to food systems. The data suggests that food supply shortages were driven by State level policy making (Narayanan & Saha, 2020a).

## 5.0 Impact of COVID-19 on Key Stakeholders in Food System

### 5.1 Overall Impacts

The total quantity of food arrivals to Mandis (state-regulated agricultural markets) fell by 64% and prices for food products at Mandis rose by an average of 10% in the month following the initial national lockdown on March 24, 2020. Many Mandis temporarily closed in the month following the initial lockdown and from late April Mandis began to resume functioning however their reopening was slow and scattered.

The total quantity of food arrivals to Mandis rebounded to rates comparable to 2018 and 2019 by June 2020 (three months after the initial lockdown). However, the total quantity of food arrivals to Mandis subsequently fell in August and September and these quantities were lower than what was recorded in 2018 and 2019, as can be viewed in Figures 2. Lowe et al, 2020 found that during this recovery phase, food supply volumes have recovered in all States irrespective of the incidence of the virus spread.

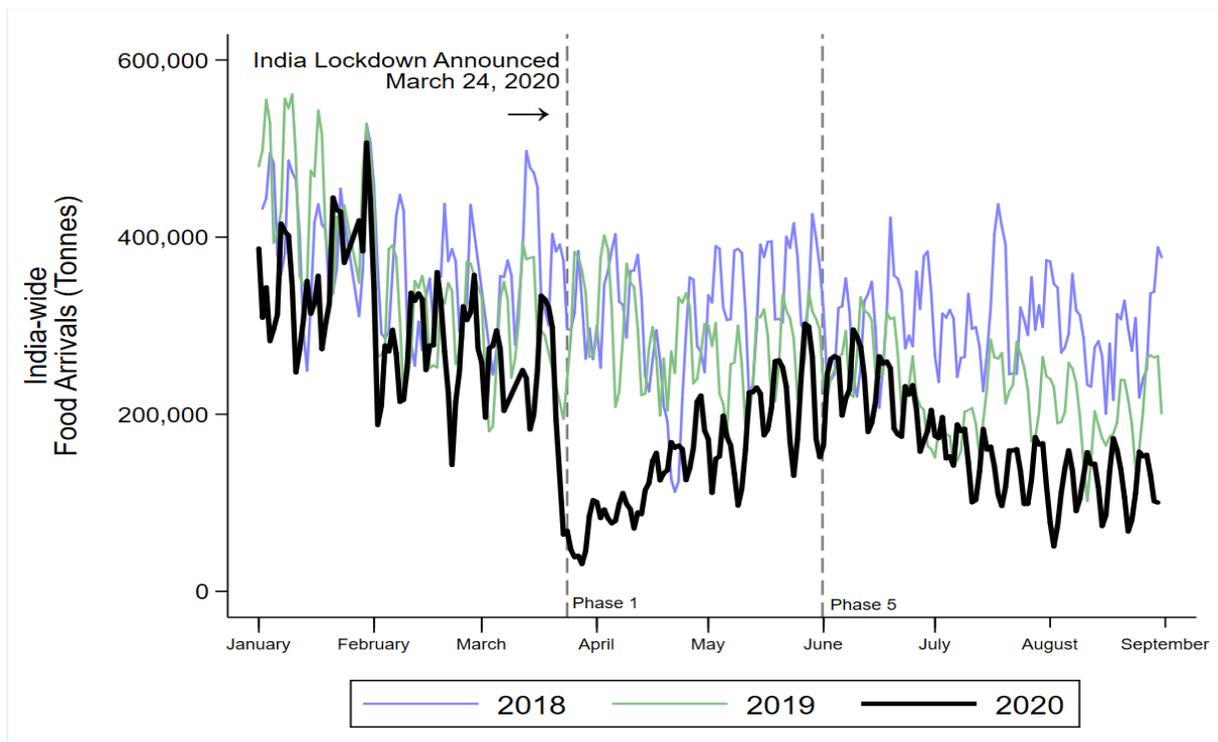


Figure 2: Volume of food arrivals reported by registered Mandis to the Agricultural Marketing (Agmark) database on a daily basis

The rebound in market arrivals did not persist past June and a deeper investigation into agricultural sector data highlights latent, systematic challenges (Pinto et al, 2020). The lower rates of food arrivals to Mandis since Phase 5 re-opening in June could potentially be driven by a high crop rotting (Das, 2020), lower Zaid season harvest, return of migrants, and/or economic shocks following the announcement of new laws (Kaur, 2020). The accumulated evidence does not point at one single factor driving this dip and these trends need to be monitored over the next few months as we enter the kharif harvest.

Mahajan and Tomar (2020) have found that while the availability of non-perishable items did bounce back, the farm gate quantity arrivals of perishable food products continued to remain lower than their pre-lockdown levels. This led to the hypothesis that the disruptions to food systems would be greater for perishable products and for those products that required more transportation investment due to relative geographic proximity to purchasers. Mahajan & Tomar (2020) note the differential impact on perishable food products may be exacerbated by intra state transportation restrictions and challenges imposed due to State-level lockdown decisions.

