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Dual impact of COVID-19 pandemic on farming community

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Abstract

The COVID-19 pandemic, unprecedented in both scale and scope, brought far-reaching disruptions to the agricultural sector in India, particularly affecting rural livelihoods and farming communities. This research investigates the multifaceted effects of the pandemic-induced national lockdown on agricultural households, with a focus on three states: Andhra Pradesh, Telangana, and Maharashtra. The study employs both quantitative and qualitative methodologies to analyze changes in agricultural productivity, access to essential inputs, market participation, wage income, and food security among 500 farming households from 30 districts. Findings reveal that the pandemic disproportionately impacted vulnerable segments such as landless and smallholder farmers. Disruptions in labor availability, transportation, and input supply chains led to delays in harvesting, increased post-harvest losses, and heightened costs of cultivation and logistics. The majority of landless farmers (only 47% could harvest) faced greater economic insecurity, while smallholders struggled with market closures and reduced income opportunities. In contrast, medium and large farmers demonstrated relatively higher resilience, partly due to greater access to resources, mechanization, and better education levels. In terms of input availability, the supply of seeds, fertilizers, and pesticides experienced sharp declines-most notably in Andhra Pradesh and Maharashtra-while Telangana showed adaptability through increased use of rental agricultural machinery. The allied sectors, including dairy, poultry, and fisheries, also suffered major setbacks, with fisheries facing the steepest decline in production. Wage-based rural employment plummeted, with an average household income loss of over 70%, further intensifying the rural livelihood crisis. However, the support was unevenly distributed, and many larger farmers lacked access to or information about these programs.

Keywords: COVID-19 pandemic, farming community, farmers, impact

Introduction

Emerging in early 2020, the COVID-19 pandemic compelled India's Government to impose an unprecedently broad and sweeping nationwide lockdown-widely recognized as the world's largest-which affected the lives and livelihoods of about 1.3 billion people from March 25 to June 8, 2020. Although the stringent lockdown was initially aimed at stalling the swift spread of the virus, unintentionally it unleashed a broad spectrum of social-economic repercussions that affected the nation's most vulnerable groups the most acutely. Among them were daily-wage earners, migrant laborers, and the rural farming communities. Confronted with chronic incomes that fluctuated erratically, numerous Indian farmers slipped deeper into economic hardship and food insecurity when swift movement restrictions, suspended economic activities, and disrupted supply chains suddenly ensued.

Low agricultural incomes were already acknowledged before the pandemic as a major developmental hurdle in India. In response, the Government of India had articulated an ambitious policy objective: to double farmers' incomes by the year 2022. Yet the NABARD All India Rural Financial Inclusion Survey (2016-17) demonstrated that the average monthly income of an agricultural household hovered at a modest ₹8,931 (about $118). This income profile leaned heavily on several streams, with 35% coming from crop yields, 34% from wage employment, and about 8% arising from livestock-related pursuits. Any disturbance, and particularly that caused by a nationwide lockdown that would hit these sources of income on the same line, would have damaging impacts on the financial and nutritional safety of the rural families.

In spite of the clear fragilities, a significant dearth of empirical evidence still leaves the broad effects of the COVID-19 lockdown on rural farming households unexamined across a range of dimensions-including agricultural production, livestock-based revenue, wage earnings, food security, and dietary diversity. The issue of knowledge gap is not only essential in creating specific relief and recovery plans, but also, in constructing long-term resiliency and equity in food systems of India.

In addition, the moment the nationwide lockdown was enacted proved especially critical because it coincided with pivotal agricultural operations, including both the harvest and the marketing of Rabi crops. The onset of this crisis simultaneously with seasonal operations further exacerbated the shortages of labor, obstacles to market access, and constraint in the flow of goods and services. Since more than 86% of India's farm households belong to the category of small or marginal landholders, the pandemic laid bare and intensified the pre-existing structural weaknesses of the agrarian economy (Kumar *et al*., 2021) [18]. These highly disruptive outcomes of the lockdown on the agricultural sector demonstrate the value of preemptive policy systems to ensure rural livelihoods are resilient to emergency-level shocks but also in the long-term to ensure food systems are resistant to shocks.

