
Impact of Covid-19 Pandemic on Short Period Markets of Meghalaya

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The present study attempts to estimate price gap and losses of various vegetables in short period market NEPA in Meghalaya. The inferences are drawn based on comparison of price from data collected using primary and secondary sources on five vegetable crops namely potato, tomato, brinjal, cabbage and ginger during lockdown period with preceding normal year. Weekly data of lockdown period has been used in the analysis of price variation and losses. The results of the study indicated that during time of lockdown of covid-19 the Government of India and in particular Government of Meghalaya have taken several measures to reduce losses and price difference of different agricultural crops which proved insufficient to overcome these problems. The marketing of vegetables of short period market was greatly affected by the pandemic and most of retailers reported to have sold their produce at half of the previous year's price resulting in huge losses. Among the five crops studied, huge losses have been incurred in marketing of ginger because arrivals were high and price was low which created price gap and huge losses to producers. The losses incurred for the other vegetable crops were less intense due to less amount of market arrivals.

Impact of COVID-19 on Onion Prices and Volatility Across Spatially Separated Markets of India: Evidence from Regression Discontinuity Design

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The paper aims to examine the persistence of volatility in onion wholesale prices across states in the pre and post-lockdown period. For the purpose the estimates of the immediate impact of COVID-19 induced lockdown on the onion wholesale prices across 11 states in India have been worked out using Regression Discontinuity (RD) design. The study uses the daily weighted average wholesale onion prices from 1 February 2019 to 30 June 2020 to compare the price volatility during same months in the pre (2019) and post lockdown (2020) period using GARCH model. The volatility persistence for most states was extremely high in the post-lockdown period. In case of Maharashtra, Rajasthan, Punjab, Kerala and Himachal Pradesh, it was nearly same or slightly lower than 2019. The RD estimates show that COVID-19 restrictions had a significant positive impact on the wholesale prices right after the announcement of

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lockdown. Among major producers, a significant rise in prices of the magnitude of 32 per cent, 18 per cent and 9 per cent was reported for Gujarat, Maharashtra and Madhya Pradesh respectively. The states like Kerala, West Bengal and Odisha also experienced a significant surge in the wholesale prices within a range of 11-31 per cent. Major onion importing states like Punjab and Uttar Pradesh remained relatively unaffected in the immediate period after lockdown. However, Haryana on the other hand, did witness a significant price rise of 10 per cent. The findings of the graphical analysis showing a sudden discontinuity in the prices around the date of commencement of lockdown are also in line with the estimated impact. The results obtained are consistent with the various robustness checks applied to the model. The findings of the study further strengthen the argument that COVID-19 restrictions caused serious supply chain disruptions immediately after lockdown leading to a short term price spike of the essential commodities like onion.

Impact of Covid-19 on the Vegetable Farmers – An Empirical Analysis in the Rural Areas of Barpeta District in Assam

Deluwar Hoque* and Chandan Hazarika**

An attempt is made to examine the impacts of COVID-19 pandemic and restrictive measures of social isolation or lockdown on the farmers producing vegetables in the rural areas of Barpeta district in Assam. The primary data are collected from the targeted respondents through telephonic interview method of data collection during the months of May and June 2021. Using random sampling method a total sample of 60 respondents consisting of 20 respondents from each of three development blocks, namely, Mandia Development Block, Gobardhana Development Block and Rupasi Development block were selected from the study district. The study revealed that there is a huge decrease in income of the farmers after the Covid-19 pandemic. All the sample farmers in the study area have faced many problems in transportation and selling of vegetables produced by them as the government has imposed strict restrictions on the business hours in the market places both in urban and rural areas in addition of the restrictions on the transportation and movement of people from one place to another. Overall the strict lockdown and other measures have hampered the supply and selling of vegetables produced by these and adversely their income and livelihood in the study area.