In addition to a decrease in food arrivals to Mandis, reports of farmer suicides (Singh, 2020) and data on major food security challenges (Jaacks et al., 2020) are symptomatic of agricultural markets that may not be as healthy as headline market figures suggest.

**Total quantities harvested for the 2019-2020 rabi season were large, with an all-time record for maize harvested in a rabi season and increased total food grain production when compared with 2019 (see Figure 3 below).**

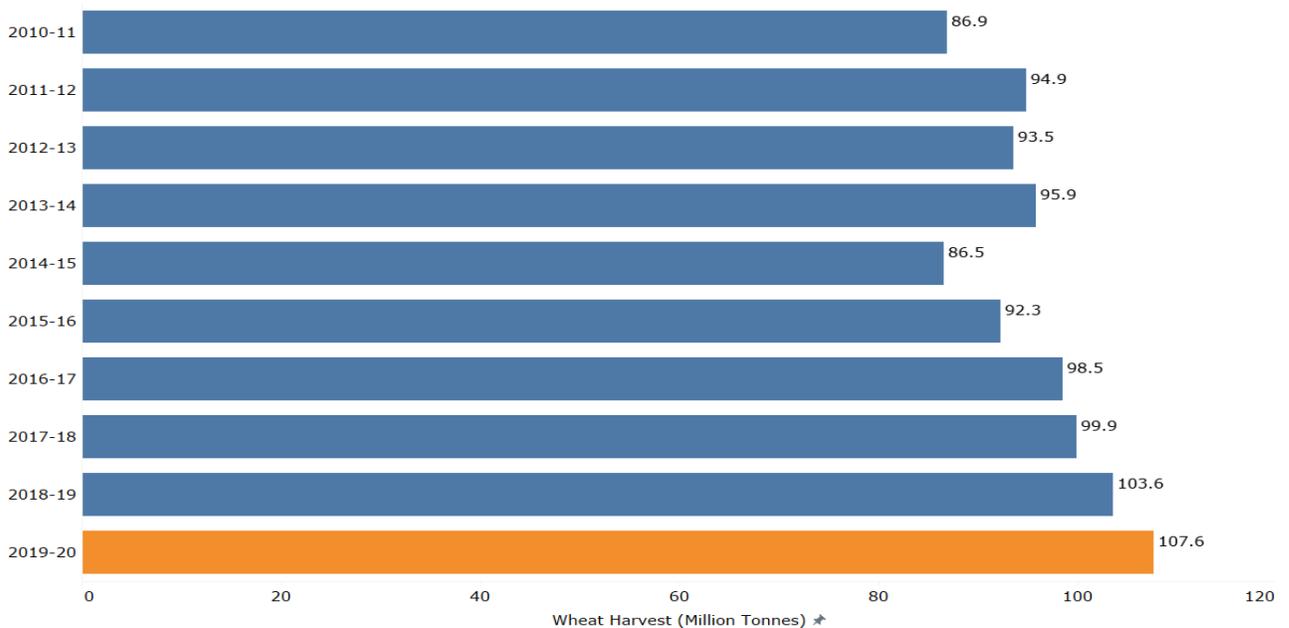


Figure 3: Wheat harvest from 2010-11 to 2019-20 (Ministry of Agriculture & Farmer Welfare, 2020)

**Government procurement policies helped ensure that demand for staple crops (including wheat) stayed strong after the rabi harvest** (Narayanan & Saha, 2020a). The Central government increased minimum support prices for wheat and five other crops in order to bolster demand for staple grains harvested during the rabi period (Times of India, 2020). Ramakur and Tanitkar (2020) compared the arrival of foodstuffs between March 15 and June 30 in 2020 as compared to 2019, and found a reduction of quantities by between 6.5 percent (for paddy) and 61.6 percent (for onion) (see Figure 4 below). Note that market arrivals for wheat over this time period also reduced by 38.4 percent. The shortfall between headline production figures and Mandi arrivals may be driven by many factors, including increased direct consumption of wheat by farmers, or storage.

State procurement policies for certain products in certain States did act to prop up demand and consequently farmer incomes. The government procured 38.83 million tons of wheat from ten wheat-producing states in 2020 (Food Corporation of India, 2020). Many state governments also arranged to facilitate local procurement of milk and horticultural products for direct distribution. The changes to the government procurement policies also explain some of the shortfall as procurement activities often happen outside of Mandis.