Objectives of the study

1. To know the impact of covid-19 pandemic on farmers
2. To identify the impact of covid-19 on different sectors
3. Prepare agriculture for future pandemics by building resilience, ensuring continuity of farming activities, and protecting farmer livelihoods
4. Government support and livelihoods in participants from agricultural households

Review of Literature

Survey and empirical evidence

Various empirical investigations carried out during initial months of COVID-19 lockdown are crucial to offer an insight into the multidimensional consequences of such a crisis as it can affect food security, farming activities and rural livelihoods in India and in the context of adjacent areas. A survey conducted by researchers of Totapally *et al*. (2020) on 6,915 Below Poverty Line (BPL) households between April 7 and 9 revealed that a large part of the population (43 percent in male citizens and 48 percent in female citizens) was worried about acquiring bare necessities such as groceries. On a worrying note, even a majority of the respondents who had an entitlement to Public Distribution System (PDS) entitlements under the government scheme were not getting their due, especially since there was a lack of logistic-wise capacity to deliver to such an extent with transportation problems and supply gaps staging a major setback.

According to a wider survey done by Vikas Anvesh Foundation (2020) [33] on 5,162 respondents on date 27 April to 2 May it was endorsed that almost a half of the households increased the frequency of the meals consumed in a day and approximately two-third of the respondents stated that they decreased the number of items in daily food. This was regardless of the fact that 84 per cent of the sampled population were getting their food rations under PDS which qualifies the existence of a disparity between the availability and nutritional sufficiency of food. To add to it, Azim Premji University (2020) [3] queried 3,970 rural inhabitants, of whom 331 were farmers, and found that 70% of them were eating less than they normally would. Although 91 percent received PDS benefits and 53 percent cash transfer assistance, many were still unable to properly access adequate and nutritive food. Out of the farmers, 37 percent could not harvest their crops and 15 percent could not market their fruits because of market closure and restriction of movement.

The state-level differences could also be seen in the analysis conducted by Acharya (2020) [27] who found out that 48 percent of households in the state of Bihar and 32 percent in the state of Uttar Pradesh faced food shortages during the lockdown. Harris *et al*. (2020) [10] also gave a more sector-specific vision of a study that investigated 448 farmers involved with the World Vegetable Center in four states. They discovered that more than 80% recorded low levels of sales, 90 percent revealed declines in the farm income levels, and 62 percent indicated negative changes in food consumption levels especially low access to fruits and animal-based foods-the most significant factors with regard to dietary diversity.