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Impact of Lockdown Due to COVID-19 on Prices of Pulses in Major Markets of India

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The COVID-19 pandemic has impacted almost all the sectors including agriculture in the country. The present paper investigates the impact of COVID-19 induced lockdown on both wholesale and retail prices of major pulses in India. The daily wholesale and retail price data on five major pulses, namely, lentil, moong, arhar, urad and gram are collected for five major markets in India, namely, Delhi, Mumbai, Kolkata, Chennai and Hyderabad during the period January, 2019 to September, 2020 from Ministry of Consumer Affairs, Food and Public Distribution, Government of India. The Government of India declared nationwide lockdown since March, 24, to May, 31, 2020 in different phases in order to restrict the spread of the infection due to COVID-19. The results indicated that the lockdown had a significant impact on both the wholesale and retail prices of pulses. Among the studied markets, Mumbai has seen the highest increase in retail and wholesale prices, followed by Chennai during the lockdown period. Delhi had the lowest price increases for both retail and wholesale, followed by Kolkata. In case of pulses, due to lockdown, gram is the least impacted, followed by lentil, and urad is the most affected, followed by moong. For arhar, the lockdown has a comparatively modest effect. The imposition of lockdown not only impacted the price of pulses but also its volatility significantly. The inclusion of lockdown as exogenous variable in both mean and variance equation of fitted model could effectively capture the variation in prices across the different markets. In future study, the other variants of GARCH model including machine learning techniques may be applied to model the volatility in agricultural commodity prices.

Income Inequality Decomposition by Sources and Factor Components Among Agricultural Households

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In the paper an attempt is made to measure and decompose income inequality among agricultural households by sources and factor components for the agricultural year 2018-19 in South coastal region of Andhra Pradesh state with the hypotheses that livestock is a major source and value of farm assets is major factor component to increase income inequality among agricultural households. The study employed regression based inequality decomposition (RBID) method to identify the factors that

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contribute to income inequality among agricultural households. Gini and Atkinson indices shown higher values for off-farm activity, however Theil and Mean Log Deviation (MLD) indices shown higher values for cultivation. The decomposition of Gini coefficient by income sources revealed that across the income sources of agricultural households, livestock and agricultural wages have a larger equalising effect and cultivation and off-farm income have an un-equalising effect on income distribution. Among the factors examined to explain income inequalities, size of landholding, size of operational holding, non-farm income earning members, total number of animals, dependency ratio and age of the household head contributed maximum inequality share across different income sources with considerable differences in their share in each income source. The findings suggested that livestock and agricultural labour market can serve as potential sectors for marginal and small farmers to enhance income and minimise income variability across landholding categories.

Economic Impact of COVID-19 Pandemic on Dairy Farmers: A Case Study of Kozhikode District of Kerala

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Dairy sector have been affected due to supply chain breakdown and demand uncertainties during the COVID-19 lockdown. In this context an attempt has been made to assess the multi-dimensional impact of the crisis on dairy farmers based on primary data collected from 200 farmers of Kozhikode district in Kerala. Drop in milk prices and dry fodder shortage emerged as the major problem during the pandemic. The dairy farmers suffered an average loss of Rs. 7,175 per milch animal. Around 49 per cent of the total loss was incurred due to decrease in returns which was followed by loss due to missed artificial insemination. Consumers hesitated to purchase milk directly from the farmers due to fear of COVID-19 and preferred packaged milk owing to which the dairy farmers selling milk directly to the consumer households were affected more than the ones supplying milk to the cooperatives. On the basis of herd size categories, large farmers suffered highest losses (Rs.9,832/milch animal). Search for new consumers, preparation of ghee from surplus milk and preparation of feed mix at home were the main coping strategies adopted by the farmers. The study may prove helpful to the policy makers not only for the present pandemic but can also help in better preparation for combating similar crisis in future.

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Obstacles Faced by the Farmers during COVID-19 to Diversify Crops in Odisha

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The study explores the obstacles faced by the farmers during pandemic to diversify crops in Odisha. For the purpose primary data have been collected from 140 farm households through telephonic interview during the period of mid March to mid June 2021. The degree of crop diversification with farm households is measured using the Simpson diversified index. Further, the Tobit model is used to examine the hurdles faced by the farmers to diversify crops during COVID-19. The mean diversification index is 0.70 and this shows a very high degree of crop diversification. The Tobit regression model shows that crops diversity is significantly and negatively influenced by age of the household, sold of harvested crops, yield loss, change in harvest cost, change in transportation cost, labour issues, market distance and restricted field working hours. On the contrary, education of the household, farmer's landholding size and harvesting during pandemic are found significantly and positively associated impact on crop diversification. However, the study recommends for widespread awareness campaigns through the social media and television which includes promotion of available services of government schemes, crop loans, processing of crops, and the COVID protocols of social distancing in market and in farms as well.