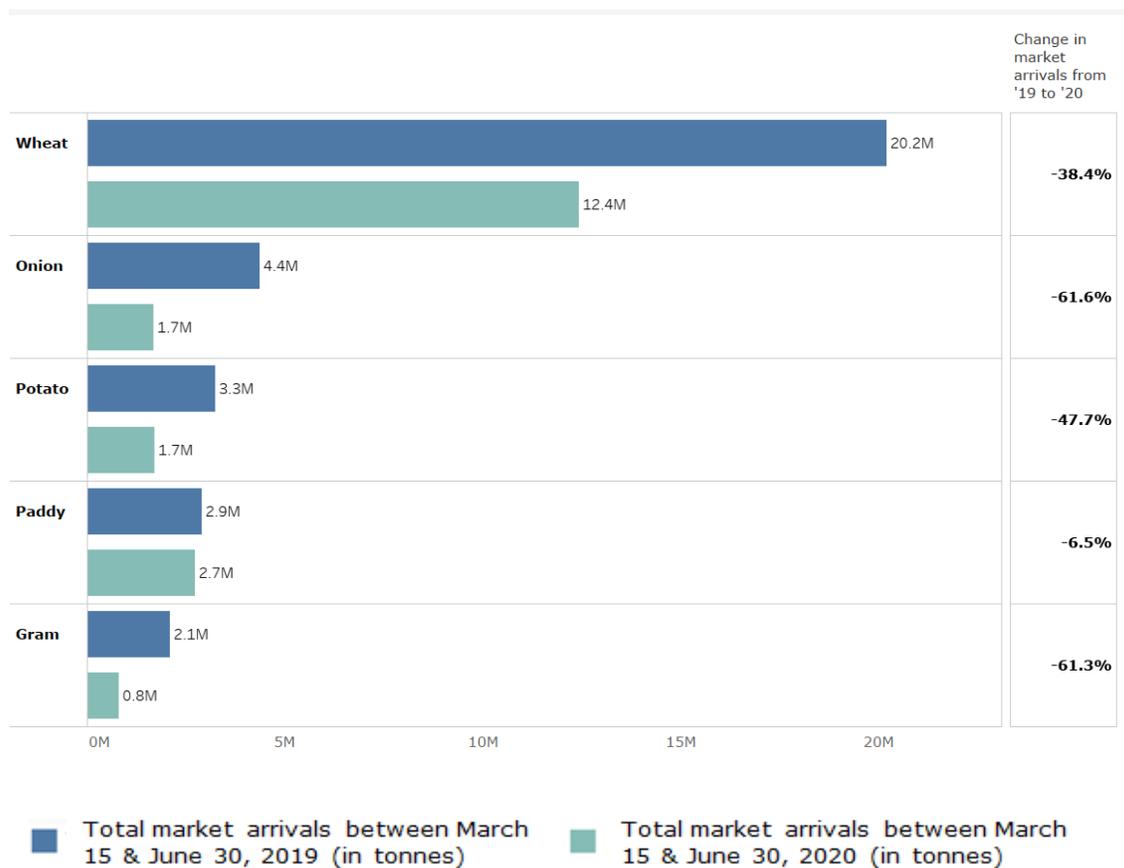


Figure 4: Change in Total Arrivals in Registered Mandi Markets (Ramakur and Tanitkar, 2020)

## 5.2 Input Markets

**Farmers face persistent challenges to access, purchase and incorporate agricultural inputs.** As Vikas and Rawal (2020) stated, “These disruptions in access to input will have repercussions on yields of these crops and livestock not only during the lockdown but also in the coming months.” Jaacks et al (2020) found that of over 1,400 agricultural households across 12 states undertaken in May 2020 found that 56% of farmers reported that the lockdown has impacted their ability to prepare for the upcoming sowing season. In particular, 50% of these said that they were concerned about being able to afford inputs, particularly seeds and fertilizer, and 38% were concerned about labor shortages.

**Soon after the lockdown was imposed, there was a large increase in unemployment with a coinciding drop in earnings. This had an outsized impact on self-employed workers and informal workers** (Lahoti et al, 2020). Jaacks et al (2020) found that 79% of households with wage workers witnessed a decline wages. Of those that witnessed a decline, the average wage of these workers was 24% less than when compared with the past month (prior to the lockdown). The Central government has increased the scope of the MNREGA program to seek to employ many of these workers who lost their jobs or who were migrant laborers who returned to their homes during the lockdown period (Vasudevan et al, 2020). The implementation of the program is driven by States and accordingly, the success of the expansion of the program is highly heterogeneous (D’Souza & Ratho, 2020).

**Average prices for fertilizer were higher and total expenditure of fertilizer were lower for 2020 Kharif season when compared to the 2019 Kharif season.** IDinsight (2020) gathered data from six States and found that a plurality of farmers reported increased fertilizer prices, with more detail below in Figure 5. This led to an average decrease in fertilizer spending of 7% for the 2020 monsoon season when compared to 2019.

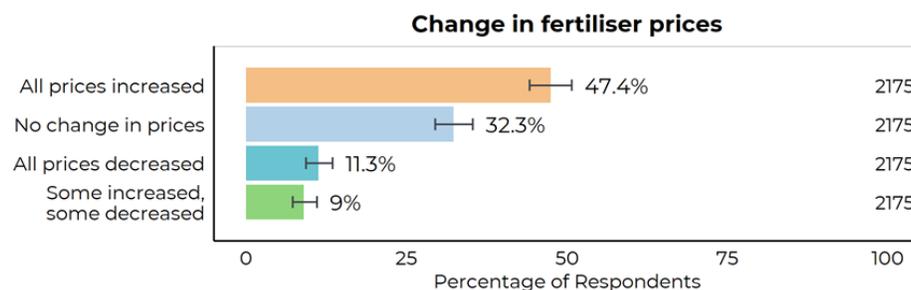


Figure 5: Changes in Fertiliser Prices in July / August 2020 compared with July / August 2019

IDinsight (2020) also found that in September farmers reported a 13% decrease in fertilizer expenditure from the prior kharif season, as can be seen in Figure 6 below. While 35% of farmers reported increase

in the price of fertilizers, 57% reported no change in their per-unit application. Amongst farmers who reported increased fertilizer prices, 56% reported reducing their expenditure, while amongst farmers who reported no price rise, 51% of farmers reported reducing their expenditure.