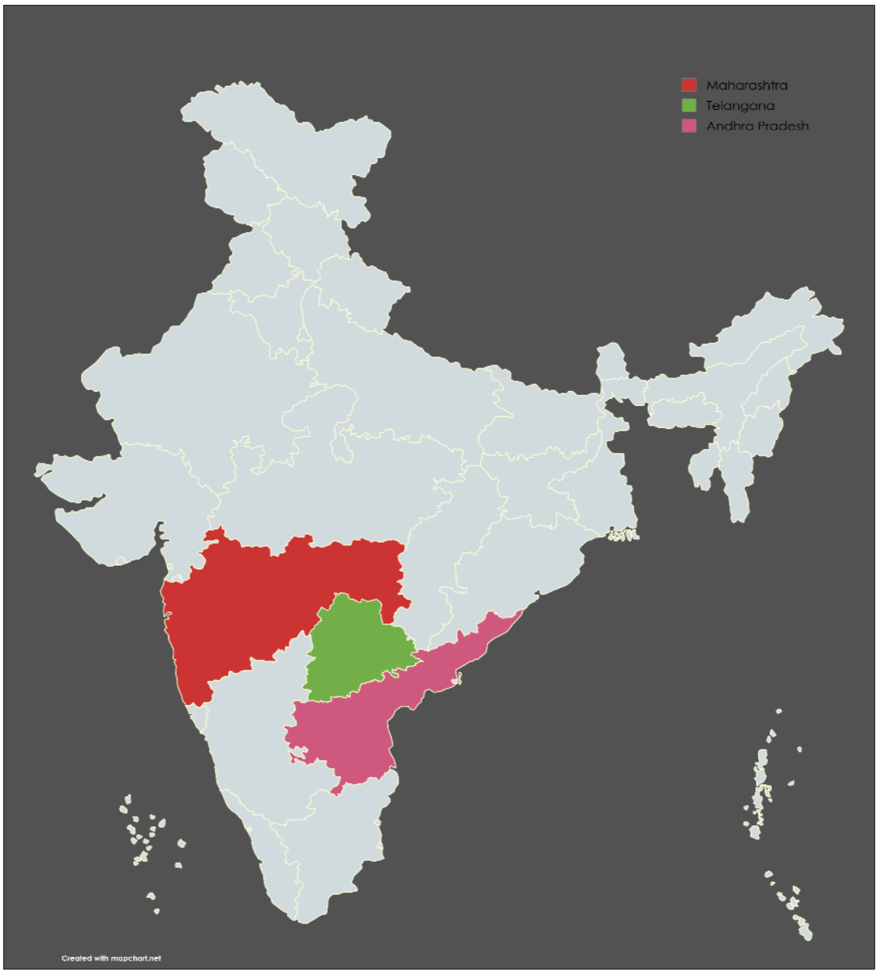
A study by Ceballos *et al*. (2020), analyzed data related to 1,515 respondents who were smallholders in Haryana and Odisha. Forty one percent had more expenses to harvest wheat in Haryana and 61 percent had to store their produce without selling it in the market. Three out of four survey respondents preferred to store black gram due to 74 percent of them reporting high harvesting whizzes in Odisha, 80 percent claimed such high costs. Interestingly, in Odisha food insecurity was also not severe (due to short supply chains, kitchen gardens and effective PDS).

In this study, participants were chosen among the leading agricultural-producing states in India, in terms of an acreage under the food grains (rice, wheat, maize and pulses), oilseeds and commercial crops (sugarcane and cotton). These states are Andhra Pradesh, Maharashtra, and Telangana which are high contributors of the agricultural GDP of India. In these states, thirty districts were selected to cover a wide range of agro-ecological zones and farming systems and the sample from these districts was drawn on the participants.

Respondents had to be adults with an age of 18 years and above, and fathered to an agricultural household to qualify being part of the study. In this study, agricultural households were means by which one of the members owned some agricultural land, harvested a crop in the last month (with or without land ownership), received a wage in agricultural labor (daily or contract), or received income of any of the related activities like livestock or fishing. Those respondents who failed to satisfy any of these criteria were dropped in the final analysis. It eliminated the groups of 19 others, who could not be considered as farmers or agricultural workers.

The original selection of the participants occurred according to already existing statistics as to the patterns of crop farming and the levels of communities relying on agricultural activities highly. The contacts were also tapped into using personal networks, local Gram Panchayats and partner organizations in rural developments and agricultural extension. These organizations spanned sectors including education, livelihoods, women's empowerment, water and sanitation, and nutrition. The process of participant identification in Telangana and Andhra Pradesh specifically depended too much on informal networks of professionals and local area contacts who were knowledgeable of the countryside.

Snowball sampling method was also used to ensure that a more diverse and much wider sampling group is reached. In cases of the former, every first respondent was requested to leave contact details of up to four other farmers in his or her community. There was training of interviewers to include different categories of agricultural households. These were small and marginal farmers, big landowners, women farmers, wage earners and the individuals who participated in allied activities such as dairy, poultry and fish feeds. In this way, the resulting sample of 500 farming house-holds represented a wide range of agricultural livelihoods and regional attributes among the thirty chosen districts of the three states.



Without land, landless farmers were in great trouble under COVID 19 lockdown. Only 47 percent made a harvest and just 37 percent were able to sell any produce and the one-mode left to store and seven percent having waste their crops. Most (67 percent) experienced decrease in their yield, and others incurred extra harvesting costs (27 percent) and transport cost (13 percent). This rise in costs was probably fueled by their low access to the tools and machinery and stable labor, to which they were already vulnerable. Many landless farmers being more engaged in wage work and being less subordinated to crop cycles gave the answer that the disruption will affect the next crop only in 23 percent.