Impact of Pandemic on Income, Employment and Consumption Pattern of Migrants: An Evidence from Chhattisgarh

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The paper aims to explore whether pandemic has any impact on income, employment and consumption patterns before and during the pandemic period on migrant labourers in Chhattisgarh. The data for the present study have been collected from different villages of the Mungeli district of Chhattisgarh where workers migrated from their place. In all, 150 migrant workers were selected randomly comprising 90 landless workers, 30 marginal and 30 small farmer's categories. The primary data were collected for two-points of time, i.e. pre COVID period 2019-20 and COVID period 2020-21. The findings of the study clearly indicate that the pandemic had profound impact on the pattern of livelihood of migrant labourers in

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the study area. In the pre-Pandemic period, overall income was Rs. 104292.0/Year which was much higher as compared to the pandemic period of Rs. 73606/year. In pandemic period major shift was observed towards healthy food consumption. It was also observed that in the pandemic period the expenditure on non-food items drastically changed in all the categories of households. The major causes of migration reported by selected households were include getting high wage and employment, mitigating poverty, large family size, small size of holding, pay-off debt etc. Staying healthy remained the preferred choice of consumers during pandemics. Job loss reduction of income, reduction in the capability to spend are some of the major impacts of pandemic in the study area. A need is emphasised on interventions in the form of direct supplies of essential food items and cash doles will ensure the food security of the poor during the Pandemic situation.

The Covid 19 Pandemic and Agriculture in Rural Punjab: Observations from Punjab Villages

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The present study attempts to identify and assess the impact of the pandemic induced economic slow-down on agricultural production and marketing in the state of Punjab along with mitigation strategies followed. A total of six districts representing three diverse agro-climatic zones with different cropping patterns in the Punjab state were selected, i.e. one from sub-mountain undulating zone (Hoshiarpur); two from central plain (Tarn tarn) and (Sangrur) and three from western zone (Moga, Firozpur and Sri Mukatsar Sahib). Data were collected from 100 farmers of different farm categories from 10 villages from diverse agro-climatic zones representing different cropping patterns. It was observed that the area under paddy crop increased (+1.03 %) while it declined in case of cotton and sugarcane due to labour shortage. Fall in paddy area was observed in case of marginal, small and semi-medium farmers only and these categories resorted to the use of family labour for paddy transplanting to evade high local labour charges while the medium and large farmers opted for DSR. A sharp increase in the cost of cultivation for *kharif* crops due to increase in cost of labour wages, material inputs, fuel and rental charges for machinery was observed. The human labour wages for paddy transplantation increased non-uniformly across the villages from 23 per cent to as high as double the wages and this wage hike was more in the villages with lower wage rate during *kharif* 2019. The number of farm households in the village bore a negative relationship with the wage increase whereas there existed a positive trend in paddy area across low, medium and high wage increase villages. The seed price rose by about 10 - 38 per cent for paddy; by about 5 - 18 per cent in cotton and no change urea and DAP prices was reported during the

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lockdown. Marginal and small peasants, were disproportionately affected due to an increase of 16 per cent in diesel price in Punjab in June, 2020. Different mitigation strategies and farmer's initiatives which helped the farmers to defeat the covid challenge included coupon system for marketing of the *rabi* produce; employment of local unemployed labour and family; relaxation in Government norms related to dates of sowing and transplanting paddy and adoption of improved technology like DSR.