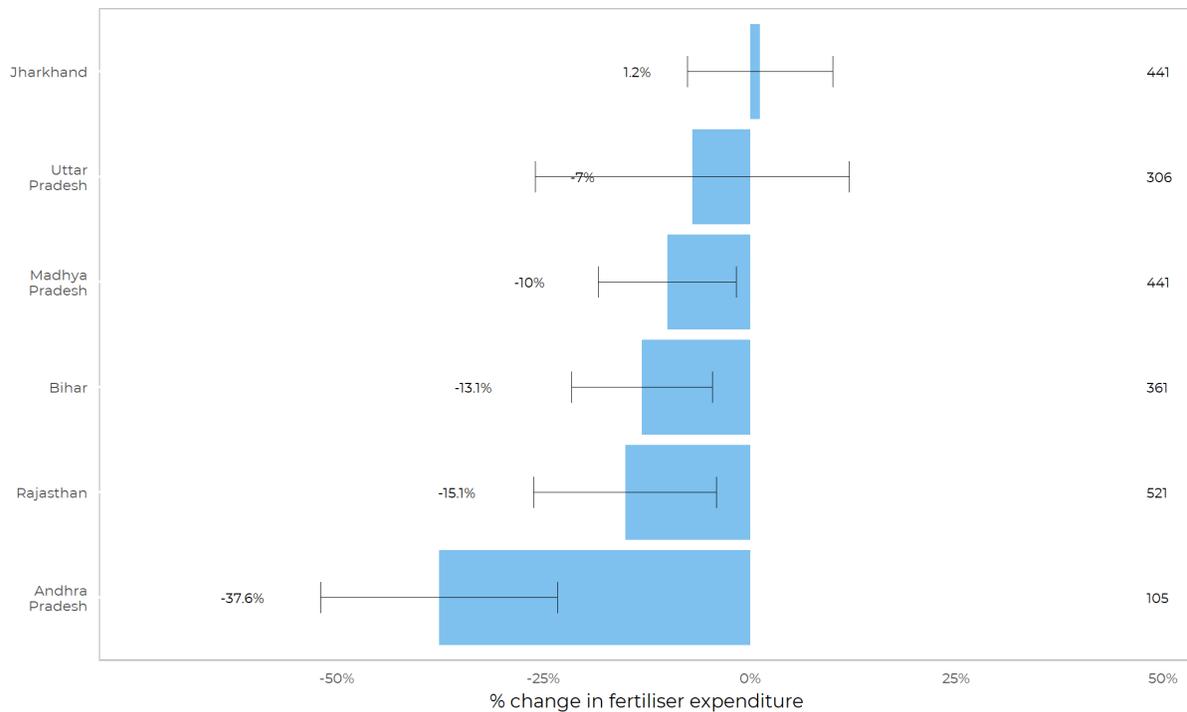


Figure 6: Changes in Fertiliser Amount and Prices in September 2020 compared with September 2019

**On average, farmers with more land reduced total consumption of fertilizer more than farmers with less land.** IDInsight (2020) found that farmers who were in the top quintile of land ownership within the sample reduced their fertiliser expenditure relatively more than farmers in the bottom quintile.

**COVID-19 has also negatively impacted farmers access to pesticides.** In UP and Bihar, qualitative reports have indicated depletion of pesticides and weedicides with dealers anticipating price increases and shortage of available supplies (Kumari, 2020).

### 5.3 Income and Output Markets

**COVID-19 has had an outsized, negative impact on smallholder farmers, many of whom have seen significant decline in income.** Cariappi et al (2020) found that agricultural household income declined by 37.9% (March, 2020) 43.5% (on April 5, 2020) and 43.7% (on April 12, 2020) respectively, when compared with the same month in 2019.

**Declines in farmer income were at least in part driven by lower price realization for agricultural products.** IDInsight (2020) found that prices for perishable products decreased by 48% year-on-year as of May, 2020. Travel restrictions and closure of various intermediary functions triggered a negative shock in demand for agricultural products. Lahoti et al (2020) found that farmers were forced to sell relatively more crops locally at lower prices. This extended into widespread reports of farmers dumping perishable food products after the rabi harvest due to lack of demand.

**Smallholder farmers also reported reduction in agricultural borrowing and depletion of existing personal savings.** IDInsight (2020) found that on average farmers reported reducing their agricultural borrowing by 19% in June and by 11% in September 2020 when comparing to the same month in the year prior (see Figure 7 below for summary in September). Of the farmers not borrowing, the vast majority (approximately 83%) reported using their savings to make up for reduced borrowing in order to meet agricultural costs.

