Management of the Pandemic: Agriculture, Food Management and Resilience During Covid-19 in India

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Abstract
This article aims to analyse the impact of Covid-19 on agricultural activities, food security and policies of food management during the pandemic in India, particularly with reference to hardships caused to the most vulnerable communities due to the loss of livelihood, issues of access and availability. The explorations suggest that the growing inclination to centralise the structure of contemporary food and farming would make the entire system fragile, further accentuating the issues of food insecurity in the country. On the other hand, the localised, diverse systems of farming practices existing in various parts of India are rooted in agroecology, judiciously using and conserving the local natural resources. Thus, they have emerged as not only sustainable in the long run but are also food secure. While this impending crisis has exposed the systemic weakness of globalised food systems like never before, it also provides us with a crucial opportunity to mend our food and farming, keeping the long-term sustainability and food security as the goals.

Keywords
Covid-19, agriculture, food security, food management, local food systems, agroecology, post Covid-19 India
Introduction

Covid-19 has led to an unprecedented crisis in India as it did across the world. The impact of the pandemic has been the most severe on the vulnerable sections of the society. The sudden nationwide lockdown created hurdles in all sectors including agriculture, impacting the movement of farm machineries as well as agricultural labourers, many of whom happened to be migrant workers. With the sudden exodus of the panic-stricken farm workers to their native places, agricultural activities witnessed acute labour shortage in the farms. On the other hand, the loss of livelihood of these workers resulted in increased hardships, further diminishing the access, availability and affordability of food, making them highly food insecure (Chowdhary, 2020). However, it is significant to note that despite the pandemic-induced disarray, the Indian agricultural sector emerged as the most resilient with a growth rate of 3.4% at constant prices during 2020–2021 (Ministry of Finance, 2021). With agriculture and allied activities employing about 54.6% workforce in the country (Census of India 2011) which accounts for around 17.8% of the country’s Gross Value Added (GVA), the various government interventions to enhance agriculture and food management appear not only pertinent but most sought-after. Whereas policies like *Atmanirbhar Bharat* offered new measures on credit, market reforms and food processing, other policy initiatives like *Pradhan Mantri Garib Kalyan Anna Yojana* provided additional foodgrains above the National Food Security Act (NFSA), 2013 to 80.96 crore people (Ministry of Finance, 2021). Though these policy interventions are highly welcome, a systematic and long-term move towards localised, diverse framework of food and farming appears as exigent from the analysis of the pandemic. This would require a re-conceptualisation of the entire system by revisiting the past discourse of agricultural modernisation of the country to critically evaluate and remould it with an aim of enabling it to address the current challenges better.

This article is organised in three sections. The first section analyses the discourse of agricultural modernisation in India to explore the ways in which the challenges of food security appear endemic to the vision of this discourse. Although the pandemic exacerbated the crisis, the foundations of such crisis were already building up in the very process of agricultural development of post-colonial developmentalist Indian state. The second section discusses the issue of food security among the most vulnerable sections of the society, majority of whom toiled in the informal sector and now their vulnerability is compounded by lack of adequate safety nets. It also critically evaluates the various policy interventions on food management during the pandemic. The third section discusses the urgent need to revisit the ‘vision of agricultural development’ and to question its emphasis on over-centralised production and distribution system which could be stifling the food security, despite sufficient production. The article suggests in the conclusion that the local diverse and agroecological food systems are better equipped to respond to the pandemic-like crisis without any environmental trade-offs.
Revisiting the Discourse of Agricultural Modernisation and the Contemporary Crisis

Given the spate of rampant famines in colonial India causing widespread food scarcity, it was obvious for the country to adopt a productionist approach in its post-colonial agricultural developmental discourse. Hence, the productivity paradigm got firmly entrenched in agricultural modernisation by the combined efforts of the Government of India, the National Agricultural Research System (NARS) and the international philanthropic foundations such as the Ford and the Rockefeller resulting in the Green Revolution in the 1960s. This seed-fertiliser revolution produced bounty harvest with the use of high-yielding varieties of seeds of wheat and later rice, immediately raising the crop yields and providing India the much sought-after respite from food-dependence on other countries. The Green Revolution had been very crucial for the overall development of the country, however, ingrained in it were certain negative externalities. Their impacts are raising serious questions about the rationale and long-term viability of this model. The environmental trade-off in technologies such as in the Green Revolution has been debated since the 1970s, although its impingement on the autonomy of farming systems and farmers is gaining attention only recently.