Key Observations:

- **State distribution:** Telangana contributes 49 percent of the sample, Andhra Pradesh 40 percent and Maharashtra 11 percent the disparities between farm sizes are high (p<0.0001).
- **Gender:** The large majority of the respondents are male (92 percent), the female representation is smaller in the large farms than in the landless farms (the female share drops to 3 percent in large farms, compared with 18 percent in landless farms); a remarkably considerable difference (p<0.0001).
- **Age:** The majority (53 percent) of the participants are aged between 30-50, with little representation of the youth. Remarkably, the proportion of the young participants (26%) is more significant among landless farmers (p<0.005).
- **Education:** close to 31 percent have graduation education or above; most educated are large farm owners (36 percent), least educated are landless respondents (12 percent) individually significant to a high degree (p<0.0001).

Table 1: Demographic and socio-economic characteristics of participants from agricultural household

Particulars	Farm size					P value †
	Total (500)	Landless (30)	Small/ marginal (268)	Medium (93)	Large (109)	
States						
Andhra Pradesh	198	21	82	32	33	<0.0001
Telangana	246	3	143	46	18	
Maharashtra	56	6	43	15	58	
Gender						
Male	92%	82%	92%	95%	97%	<0.0001
Female	8%	18%	8%	5%	3%	
Age						
18-30	18%	26%(15)	13%	20%	17%	<0.005
30-50	53%	49%(8)	60%	56%	57%	
50 and above	29%	25%(7)	27%	24%	26%	
Literacy Levels						
Illiterate	6%(25)	25%	7%	3%	9%	<0.0001
Up to Primary	21%(115)	37%	24%	25%	16%	
Secondary	42%(250)	26%	47%	42%	39%	
Graduation and above	31%(110)	12%	22%	30%	36%	

Values are percent (n) or mean (SD) Abbreviations: ha, hectares

* Defined according to land ownership as landless (0 ha), small/marginal farms (0.01-2.00 ha), medium farms (2.01-4.00 ha), and large farms (>4.00 ha) † P value from chi-square test (binary and categorical variables) or analysis of variance (continuous variables) comparing characteristics across farm sizes

Small and marginal farmers who had a land size of between 0.01 and 2 hectares were a bit more resilient. These farmers who have 58 percent of the harvesting ability also portrayed greater diversification of crops such as 21 percent had crops growing vegetables and 5 percent raised pulses crops unlike that of the landless households. But 46 percent had to put their crops under storage as a result of market upheavals and 33 percent were able to sell. These growers also experienced decreases in the yields (66 percent), cost of harvesting (60 percent), and costs of transportation (35 percent), and over half (52 percent) expected to have the effects extend to the following season. These discoveries support those made in national studies, which found that disruptions caused by lockdown to mandi functionality and transport infrastructure had greater impacts on smallholders than on larger ones (Vyas *et al*., 2021; Ceballos, Kannan, & Kramer, 2021) [37, 5].

Middle-sized farmers (2.01-4 hectares) were better off; 67 percent of them used to harvest and 55 percent sold, whereas 33 percent placed it under storage. However, 58 percent recorded losses in the yield, 47 percent increase in harvesting cost, and 46 percent elevated cost of transport. In spite of these hurdles, 60 percent out of these farmers anticipated the effect of the next season. This indicates that the scale effect boosted stability in operations due to greater market connections, but they were also susceptible to constraint within the supply chain, and the same trend was observed by IFPRI (2021) [11], which concluded that the integration into the market made medium-scale producers more sensitive to the effects of systemic shocks.