Impact of COVID-19 on the Dairy Farmers of Assam: A Micro Level Study

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The COVID-19 pandemic resulted in being the greatest global humanitarian challenge the world has faced since World War II. All the sectors of the Indian economy were badly affected by the pandemic and the dairy sector in the rural areas was no exception and was hit hard by this pandemic. A study was undertaken with the objective of analysing the impact of COVID-19 on the dairy farmers from two districts, i.e., Kamrup (rural) and Kamrup (metro) of Assam. The two districts were selected purposively and a total of six blocks and 12 villages were selected from the districts purposively based on the number of cattle population. A total of 90 respondents were selected using random sampling proportionate to the population size and data was collected using personal interview method with a pre tested questionnaire and a phone survey. The study concluded that the farmers experienced mainly three types of problems, vis-à-vis production and transportation, sales of milk to processors and the financial problems of the farmers. The study also reported that 88.89 percent of the farmers had to accept a reduced price for the milk produced and the farmers undertook several measures to reduce the milk production to prevent the excessive losses. Lack of planning and preparation by the central government for tackling the COVID-19 pandemic in the initial phases has dealt a massive blow to the dairy sector and has caused enormous hardships to the people who depend on it for an additional source of income. Either expanding demand through consumer awareness or increasing exports from the country, as done by many developed countries would enhance the health and sustainability of the dairy sector.

Impact Assessment of Covid-19 on the Horticultural Sector of Jammu and Kashmir, India

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The paper attempts to assess the impact of Covid-19 on the horticultural sector of Jammu and Kashmir, considered as the backbone of the economy of the Union

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Territory by analysing its impact on the production and the marketing front. Primary data was collected in 2021 from six major horticultural districts of the region through telephonic survey-considering the restrictions induced by Covid-19. Almost 77.5 percent failed to use chemicals and fertilisers on time which resulted in total fall of production over 13 per cent in the region. About 58 per cent of the farmers witnessed decline in production while another 60 per cent of the farmers witnessed slump in the farm-gate prices. The study concluded that all the major districts of the region have been drastically hit. District Kulgam was the worst-hit while Ganderbal being the lowest hit witnessed a fall of 9.5 per cent in the production. Such has been the devastating impact of the pandemic on the sector. Longevity of Covid-19 and the subsequent social-distancing norms along with poor demand of horticultural produce will further dent the efficiency of the supply-chain of the horticultural crops in Jammu and Kashmir. The profitability of horticultural sector as a whole is taking a severe hit which will impact in the coming years too. With the pandemic cycling in different waves, the government should ramp up the infrastructure, provide timely inputs to the farmers, bring clarity in the opening of mandis and provide a financial stimulus to restore some normalcy in the sector.

Changes in Household Indebtedness – Pre- and Post-Pandemic: Evidence from Seven Villages

Ritam Dutta[†]

The study has assessed the seven villages in three states to understand the state of household debt and how the pandemic has affected that. For the purpose the study uses data from seven villages across three states – Katkuian and Nayanagar in Bihar, Amarsinghi, Kalmandasguri and Panahar in West Bengal and Venmani and Palakurichi in Tamil Nadu. The pre-pandemic primary data surveys were conducted in 2012, 2015 and 2019 for Bihar, West Bengal and Tamil Nadu respectively. The post pandemic primary data survey was conducted in 2020. The phase before the raging pandemic have witnessed a dominating presence of the moneylending community in Bihar, with exorbitant terms and conditions of loans; Bengal had a mixed presence of traditional bank loans, micro finance and non-institutional sources while Tamil Nadu had a wide presence of financial institutions. There was an inequitable access to cheap credit with the Dalit households and the poor peasantry being left out. Thus the study has explored the impact of this distress on them, six months since the outburst of the pandemic and the lockdown that ensued.

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Impact of COVID-19 over Wholesale Price of Wheat in Different States of India

Rashmi and Harindra Prasad Singh*

The present study investigates the impact of COVID-19 and restrictions imposed on wheat in different agricultural markets of India. Monthly whole sale price data of seven states, viz., Chhattisgarh, Uttar Pradesh, Madhya Pradesh, West Bengal, and Maharashtra are worked out from agricultural marketing portal of India. Monthly prices of April, May and June have been compared across 2019, 2020 and 2021. Linear piecewise regression was used to understand the impact COVID-19 on market whole sale price during different phases. The results revealed that wheat prices were at minimum support price in most of the states. Time series analysis showed the immediate impact of lockdown on decreased monthly wholesale price in all the states. Price risk calculated using Cuddy Della Valle instability index (CDVI) also indicates that there was increase in price risk after lockdown across all the states, except Uttar Pradesh. Measures taken by Government of India after lockdown has been reflected in increase in monthly wholesale price of wheat in post lockdown months. The percentage change analysis showed clear impact of lockdown on average monthly wholesale price of wheat in comparison to normal year (2019).