Lahoti et al (2020) found similar results, noting: “An overwhelming majority of farmers could not sell their produce or had to sell at lower prices. Kharif crop is likely to be impacted adversely as farmers have depleted their savings which would have been used as capital for seeds and fertilizers. Casual and self-employed workers were the worst impacted. About half of the wage workers received no salary or reduced salary during the lockdown.”

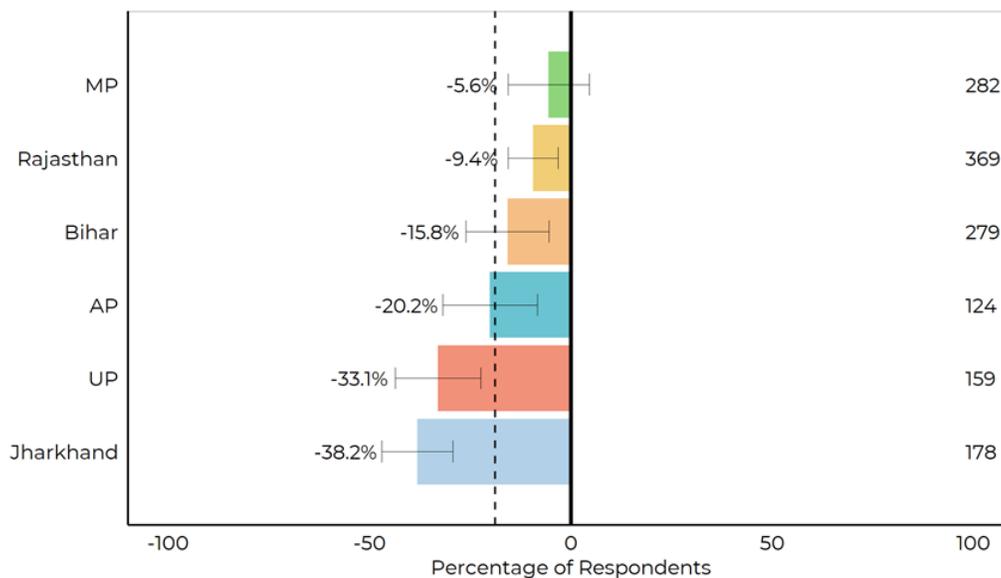


Figure 7: Average % Change in Agriculture Borrowing between Kharif 2019 and Kharif 2020 (IDInsight, 2020)

**COVID-19 has created challenges surrounding transportation and storage of products. These challenges have disproportionately affected smallholder farmers of perishable food products (such as livestock and dairy farmers) who do not have access to their own cold-storage and transport infrastructure.**

Furthermore, dairy and livestock farmers have been negatively impacted both by rumours surrounding the spread of COVID-19 through animal products. The closures of hotels, restaurants and cancellations of special events have exacerbated the decline in demand. This has led to the shutdown of many small poultry farms and livestock herdsman selling animals as a last-resort income measure (Rawal & Kumar, 2020). Village-level reports in June and July reported a near cessation of milk collection for sale at nearby markets in Bihar and Uttar Pradesh (Kumari, 2020).

#### 5.4 Informal Village Middlemen and Traders

**Government policies imposing transportation restrictions resulted in a general localization of food systems. The localization of food system has caused significant loss of jobs for informal village middlemen and traders who generally purchase food products from farmers for resale.** Reardon et al (2020) note how the majority of actors in the food system are members of the informal economy. Further they note more than half of rural employment is related to commuting or transportation of goods that are heavily impinged by the policies associated with COVID-19 lockdown.

**Travel and movement restrictions made it difficult for intermediaries and traders to transport agricultural produce over state borders and oftentimes even over district or village boundaries. This has prevented traders from selling produce in more lucrative markets, forcing them to sell locally, generally at lower prices.** The central government did issue orders notifying agricultural produce as “essential commodities” and allowed for unrestricted transportation of these goods, however as Narayanan and Saha (2020) note, these orders were delayed and did not percolate to state and local-level administrations in time. As a result local authorities in many cases stopped traders from transporting their goods across district or state lines, causing much hardship to these informal players. In addition, there were reports of small traders being harassed by the local police on account of this lack of coordination and communication between different tiers of government.

However, government reports from May indicate that this situation has been steadily improving. Iyer (2020) suggests that “As a percentage of the average daily number of food trucks before the lockdown, only 30 per cent were operational on March 30. This improved to 59 per cent on April 10 and further to 80 per cent on May 5”. The easing of transport restrictions is likely to bring some relief to village intermediaries and traders.

**Various levels of government mandated containment zones and enforced lockdowns that followed the nation-wide lockdown in many parts of the country which created fresh challenges for informal village middlemen and traders.** In Odisha, for instance, panchayats were vested with District Collector level powers by the state government in a bid to battle the COVID-19 pandemic in a more decentralized fashion (Das, 2020). Our conversations with civil society organizations in Odisha revealed that many panchayats, especially in tribal areas, prevented the entry of outsiders into the village for fear of contamination. These restrictions further hurt trader communities by closing off previously accessible markets and forcing them to sell locally at lower prices. Furthermore, in many instances traders were forced to divert their trucks and take longer routes on the way to their intended destination in order to

avoid passing through containment zones and villages with restricted entry, which added to their transportation costs.