Big farmers who owned over 4 hectares were the most resilient because 77 percent harvested and 64 percent sold their harvest with minimal storage or losses. However, they did not escape disturbances: more than half (54 percent) lost yield, harvesting expenses were increased in 48 percent, transport expenses shot up in 68 percent, which was higher than anywhere in any other group probably because they called on much longer supply chains. Moreover, 67 percent of them also expected a bad performance in the following season. Better education (36 percent graduate or higher) probably led to a higher consciousness of future dangers and to a more informed planning, which has been demonstrated to be key evidence in the support of research showing an improved adaptive strategy with education and scale (Chetri, Sharma, & Ilavarasan, 2021; Ceballos *et al*., 2021) [6, 5].

Gender and age disparity also influenced outcome across all farms. Large farms were dominated by male led where only 3 percent of female responded and 18 percent were landless respondents were women. Continued indications point out that the female farmers were more exposed to obstacles under lockdown such as limited market access and resources (Overton *et al*., 2023; Kulkarni *et al*., 2021) [26, 17]. Less experienced farmers (who were 26 percent of landless respondents aged 18 30) completed fewer harvests which affirmed the previous knowledge that age and experience increased resilience to sudden shocks (Chetri *et al*., 2021) [6].

Conclusively, factors of far size, education, gender, and age interacted to impinge on the agricultural impacts of the pandemic. Educated, large and male-managed farms were more successful in their harvesting and had better access to the markets and had higher expectations of risks ahead. In contrast, landless and smallholder households and, in particular, households with younger people or women as the head of the household, experienced an accumulation of vulnerability, as they had less ability to harvest, sell, or even anticipate. These results highlight the necessity to invest in specific policy solutions, according to which smallholders should have access to better markets, subsidies on harvest and transportation, gender-sensitive programming, and popularization of education in line with the agricultural policy recommendations (FAO, 2018; Overton *et al*., 2023) [8, 26].

Table 2: Agricultural production in agricultural households

Category	Farm Size					P Values †
	Total (500)	Landless (30)	Small/Marginal (268)	Medium (93)	Large (109)	
Harvested in past season						
Out of season	125 (25%)	9 (30%)	78 (29%)	24 (26%)	14 (13%)	<0.0001
Yes	315 (63%)	14 (47%)	155 (58%)	62 (67%)	84 (77%)	
No	60 (12%)	7 (23%)	35 (13%)	7 (7%)	11 (10%)	
Primary Crop harvested	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Paddy	300 (60%)	20 (67%)	139 (52%)	59 (63%)	77 (71%)	<0.0001
Vegetables	75 (15%)	1 (3%)	56 (21%)	13 (14%)	5 (5%)	
Pulses	20 (4%)	1 (3%)	13 (5%)	2 (2%)	4 (4%)	
Wheat	15 (3%)	1 (3%)	11 (4%)	2 (2%)	3 (3%)	
Maize	15 (3%)	2 (7%)	11 (4%)	4 (4%)	2 (2%)	
Other++	75 (15%)	5 (17%)	38 (14%)	14 (15%)	13 (12%)	
Action Taken	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Sold it	220 (44%)	11 (37%)	88 (33%)	51 (55%)	70 (64%)	<0.0001
Stored it	195 (39%)	7 (23%)	123 (46%)	31 (33%)	34 (31%)	
Trying to sell	60 (12%)	9 (30%)	43 (16%)	7 (8%)	1 (1%)	
Not yet decided	10 (2%)	1 (3%)	8 (3%)	2 (2%)	2 (2%)	
Wasted	15 (3%)	2 (7%)	6 (2%)	3 (3%)	4 (4%)	
Change in land harvested	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Decrease	65 (13%)	6 (20%)	46 (17%)	8 (9%)	11 (10%)	<0.009
Increase	85 (17%)	4 (13%)	48 (18%)	25 (27%)	23 (21%)	
No change	350 (70%)	20 (67%)	174 (65%)	60 (65%)	75 (69%)	
Yield Loss++	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Yes	310 (62%)	20 (67%)	177 (66%)	54 (58%)	59 (54%)	<0.26
No	190 (38%)	10 (33%)	91 (34%)	39 (42%)	50 (46%)	
Change in Cost to harvest $	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Higher	265 (53%)	8 (27%)	161 (60%)	44 (47%)	52 (48%)	<0.0001
Lower	105 (21%)	4 (13%)	56 (21%)	17 (18%)	28 (26%)	
Same	130 (26%)	18 (60%)	51 (19%)	32 (35%)	29 (27%)	
Change in transport cost#	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Higher	215 (43%)	4 (13%)	94 (35%)	43 (46%)	74 (68%)	<0.03
Lower	10 (2%)	3 (10%)	5 (2%)	2 (2%)	0 (0%)	
Same	275 (55%)	23 (77%)	139 (52%)	48 (52%)	35 (32%)	
Impact on upcoming season	**Total**	**Landless**	**Small/Marginal**	**Medium**	**Large**	
Yes	275 (55%)	7 (23%)	139 (52%)	56 (60%)	73 (67%)	<0.0001
No	225 (45%)	23 (77%)	129 (48%)	37 (40%)	36 (33%)	