Effect of Covid-19 Pandemic on Wholesale Prices of Potato in Uttarakhand

Shefali Srivastava and S.K. Srivastava†

A study was undertaken to assess the effect of Covid-19 pandemic on wholesale prices of potato in Uttarakhand. There were two time periods chosen for the study, the pre-pandemic year (25-03-2019 to 24-03-2020) and the pandemic year (25-03-2020 to 24-03-2021). Weighted average minimum price, weighted average maximum price and weighted average modal prices for the state were calculated by summing up the per day product of arrival and price of all mandis and dividing it by total arrivals. The movement of arrival and prices was analyzed using graphs, growth rates and instability index (Coefficient of Variation). Difference in arrival, difference in modal price and price range were also calculated. Paired t-test was applied to understand whether the 2020-21 values of arrivals and prices were significantly different from the values of 2019-20. It was found that the arrivals of potato in Uttarakhand mandis were mostly low in 2020-21 than in 2019-20. The average prices and price range were higher in 2020-21 than in 2019-20 until mid-December after which 2020-21 values became higher again in March showing that the situation stabilised until

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February but worsened again in March. The mean values of arrival and average weighted prices were different for the years 2019-20 and 2020-21. It was concluded that the Covid-19 pandemic adversely affected the arrival and prices of potato.

Does Participation in Community Institutions like FPOs and Value Chain Interventions Improve Farm Income and Resilience?

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In 2015, the state of Andhra Pradesh, with support from the World Bank, launched the Andhra Pradesh Rural Inclusive Growth Project (APRIGP). The APRIGP aimed to enable institutional platforms of the poor to achieve inclusive growth by expanding and diversifying livelihood opportunities and improved quality of life through human development initiatives, and access to entitlements for the poorest households. Keeping in view the above the present study through phone survey during the pandemic in 2020 has attempted to evaluate if the participation of farmers in community organisations like FPO's has helped enhance income and resilience through various interventions in value chain. The findings from the study suggest that there has been a significant increase in farmers' income. Although speculative, this increase in the household income may have translated into higher savings and asset creation and helped households cushion the impact of the COVID-19 economic shock. The FPOs played a key role by facilitating marketing activities, conducting MSP (Minimum Support Price) operations and providing security to farmers by ensuring that both agricultural operations and market sales remain minimally affected.

Covid -19 Pandemic and Livelihood Loss: An Analysis of Women SHGs

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The paper analyses the economic impact of COVID-19 on agri based micro enterprises of Kudumbashree and on the livelihood of the members during lockdown phase in Kerala. The paper draws the inferences based on a case study analysis followed by a quick survey of 40 Kudumbashree JLG / micro enterprise members conducted in Thrissur district. The cases were identified with the support of Kudumbashree district mission, representing different types of enterprises. The financial status of the enterprises before and after the Covid 19 incidence and the income, days of employment, indebtedness, health status of the members and the challenges in running the enterprise are documented. Surveys for respondents were

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conducted by bilingual data collectors with the help of smartphones which contained pre-loaded survey forms. The analyses of case study clearly indicated that the Covid 19 has disrupted the supply chain and livelihoods of people, especially small and marginal producers and women collectives. The impact of Covid 19 on the JLG members was assessed in terms of loss of employment, income and the hardships faced by them in running the small business. Across the micro enterprise units studied, the annual income as well as the annual expenditure has fallen drastically. The study reiterates the need for strengthening the market support system including development of efficient supply chains and procurement system and facilitating medium scale agro-processing industries. The undeniable role assumed by women SHGs in sustaining agriculture, and in supporting the sustainable livelihood calls for the need to keep them working in this challenging period also. Concerted efforts from all quarters through constant interventions, contemplative commitments and hand holding are needed to unleash and sustain the seamless strength of the women Self-help Groups in the great endeavour of nation building and making of 'Atmanirbhar Bharat'.