**The shutdown of weekly haats (open-air, local markets) and Mandis severely impacted many village intermediaries and traders who rely on these markets for their incomes.** Even when Mandis and haats began to be functional, the volumes exchanging hands at these Mandis were significantly lower (Mahajan and Tomar 2020). This has harshly impacted small traders and village intermediaries whose occupation is dependent on the trades taking place in these Mandis.

Village middlemen and small traders are particularly vulnerable members of the food supply chain and hold a lot of risk outside the production risk that is borne by farmers. Since they are private players and have no direct engagement with the government, there is little assistance that governments have been able to provide to these informal groups in light of COVID-related disruptions to their livelihoods.

## 5.5 Mandi Markets

When the nation-wide lockdown was announced many Mandis shut down. During the first 21 days of the lockdown, the number of Mandis that were operational fell significantly, resulting in a fall in market arrivals (Rawal and Kumar 2020). For instance, the total arrivals of wheat during the initial lockdown was only 6 percent of the quantity of arrivals in the same period last year. Further analysis shows that even with the first two phases of lockdown combined, the quantity of wheat arrivals in the country in the Mandis were only 30 percent of the arrivals in the same period last year (Rawal and Kumar 2020).

**Mandis in many parts of the country resumed functioning after the first phase of the lockdown although this resumption was slow and scattered.** IDinsight's conversations with civil society organisations in Odisha reveal that a surge in COVID-19 infections in the area often brought increased scrutiny on Mandi functioning and Mandis became susceptible to being shut down by the police whenever such an increase in case load occurred.

**Volumes traded in Mandis remained low even as Mandis slowly resumed functioning.** The supply of agricultural products were affected by the ambiguity in lockdown measures coupled with varied enforcement regimes across regions, restriction on inter-state movement and non-availability of transportation facilities affected (Kalsi, Sandoval, and Sood 2020). Mahajan and Tomar (2020) note that quantity of vegetables and fruits arriving to Mandis fell by 20% in many major cities. They also note that the fall in arrivals to Mandis varied by distance to their production zones with the quantity of products arriving falling by as much as 42% for commodities produced farther away. In many states there have been reports of commission agents (arthi) not operating in most of the Mandis due to the lockdown (Rawal, Kumar & Pais, 2020), and many APMC employees not being paid (Katiyar, 2020).

Mandis are traditionally dense, enclosed spaces with a large number of buyers and sellers packed in together – conditions that unfortunately lend themselves to an increased risk of COVID-19 transmission (Reardon et al, 2020). Indeed, reports emerging from Asia's largest wholesale market for fruits and vegetables, Azadpur Mandi in Delhi, brought these fears into sharp focus with a surge in infection rates in the marketing premises in May (Katiyar, 2020). COVID-19 infections spread among the traders,

workers and retailers and many Mandis due to a lack of proper infrastructure and facilities in Mandis (Rawal & Kumar, 2020).

**Many governments instituted measures to enforce social distancing and mitigate the risk of COVID-19 transmissions, which hampered the functioning of Mandis** (Rawal & Kumar, 2020). Restrictions were placed on the number of farmers allowed inside which resulted in long queues of farmers, with tractors of grain, waiting outside the Mandi gates for hours and days. In many states, farmers were required to do an online registration and were given a particular date for taking their produce to the Mandis, which also caused hardships to many farmers not adept at using this technology (Rawal & Kumar, 2020). Biswas (2020) also notes that Mandis are likely to continue to come under strong constraints, particularly to the extent that logistics controls are enforced for truckers and rural field brokers. However, huge Mandis like the Azadpur Mandi in Delhi and Vashi Mandi in Mumbai usually receive tens of thousands of trucks per day which may make it difficult to enforce these norms. Mobility is also likely to be less controllable in the rural wholesale markets in villages and small rural towns. This is corroborated by our conversations with civil society organisations who report that enforcing social distancing in Mandis, given the very nature of these spaces, has proven to be unfeasible in many cases.

**More recently, market reforms in the form of three agricultural bills have been passed in the parliament.** These bills, when read together, represent actions intended to alter the manner and degree of State regulation over the exchange, storage, movement, and taxation of agricultural produce in India (Krishnamurthy & Chatterjee, 2020). **These bills have a potential to vastly change the influence and functioning of regulated Mandis. However, implementation of these reforms at the state level will determine the future of Mandis and what shape they take in the coming months and years.**

## 5.6 Micro, Small and Medium-Sized Enterprises (MSMEs)

**The lockdowns imposed to curb the spread of COVID-19 harshly impacted many kirana stores (small scale local stores) and informal players in the food markets largely through a lack of supply of food products.** Narayanan & Saha (2020b) note evidence of significant supply disruptions relating to availability of supplies and transportation. In a survey of 50 food retailers across 14 cities in April they find that retailers of fresh produce faced many challenges in sourcing their produce. While previously these retailers would source their produce from a single wholesale market, they were now forced to go to different locations to obtain different items & often even make multiple trips. The unpredictable timings of the wholesale markets, and the shortage of supplies also made it harder for vendors to procure goods. Mehrotra et al (2020) found in a survey of 152 MSMEs (including non-agricultural MSMEs) that 44% of the MSMEs reported a decrease in the volume of supplies.