Like any other modern production system which calculates efficiency based on evaluation of only one variable which is productivity, while assuming other variables to be constant or irrelevant, the Green Revolution also did not factor in how other variables would play in its course of action. It has been driven by the aggressive push for productivism, made possible by extensive mechanisation and high-yielding seeds (Raina, 2009). Under this notion, success of agriculture is evaluated in terms of how much cereals are produced per hectare of the land, without any consideration for their nutritional value, palatability and the environmental trade-offs that happen in the centralised monocultures. Green Revolution’s enhanced productivity induced a huge cost on other variables of the agricultural production system such as soil, groundwater, ecology and the increasing acreage of monocultures of hybrid wheat and rice resulting in gradual vanishing of indigenous varieties of diverse crops like millets and pulses. Not only did it destroy the biodiversity of the region, but it also resulted in the sidelining of nutritionally superior and sustenance crops in favour of high-input hybrid crops that made small and marginal farmers market-dependent and debt-ridden.

Another significant aspect of the modern production system is its highly centralised, homogenised channels of production and distribution. However, with highly restricted mobility of people and commodities, as in the case of this pandemic, the centralised chains of distribution went for a toss. Many people could not access food, commodities and other essential utility goods, making the world realise the futility of over-dependence on the globally integrated markets. Grains and vegetables could not move from the urban hubs of agri-business to distant places nor from the rural farms to the urban markets because of sealed country and state borders. The entire supply chain got paralysed in this unforeseen and unprecedented situation. The disruptions raise questions about the very structure
of food systems that we have. Although it is in hindsight, the clarity about the unsustainability of such a production system has emerged now.

**Issues of Food Security: Covid-19 and the Food Management in India**

Among the vulnerable communities, the impact of the pandemic was most visible on the migrant workers. India is a country with significant number of people migrating from their place of rural permanent residence to urban areas either within the country and to other countries in search of livelihoods, better job prospects and for reasons of marriage in case of women. According to the Census of India 2011, India had 45.6 crore migrants and the number is increasing every year. Imposition of a national lockdown since 24 March 2020 because of Covid-19 caused huge reverse migration, as all the migrant workers wanted to return to their native places from the places of their employment. In a survey conducted by *Ekta Parishad*, a land and forest rights organisation, it was found, as high as 95% of total 31,423 migrant workers wanted to go back to their native places due to the loss of employment (Kapil, 2020). Owing to the loss of current jobs, dim chances of future employment opportunity, lack of financial support and looming uncertainty, workers embarked upon reverse migration, marking the second largest mass migration in the history of India since Independence and partition in 1947 (Mukhra et al., 2020). Punjab receives a sizable number of in-migrants from states such as Uttar Pradesh, Haryana and Bihar primarily for agricultural works (Ministry of Home Affairs, 2001). Most of the migrant workers lack social security, health benefits, decent housing and other basic amenities and many reside in informal settlements. These situations result in a high vulnerability quotient for them.

In some Indian states such as Punjab and Haryana, migrant farm workers constitute a significant proportion of the agricultural workforce. They perform a variety of tasks such as tilling, sowing, transplantation, pesticide and weedicide application according to need of crops, and packing and delivering fruits, vegetables and crops to specific destinations. Many of the migrant in eastern and Central India migrate seasonally to Punjab and Haryana in times of paddy transplantation and harvesting. The money earned in this time is sufficient to take care of them for the next few months. However, this year was not the same as other years; those who migrated for the harvest in the month of February and March to states such as Punjab and Haryana got stuck in the lockdown. As all work was stalled, they could barely earn any money. Whatever little money they made in the early period was all gone in maintaining the minimum necessary in the shutdown.