Covid-19 Pandemic in Jammu & Kashmir: Strategies for Mitigating Food Insecurity in a Climate of Uncertainty

F.A. Shaheen*

The study attempts to assess the food security scenario of UT of Jammu and Kashmir with respect to Covid 19 pandemic and then draw strategies to mitigate the food insecurity at regional level in Kashmir valley. The food security scenario of the Jammu and Kashmir including Ladakh with respect to domestic production, imports and food management through public distribution schemes and other open market system are discussed. The paper also analyses the labour contingency plan in order to meet the needs of farm sector. The impact of pandemic was more disheartening for regions like J&K whose food needs are mostly met by imports from other areas. Managing food supplies and augmenting labour for farm operations in J&K was of prime concern before authorities, besides managing the health crisis. the government and related departments Some of the measures suggested to mitigate the ill effects posed by pandemic include efforts to make functional the local farming system of Kashmir through ensuring movement of essential inputs as well as roping up the concerned departments and stakeholders. A strong advisory by the government from top level should go to the law enforcement agencies for free movement of inputs supplied for farm sector as well as any produce from the sector. Furthermore, movement of scientists from SKUAST-K and its broader network of research stations and KVKs across all districts may be facilitated in order to reach the farming

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community in such difficult times. Likewise, free movement of other officers and field functionaries of concerned development departments may be ensured by the government in order to better serve the farming community. Finally the state should focus on building regional food security through multi-pronged strategy in the long run.

Impact Assessment of Covid 19 on Cotton Economy of India

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The impact of COVID-19 on the economy in general is no doubt ravaging and its impact on agriculture is complex and varied across diverse segments that form the agricultural value chain. Cotton has a complex supply chain that stretch from input suppliers, farmers, traders, ginning factories, spinning mills, textile companies and oil processors. The study was designed to capture the panoramic view of world and national cotton economy during the pandemic period and its impact on cotton farming in India. Cotton prices declined in the initial months fo January to April '2020 and later recouped once the lock down restrictions were phased out. As such from the study during the year 2020-21, it was noticed in general, cotton farming in India was not affected in its area and production excepting in North Zone which was not due to lock down but for the pest attack and lack of irrigation facilities. District wise analysis confirmed that labour availability for loading and unloading and its transport was the major impediment especially in the Southern Zone while it was market uncertainty in the other Zones. in the Covid-19 pandemic year, the cotton value-chain, like others, had faced unprecedented disruptions. Cotton farmers and supply chain actors should work together to make sure that the farmers have secured acquaintance to sell their cotton. Farmers' protection should be considered a priority in getting the minimal requirements regarding the input supply, logistics and remuneration for their produce.

Impact of Covid-19 on the Livelihoods of Rural Farmers in Uttar Pradesh, India

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The paper makes an attempt to assess the livelihood vulnerability to Covid-19 using systematically collected field survey data of two villages in Mathura district of Uttar Pradesh by employing a livelihood vulnerability approach and the factors

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contributing to it. The multistage sampling method was adopted for the selection of district, village, households, and a total of 150 sample households were collected. The field survey was conducted during May 15-30, 2020 by taking permission from local authorities. The findings from the study indicate that farmers are highly exposed (perceived) to novel Covid-19 and also equally sensitive to inadequate and poor availability and accessibility of clean water, sanitation and health care system. These households undertook a range of preventive measures including health insurance, balance diet, stored food items, consultation to doctors, self-quarantine to contain the serious adverse impact of Covid-19. The calculated livelihood vulnerability scores show that households belonging to Virjapur village are relatively highly vulnerable than Narholi village. Based on the grass root evidences, the present study suggests a few *ex-ante* preventive measures in the regional languages including increase public health budget to meet the demand and improve the supply chain; establishment of more physical and human infrastructure in long run and charting a comprehensive plan to ensure continuous water supply in the rural areas.