Some kirana store owners reported that due to supply constraints, wholesalers had raised prices of most commodities, and some retailers reported stocking fewer items than before (Narayanan & Saha, 2020b). According to Mehrotra et al (2020) 39% of enterprises were not able to restock as per the demand largely due to a reduction in supply. Furthermore, restocking was a bigger issue in rural areas where 85% of enterprises had been unable to restock. The survey also indicates that the decrease in the volume of supplies was a median value of 40%.

**Even as supply was a problem, businesses were also hampered due to movement and physical distancing restrictions enforced by governments.** Store owners and retail vendors reported being constrained by the limited permissible business hours. Police ensured that shops were closed after 5 or 6 pm - a shift from non-COVID-19 times when they were used to operating their store until 10 pm (Narayanan & Saha 2020b). Store owners were serving customers at the doorstep, forbidding entry into the store and discouraging people from browsing. Many pushcart and street side fresh produce vendors also reported keeping their produce covered.

**A disproportionate number of street vendors and store owners complained of police harassment** (Narayanan & Saha 2020b). Street vendors reported being frequently stopped, and asked to produce “moving passes” when travelling to source produce at night. These permits were difficult to get and many did not know how to obtain them. Other vendors were harassed for even opening up their shops or for not ensuring physical distancing amongst consumers. Street vendors of fresh produce were far more likely to face such harassment than kirana shop operators, although kirana shop owners too reported that the police visited frequently to ensure that the shops were not crowded (Narayanan & Saha 2020b).

**While business costs largely remained unchanged, 37% of enterprises reported an increase in transportation costs by a median of 20%.** While urban enterprises reported a median 20% increase in transportation costs, semi-urban and rural enterprises reported a 10% and 18% increase respectively. In rural areas, 63% enterprises had to go and pick up supplies themselves. This is one of the contributors to increased transportation cost. Moreover, about 75% of the women-owned enterprises mentioned that they were forced to go and pick up all the supplies themselves (Mehrotra et al, 2020). Figure 8 displays some of the major operational challenges faced by food retailers including: inability to get supplies regularly and transportation challenges.

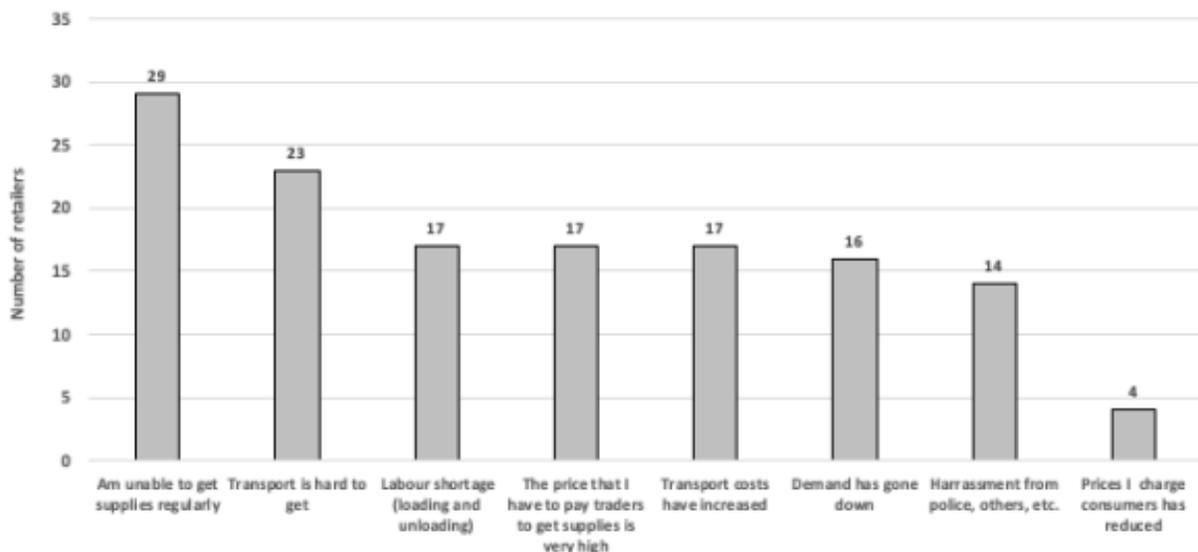


Figure 8: Operational challenges of food retailers (Narayanan & Saha, 2020b)

**Aside from supply chain disruptions, the collapsed demand in the Indian economy has harshly impacted MSMEs.** A third of kirana store owners interviewed in April felt that overall demand had gone down relative to business as usual. In Bihar, grocers reported that inability to sell their goods resulted in the spoilage and expiry of many items as well as damage from pests like rodents. Many shopkeepers talked about mounting debts and how some of them were also forced to work as wage labourers in maize harvesting to complement their incomes (Thakur, 2020).