Values are percent (n) * Defined according to land ownership as landless (0 ha), small/marginal farms (0.01-2.00 ha), medium farms (2.01-4.00 ha), and large farms (>4.00 ha).

† P value from chi-square test comparing characteristics across farm sizes.

‡ Other crops included (in order of frequency reported): fruit, mustard, millet, cotton, groundnut, sugarcane, sesame, flowers, fodder, and silk

$ Change relative to previous harvest of the same crop - Rabi 2019 or, for vegetables, 2020.

No-land farmers translated to landless farmers who are not the owners of the land but were hit the most by the COVID 19 lockdown. These households had a lot of operational challenges given that only 47 percent succeeded to make a harvest and another approximation was around 37 percent sold some produce. They became vulnerable due to high rates of loss of yields (67 percent), extra harvesting costs (27 percent), and high transport costs (13 percent). The fact that they depend on wage labour magnifies this burden allowing them to be affected by both agricultural and income shocks. Interestingly, a very small proportion of 23 percent of landless households saw future implications on the subsequent season perhaps due to availability of earning by other members outside of farming activities which means that they may not personally empathize with the future farming upheavals.

The challenges faced by small and marginal farmers (0.012 h 2ha) were more or less the same, but, less intense. These households also had a more diversified crops and 21 percent of them planted vegetables, 5 percent were producing pulses with a more modest harvest rate of 58 percent. But almost 46 percent were forced to stock up the crop because of the limitation in the market, and 60 percent had to bear additional harvesting expenses. Thirty five percent were impacted on transport cost increase, and over a half (52 percent) expected consequences on the next season. Such patterns reflect common developments in India, where smallholders were adversely affected by both lockdown-related closures of mandis and logistical changes in the system (Vyas *et al*., 2021; Ceballos, Kannan, & Kramer, 2021) [37, 5].

Better results were realized by medium sized farmers (2.01-4 ha) of which 67 percent of farmers completed harvests and 55 percent made the successful sale of their produce. However, a number of people were hit by the decline in yield (58 percent), increase in cost of harvesting (47 percent), and rise in cost of transport (46 percent). This is probably because of their heavy involvement in cropping and participation in the market which might have increased their expectations of a future influence (60 percent). It is in line with the research by the International Food Policy Research Institute (2021) which found the exposure to the market by the medium scale farmers made them more aware of the vulnerabilities within the system.

The highest resilience rates were found in large farmers (>4 ha); there was a 77 per cent crop harvested and 64 per cent crop sale rate using scale and connections. However, they had experienced the highest transport price increments (68 percent) and twenty five percent of them had suffered yield losses. However, at an astounding degree of 67 percent, they also forecasted future outcomes on the following cropping season which is due in part to their greater level of education (36 percent of them graduated or passed higher in Table 1). This is in line with the fact that education and scale will increase the risk awareness of the farmers and enable them to adopt adaptive practices (Chetri, Sharma, & Ilavarasan, 2021; Ceballos *et al*., 2021) [6, 5].

Based on farm size patterns, there is an overlapping situation with gender and education differences. The large farmers were predominantly male dominated with only 3 percent female respondents and the landless households were more likely to have female representation (18 percent). Evidence shows that women farmers encountered more challenges in grass-root accessibility to the market, land possession, and leadership in the time of COVID 19 (Overton *et al*., 2023; Kulkarni *et al*., 2021) [26, 17]. This must have limited female smallholder who are already disadvantaged as they obtain lower education and less control of assets (FAO, 2018; Overton etpton tround., 2023) [8, 26].