On the one hand, the reverse migration created widespread labour shortage in states dependent on them; on the other hand, their arrival to home states created the fear of joblessness in rural areas. Punjab witnessed acute labour crunch across economic sectors. Farmers from Punjab and Haryana depend on the skilled farm and cultivation knowledge of migrant labourers for the paddy. Their expertise is recognised, particularly in paddy transplantation requiring labour-intensive
backwards walking in the paddy fields, which is not matched by the locally available labour (Chaba, 2020). Feeling the heat, this Kharif season in June–July, many farmers offered train tickets, increased wages and additional incentives to bring workers back (Vasudeva, 2020). Labour shortage pushed the farm wages for paddy planting to Rs6,000 per acre in Haryana and Punjab, and hence, in many fields ‘direct seeding rice’ method was adopted which does not require transplantation of rice seedlings (Sally & Ghosal, 2020). The state of West Bengal, the top rice producer, contributing 15% of India’s total rice production, witnessed a 50% increase in labour cost. Although, with looming uncertainty about regular income, many workers were likely to return soon to work in the cities.

The deterioration of the food and nutritional security during pandemic immensely impacted workers. With almost 90% of India’s workforce engaged in the informal economy, about 400 million workers had been at risk of falling deeper into poverty during the crisis in India (International Labour Organization, 2020). According to a report by Food and Agriculture Organization (FAO) and collaborating UN agencies, a global deterioration of food and nutritional security has been marked in the times of Covid-19 because of a shift towards processed packaged products and poor diet (FAO et al., 2020). The lack of accessibility and availability of food resulted in a vicious cycle of malnutrition, heightened risk of disease infection and death in poor sections of society; women and children being the most affected among them. First, the loss of livelihood resulted in further cut-down in nutritional food intake of workers. Second, with sealed borders and extremely restricted mobility, the food and essential utility goods could not move and became unavailable. The interruptions of supply chain resulted in massive wastage of food products such as milk and eggs, rise in consumption of highly processed foods and the collapse of markets, ceasing livelihoods of millions of producers worldwide (Richardson, 2020). Grains, vegetable, milk and other edibles in the supply chain of agribusiness could not move from the urban hubs to distant places nor did the supply from the rural regions reach the urban areas, accentuating the crisis. The failing of the healthcare and food supply chain became more noticeable in all the countries in the times of Covid-19 because of their over-reliance on international sourcing of items, movements of food and medicine in extended supply chains (Nabhan, 2020).

To address the severe food shortages and rural-agricultural distress, the national and the state governments implemented some initiatives to revive and restore the economy and society. Although the central government has enacted some schemes aimed at enabling good nutrition among the population much before Covid-19 times such as Poshan Abhiyaan (National Nutrition Mission), Eat Right India, Millet Mission and Swachh Bharat Mission, the need is to address the issue of food insecurity particularly arising from the pandemic situation (Padhee & Kane-Potaka, 2020). Along with these policies, several stimulus for allied sector of agriculture were offered by the government, for example, a package of Rs15,000 crore was set up under Atmanirbhar Bharat, Animal Husbandry Infrastructure Development Fund (AHIDF), a package of Rs13,343 crore for National Animal Disease Control Programme (NADCP) for five years, a package of Rs10,000 crore under Prime Minister Formalisation of Micro Food
Processing Enterprises (PMFME) to be used over the period 2020–2025, issuing of 44,673 Kisan Credit Cards (KCCs) to fish farmers, and so on (Government of India, 2021). Additionally, under the programme of Pradhan Mantri Kisan Sampada Yojana, the government aimed at creating various mega food parks, integrated cold storage chain and value addition infrastructure, agro-processing, food processing, and so on.