## 5.7 Vulnerable Populations and Women

**Reports emerging from different parts of the country suggest that marginalized communities such as women, lower-caste groups, Adivasis and Muslims have been disproportionately, negatively impacted by the pandemic.** Experts have expressed concerns that the return of urban workers to family villages would swell the farm labour ranks and lead to depression in farm wages. The effects of this would be more pronounced on rural women, since 39% of rural women work in casual non-farm jobs (Reardon et al 2020). There are also fears that there may be a sharp decline in labour force participation of women, driven by men migrating home from cities (Woodhill & Kishore, 2020).

**Womens' diet quality and access to nutrition has been negatively impacted by the pandemic.**

According to a survey conducted by Dhawan et al (2020) in Chattigarh and Madhya Pradesh in April, women working in rural childcare centers reported that current rations do not fulfil nutritional needs. Although PDS shops stock enough rice and salt, 15% of women said that they had lower access to fruit and vegetables compared to other districts, 27% reported a lack of cheap replacements for green vegetables, and 21% reported loss in appetite, feeling weak, weight loss of increased feelings of irritation in the community. Over a quarter of women reported eating more rice and lentils compared to what they ate prior to lockdown. Rising food prices, unreliable access to ration shops and uncertainty of government cash transfers were the major factors behind these trends (Dhawan et al, 2020). In our conversations with civil society organisations reveal that in Odisha, mothers of young children were finding it difficult to provide appropriate or adequate food to their very young children. While the government had expanded the distribution of ration to families, food for young children was not included as part of this.

In our conversations with civil society organisations in Odisha, we have heard reports of the negative impact of the pandemic on women's' mental health. Women would use SHG meetings and trips to weekly haats as opportunities to socialise with friends. These were avenues for women to interact, share and get support from one another. Since the pandemic hit, these opportunities have dried up for many women, depriving them of an important source of comfort and support.

**According to Lahotia et al (2020) across 12 states across India in April-May, the impact of job losses and food insecurity was higher for Muslims, Dalits, women and those with lower levels of education.**

Muslims in particular faced the brunt of media channels unleashing a tirade of communal propaganda describing them as carriers of COVID-19. This had far reaching impacts. In Bihar for instance, there were reports of shopkeepers refusing to sell to Muslim customers, customers avoiding shops owned by Muslim shopkeepers, and a landlord even indicated that he didn't collect rent from his Muslim tenant (Thakur, 2020).

## 6.0 Opportunities for Further Research

As we stand today there is significant uncertainty around what the persistent impact of COVID-19 and the new farm bills may be on India's agriculture sector. This makes it very difficult to determine what policy prescriptions are needed to mitigate long term risks.

Accordingly, it is vital that policymakers ask the right questions in order to uncover ground truths and design effective, future-focused policies.

**Women's Agricultural Labourers / Farmers:** Women appear to be bearing the brunt of the pandemic. Women's labour market participation has fallen, and women's food and income security have been heavily hit. Decreasing money in the hands of women is likely to have far reaching consequences - and we have already heard some examples of this happening in our conversations with subject-matter experts. Deeper investigation into how COVID-19 has impacted women and under-served populations from various perspectives including: job opportunities, access to credit, economic empowerment and food security would be valuable in identifying policies to minimize the negative consequences on this vulnerable population. It would be valuable to investigate the role of self-help groups and other women's collectives and use this as a vector for providing insights into intra-household decision making.

**Livestock and Dairy Farming:** Livestock and dairy farmers have been negatively impacted as a result of COVID-19's effect on transportation and demand. Anecdotal and qualitative reports have highlighted that these farmers have been disproportionately affected by COVID-19, however there is a lack of robust, quantitative data to verify these claims. Additionally, these food products are important for dietary diversity and overall nutrition of Indians. Research would be valuable to understand the extent to which farmers in this sector are suffering, the role that aggregating organizations (such as FPOs / FPCs / cooperatives) play in the sector and how they may be able to support farmers.

**Micro, Small and Medium Enterprises (MSMEs):** MSMEs dominate the Indian food system, including MSMEs in wholesaling (in Mandis and outside), processing, logistics, retail (eg: kirana stores, haats), and food services (small restaurants, street meal vendors, dhabas). Evidence suggests that these processors have been hard hit, but it would be interesting to investigate whether and how that may be the case. Research into the impacts of COVID-19 on MSMEs that are involved in agricultural processing with a specific emphasis on disaggregating data by gender and focusing on women owned and operated MSMEs would help policy makers determine how to best provide support to these organizations.

**Farmer Producer Organizations (FPOs):** Central and state governments are turning their focus to FPOs as a solution to the limited market power of smallholder farmers. They act as important conduits between State actors and smallholder farmers. Furthermore, these organisations have huge potential to improve small-holder farmers' terms of engagement with the market and are being seen as an important focal point for COVID-19 times. Data on how FPOs been impacted by COVID-19, what role FPOs have taken, and what additional support can be provided to FPOs to bolster smallholder farmers' outcomes would help optimize the investment that state and central governments are making in FPOs.

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