The small farmers who owned no land (26 percent) were younger (18 to 30 years), less experienced, and less educated and harvested fewer crops than the old and more experienced medium and large farmers. The previous literature indicates that young people and low education hamper the processing of abrupt shocks because they lack access to resources and knowledge (Chetri *et al*., 2021) [6]. Simultaneously, because large farmers rely on long supply chains, they have higher transport costs; however, being reliant on long supply chains allowed large farmers to continue operating in the marketplace, whereas small farmers had to resort to storage, or lose their products.

In brief, the combined analysis is showing that land size, education, sex and age overlap in affecting the agricultural outcome in times of crisis. The educated male dominated and large households were more resilient in accomplishing their harvest, penetrating the market and making plans ahead. On the other hand, landless and small holders, particularly, the lower-educated and female-headed households were still at risk with little ability to harvest, market, or plan. This explains why the policy interventions on smallholder resilience require policy work on better markets access, transport subsidization, inclusion of genders, and educational outreach (FAO, 2018; Overton *et al*., 2023) [8, 26].

Noticeable Farm Size Findings

1. Crop harvest

63 percent are harvested all in all; landless and small farms are withheld (47-58 percent), whereas medium and large farms perform better (~6777 percent).

2. Primary crop

There is a domination of paddy (60%), and small farms are not inclined to grow it and are more diversified.

3. Disposal of crops

The large farms placed a higher propensity to sell (64%), and small/marginal were in a greater tendency to store (46%). A portion of landless households make sales but 7 percent of them destroy their crop.

4. Used land

Farm size had no consistent difference in rate; all decreased 13 per cent.

5. Yield loss

Speaking of great losses (62%), regardless of sizes.

6. The rise of harvest cost

Over half (53%) rounded off with increased expenditures; especially, they are small farmers (60%).

7. Rise in transport cost

About 43 percent; the most in large farms (68 percent).

8. Next season effect

Fifty-five percent expect that there will be negative effects, which rise in proportion with the size of the farm (Those without land least affected at 23%, those with large farms at 67%).

Summary and Conclusion

The lockdown caused due to the COVID-19 severely and disproportionately affected landless farmers, increasing the problems facing an already vulnerable portion of India. These are smallholder farmers who lack agricultural land and they normally rely on daily wage employment or tenant farming and therefore have less access to productive assets such as seeds, tools, loans, and markets. The lockdown limitations broke the chain of the whole agriculture, which gravely impacted their chances of sustaining livelihoods. Based on the statistics, 47 percent of landless farmers were able to finish the harvesting period during the lockdown. The shortage of labor, the impossibility of movement, and the impulse of tools and equipment were some of the key factors that became the contributors to this disruption in the harvesting. It is important to mention that landless cultivators often do not have access to these resources even during an average situation. Of the population growing crops only 37 percent of the farmers managed to sell their crops in the market. The other ones encountered several obstacles. An approximate 23 percent of the landless farmers were also compelled to store their harvest produce amid lack of transportations, markets, or closure of local mandis (markets), wheresofre 7 percent of the farmers had their entire harvests spoilt simply because they were incapable of storing or selling their harvests on a timely basis. These numbers indicate the significant disturbance in the market linkages, which play an important role in the income generation. Also, approximately, 67 percent of the respondents encountered substantial losses in yields. These losses not only occurred because of climatic or biological reasons and were further worsened by the lockdown-induced restrictions of labor, delayed harvest and limited input use. Increased harvesting costs affected 27 percent of farmers and a spiking transport expense influenced 13 percent. This increase in price was directly connected with the labor and equipment shortage where lots of employees have migrated to their home states and transport was less available or costly. The fact that they were not mechanized also caused the operations to be very expensive and required a lot of manpower rather than men, something that made the farming activities survive so badly in this era, especially by landless cultivators.

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