In order to manage the food situation, the government increased the minimum support price (MSP) of wheat and paddy to provide security and relief to the farmers. The National Food Security Act (NFSA) and the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) scheme were at the forefront of allocation of food grains. Another fruitful way towards ensuring food security is to strengthen the earlier employment opportunities under existing schemes like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). With the sudden increased stress in rural hinterland, the centre increased its budget allocation in MGNREGA by allocating additional ₹40,000 crore under fifth tranche of Covid-19 stimulus to generate more employment for the workers in rural areas this year (Sharma, 2020b). In their native places, the migrant workers could be engaged with watershed programmes of traditional crop cultivation aided by separate budget allocations in the rainfed agricultural areas. This will not only provide livelihoods to the workers but will also make agriculture resilient as traditional crops such as millets, oilseeds and pulses require minimum external inputs and are tolerant to the weather conditions.

The distribution of cereals allocated by the Centre under the Covid relief package emerged as a great saviour for the workers. Schemes such as PMGKY distributed grains through the government’s Public Distribution System (PDS) and cash-based aid via Direct Benefit Transfers to widen the safety net for the most vulnerable. There is also an ongoing initiative to create an Integrated Management of Public Distribution System (IM-PDS) in the form of ‘One Nation One Ration Card’. The announcement of higher quota, advance quota for distribution widened the scope of PDS and proved the significance of schemes like National Food Security Mission (Kulkarni, 2020). Under Atmanirbhar Bharat economic package, 8 lakh metric tonnes of free food grains were distributed to eight crore migrant workers, providing 5 kg of grain per person and 1 kg of pulses per family every month even for those not having ration cards (Johari, 2020). However, these initiatives should have been backed by supplementary initiatives such as wider dissemination of information about schemes, elevation of coverage of PDS, Integrated Child Development Services Scheme ICDS, Midday Meal Scheme (MDM), hygiene and sanitation drive among migrant workers and better documentation regarding them (Gupta, 2020).

On the distribution front, rather than focusing exclusively on unilinear agribusiness market models, the government promoted diverse small Farmer Producer Organisations (FPOs) as they could directly deliver to consumers. By the past two months of April and May 2020, despite the lockdown, there were some local supply chains that operated successfully. For example, Mokshagundam Vishweshwarayya Farmer Producer Company Limited (MVFPCL), in Chikkaballapur district, Bengaluru, helped farmers and customers
connect by purchasing fruits and vegetables from 40 farmers and selling five tons of produce to 200 consumers in April 2020 (Shastry & Bose, 2020). Especially for perishable food products, online sales, linking local farmers with local customers would work efficiently. These efforts of the government seemed a welcome move in this direction, though a lot still was left desirable.

At the distribution front, the government tried to boost agriculture by proposing reforms for the agricultural market in form of three Acts: the Farmers’ Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, the Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Act, 2020, the Essential Commodities (Amendment) Act, 2020. Agriculture Produce Market Committee (APMC) Act was amended to create an ecosystem enabling the farmers to avail multiple trading options. Under the proposed Act, direct purchase by exporters, processors, food supermarkets and other traders of farm produce were to be allowed along with permission for contract farming and storage of grains and edibles on a large scale by revising the Essential Commodity Act, 1955. While some agricultural experts like Ashok Gulati (former chairman of the Commission for Agricultural Costs and Prices, GoI) are very hopeful of advantages for the farmers from such reforms,² many farmer organisations and mobilisations like Jai Kisan Andolan under Yogendra Yadav have been protesting against these Farm Bills.³ The country witnessed very strong and continued farmers’ protest demanding the repeal of these laws due to the fear of strong agribusiness interest overpowering the hapless farmers. They feared that the liberalised market would further consolidate the hegemony of corporate and private investment and farmers may end up receiving less than MSP. There were serious concerns for small farmers arising from these radical shifts, and it was still to be seen how these laws would unfold in future. However, the real assessment would be possible when the fine prints of the new arrangements are actualised on the ground.

Towards the Post-Covid-19 India: Rethinking Contemporary Food and Farming Systems

The overwhelming food crisis in pandemic foregrounds the crucial questions about food security,⁴ which inevitably is linked to the issues of food and farming and needs to be examined from a fresh perspective. It is only in light of Covid-19 that the world is increasingly realising the exigency of transformation of our food systems to ensure food security and to entrench sustainable development. By exposing the limitations of overdependence on the globally integrated markets, the lockdown has made us closely realise the fragility of contemporary food systems, modelled on centralised mass production and distribution chains.