An Economic Analysis of Bt Cotton Cultivation in Cauvery Delta Region

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The study has made a comparative analysis of cost and returns, production efficiency and constraints in Bt cotton cultivation across farm size categories in covid year (2020-21) and normal year (2019-20) by a survey of 80 farmers in Thiruvavur district of Tamil Nadu and 40 farmers in Karaikal district of Puducherry U.T. There were no non-Bt cotton growers in the study area. The marginal and small farms were predominant (77.50 per cent) but operated only 43.37 per cent of land area. About 79.17 per cent practiced rice-rice fallow cotton crop rotation. The area under Bt cotton was 92.76 ha in normal year and 93.23 ha in covid year. A comparative analysis revealed that irrespective of holding size, losses ranged from Rs.4154 ha⁻¹ to Rs.31,192 ha⁻¹ in covid year; while in normal year, profits ranged from Rs.71,251 ha⁻¹ to Rs.89,971 ha⁻¹ due to the relatively higher prices during normal year. Yield difference was 379 kg ha⁻¹ and prices declined by 63.93 per cent from Rs.547qt⁻¹ in normal year to Rs.334 qt⁻¹ in covid year. Functional analysis implied that nitrogen and human labour had positive influence while plant protection chemicals had negative influence on yield of Bt cotton. As per Input oriented CRS DEA, mean technical efficiency was 0.819 in Bt cotton farms. Higher incidence of pests other than boll worms, price fluctuations, lack of government support and lack of storage facilities were major constraints faced by Bt cotton growers. The study suggests production subsidy to Bt cotton growers and R & D efforts to standardise package of practices for Bt cotton cultivation in the region. There is an urgent need to create

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awareness about refugee crops and adoption of IPM to avoid resurgence of boll worms in Bt cotton in future.

Covid 19 Pandemic: Experience and Response of the Horticultural Producers in Kutch, Gujarat

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The COVID-19 pandemic affected every other sector of the economy. Agriculture was quick to recover. The horticulture sector suffered due to disruptions in the supply chain which resulted in wastage of products, reduced price realisation due to weak market links. This paper based on a qualitative analysis of nine horticulture producers in Kutch a resource poor region of Kutch, identifies differences in the impact of the pandemic on horticulture producers. Products like mango, pomegranate and datepalm which depend on the traders and market outside Gujarat experienced reduced price for their product as well as losses. Producers of a relatively recent entrant like kamalam fruit in the horticulture sector of Kutch, based on the health appeal to the consumers and shorter supply chain could get better prices. The paper stresses on the need for storage infrastructure to avoid losses.

Migrants and Development after Covid-19

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The paper attempts to portray the vulnerabilities of migrants in a country where around one-third of workers are migrants following the lockdown due to Covid-19 pandemic. An increase in interstate migrations of rural-urban kind has been noticed. Such deplorable statistics on migration indicate the kind of development in the recent decades. Some of such noticeable features are the high rate of growth of the economy without any regard for spatial concentration, the incomplete transition of the economy, the reduction in the size of farm holdings, and the dearth of farm and non-farm opportunities in the rural vicinity. This study after portraying the situation of migrants during the lockdown discusses the development that possibly increases migration especially the rural-urban kind. A long-term solution to the problem of migration requires reorientation in our development efforts that emphasise decentralised manufacturing, create many dispersed towns with good infrastructure, and improves agriculture and the rural situation in the large part of the country. Despite these suggestions for migration-mitigating development, the current development parameters suggest that migration-led development would continue for

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more time to come. Therefore, we need to strengthen safety nets for migrant workers. This requires the portability of several entitlements and the registration of migration. We also need to create facilitative infrastructure in terms of housing, children's education, etc. for migrant workers near their workplace. In addition to the above, the Government of India report of the working group on migration (2017) deliberates on the kind of facilities desired for a dignified life of migrant workers. Some of these recommendations may be implemented to not witness the agonies of migrant workers. The problem of migrants in the short run can also be eased with emphasis on public works programmes. Such work programmes besides providing, income security also create assets that reduce distress-induced migration from rural areas of the country.