The root cause of the vulnerabilities can be understood to a great extent by revisiting the historical legacy of our modern food system as discussed in the first section of this article. Since the 1960s, the idea of mass production and distribution caught up with agricultural scientists and policymakers so much so
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that already the existing diverse local farming practices have been side-tracked (Kumar, 2019). While the contribution of the Green Revolution in ensuring food sufficiency is widely acknowledged, the unintentional externalities arising from this process were ignored, accepting them as necessary evil. Consequently, in the long run, increasing monocultures of a few cereal crops reduced our rich agrobiodiversity, eroding the precious genetic pool of the crops. The sustenance crops, despite their superior nutritional components and palatability, were marginalised.

The corporate-led agricultural intensification benefitted private agribusiness which controlled the capital and technology in agriculture. The state supported production paradigm projected overproduction as remedy of food insecurity, making entire agricultural system as pro-agribusiness, not pro-poor or pro-farmer (Altieri & Rosset, 2016).

However, this vision of agricultural development appears unsustainable and needs urgent revision in wake of fast depleting non-renewable resources. The Covid-crisis reinforces the requirement for paradigm shift more than ever as diversified and resilient agroecological food systems are the way forward. In the case of the lockdown, when the entire economy came to a halt, the farm economy was the only one still operating (Sharma, 2020a). Food system problems such as supply chain obstruction, weakening the already fragile food security and wastage caused by failed distribution occurred due to the very structure of our current food system. The centralised, homogeneous, trade- and export-oriented neo-liberal market-led frameworks are extremely fragile in the wake of such calamities (FAO, 2003). On the other hand, the local production and consumption systems are resilient, secure, sustainable and more responsive to the people in unforeseen contingencies. Not only the pandemic crisis but also the local system holds solutions to grave negative externalities to the agricultural production system such as climate change and extreme weather conditions.

In this context, agroecological farming appears as the most appropriate solution. Presence of diverse systems of production and distribution ensures systemic stability minimising chances of simultaneous failures of different supply chains (Altieri, 2010). The lockdown has proved that local production and distribution are resilient and are better capable of managing crisis. The resilient system develops a network of relatively independent and self-reliant nodes as in case of local production so that the failure of one node does not imperil the entire system (Worstell, 2020). Local food production employs agroecology and produces in symbiosis with the local ecosystem. The higher the self-reliance of a food system, the lesser will be the impact of global disruptions. In fact, there is an emerging global consensus in favour of the paradigm shift to diversified and resilient agroecological food systems as resonated by a panel report by World Economic Forum (2020). The report also calls upon countries to collaborate for the restoration and enhancement of biodiversity and sustainable food systems. One example of such a collaborative effort is the establishment of ‘One Planet Business for Biodiversity’, an action-oriented business coalition on biodiversity launched at the United Nations Climate Action Summit in New York on 23 September 2019. A coalition of 20-member nations, this is a platform formed by the world’s most significant food and beverage companies for creating
a sustainable food system. Indian policymakers and business houses should also align more towards such global initiatives for discovering new channels of sustainable and diverse production and distribution systems to proactively conserve all kinds of biodiversity.\textsuperscript{12}

**Conclusion**

In conclusion, it may be remarked that there is a need of concerted effort for creating a robust safety net for the vulnerable migrant workers to equip them with a better mitigation capacity for Covid-19-like crisis. Effective regulations, better documentation and broader social security coverage would help alleviate adversities created by pandemic efficiently. In such a situation, food and nutritional security is worst hit among migrant workers. The problems of access and availability of food gets amplified owing to the centralised structure of production and distribution systems. There is also a need of gender-specific interventions with enhanced provision of maternal health and childcare.

The way forward is to make the food system and agriculture resilient and sustainable. A long-lasting food and nutritional security would require a fundamental reorganisation of not only agricultural production and consumption systems but of existing economic and social structures as well. The adoption of the principle of ‘produce locally, consume locally’ will not only stabilise the supply chains but will also better ensure issues of food security among all sections of the society and would put the control of food back in the hands of the people. These changes would be possible through more reliable platforms of FPOs and Self-Help Groups. National Bank for Agriculture and Rural Development (NABARD) and Small Farmers’ Business Consortium (SFBC) have already been working on this front with 7,000 registered FPOs in the country under Farmers Producers’ Companies Act, 2013 (see Rani & Divakar, 2020).\textsuperscript{13} In this way, repositioning of the food system by emphasising diverse grassroots initiatives and supporting them with conducive policies will ensure greater food security, making the system more inclusive, democratic, sustainable and resilient. It will also help create better livelihood avenues for workers in the rural and remote areas, making them less likely to be forced to migrate to distant places.

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Notes

1. According to the data on migration, the inflow is directed towards states with higher per capita income such as Delhi, Haryana, Punjab, Maharashtra, Gujarat and Karnataka; whereas low per capita income states such as Bihar, Uttar Pradesh, Jharkhand, Rajasthan and Odisha witness out-migration. Among all states in India, Uttar Pradesh, Bihar and Jharkhand are the states from where the largest number of workers migrate; whereas Maharashtra and Delhi are the states that receive the largest inflow of the migrant workers, as noted by the Census of India 2011.

2. Refer to interview of Ashok Gulati by Jyoti Malhotra, *The Print* available at https://www.youtube.com/watch?v=aaYGqBKAUj8

3. Swaraj India president Yogendra Yadav and other farmer leaders from various states have strongly criticised the Farm Bills. For details refer *The Hindu* (2020).

4. Food security denotes the availability and access to sufficient, nutritious and culturally preferred food (UN’ Committee on World Food Security, 1974).

5. The enormous paraphernalia of business opportunities around centralised mass production offered opportunities for excellent profit margin to the private food industry. It enabled the companies to collect vast stockpiles of grains for supplying to the food chain and eateries run by the cartel of agribusinesses. Generally, the surplus produced is siphoned to profitable trade destinations.

6. Agroecological farming denotes a practice of farming which is in sync with the local climate, and the natural ecosystem of the region. It reconciles the scaling up of food production with ecological balance in decentralised and diversified ways. The widely prevalent view that such alternative farming systems will not achieve food sufficiency is misinterpreted.

7. Self-help groups like *Gram Disha Jaivik Samooh* from Baag village Karsog, Himachal Pradesh, did not suffer loss due to their local production and supply systems. For details refer Rohit Parashar (2020).

8. In some sense, the roots of Covid-19 health crisis have emerged from the folds of our food system. The aggressive expansion of commercial agriculture caused massive deforestation leading to increased human–wildlife interaction, resulting in a spate of infectious diseases such as HIV/AIDS, SARS, Ebola, Nipah since the 1940s and Covid-19 in recent times. Similarly, intensive livestock farming, particularly pig farming, is believed to have given rise to lethal zoonotic diseases transmitted across species due to their confined rearing and genetic homogeneity (GRAIN, 2020). Covid-19 is believed to have invaded humans due to decreasing inter-species distance and from loss of bat habitat.

9. The promotion of local sustainable systems is finding echoes in government also, for example, recently Deputy Managing Director, NABARD, P.V.S. Suryakumar wrote an article emphasising the same. For details refer PVS Suryakumar (2020).

10. For details see World Economic Forum (2020).

11. ‘One Planet Business for Biodiversity’ is an international cross-sectorial, action-oriented business coalition on biodiversity with a specific focus on agriculture. For details kindly refer https://op2b.org
12. For detailed discussion see Sustainability Next (2020).
13. Such initiatives would enhance the economy and empower the marginal women farmers. For example, the condition of mandatory incorporation of a lady director in the board of a farmer producer company makes it eligible for equity grant of ₹15 lakhs.

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