

THE EFFECT OF COVID-19 ON THE VALUE CHAIN OF PADDY AND CARROT VARIETY OF IARI

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ABSTRACT

The arrival of COVID-19 was no less than any apocalypse for the global economy. The growth of global GDP spiralled down to a very low point. The condition in India was no exception to it. Almost all the sectors of the economy were severely affected. Notwithstanding this, agriculture emerged as a bright spot in the dark horizon. Even though the growth rate was positive, there were serious impediments in the commodity value chain and agricultural marketing. Paucity in input supply, restriction in movement, closure of market, reduced demand of food products brought challenges that existed never before. In this backdrop, a study was conducted to find out the effects of COVID-19 on the value chain and marketing of Paddy Commercial variety Pusa Basmati 1121 and Carrot Commercial variety Pusa Rudhira. The research design was ex-post facto in nature and a total number of 160 farmers and 50 stakeholders including exporters, commission agents, wholesalers, and millers were consulted for the study. The locale of the study was Soodhna (U.P), Sangohi (Haryana), Khwajpur (U.P) and Nizampur (New Delhi). From extant review of literature, pilot study and discussion with experts, several constraints faced by the value chain stakeholders were identified and rank ordered using Rank Based Quotient Method (R.B.Q). Results showed that in case of farmers “difficulty in getting buyer, price fluctuation and wastage” were among the top constraints, and for stakeholders such as millers, wholesalers and retailers, “unavailability of labour and price fluctuations” were the causes of concern. Moreover, for exporters “hike in freight charges” was the most severe constraint. The findings of the study could highlight the vulnerable areas in the commodity value chain which ought to get due attention in policy making and better preparedness for future events of similar nature.

Keywords: covid-19, commodity value chain, Pusa Basmati 1121, Pusa Rudhira, constraints

INTRODUCTION

Novel corona virus pandemic has impacted all sectors of the economy. In India, although agriculture was the only sector to report a positive growth during this period, a lot of challenges were faced by farmers and other stakeholders were also noticed. At the national level the impact of COVID-19 and the resultant lockdown had been quite harsh on agriculture and allied sector in majority of districts (NABARD, 2020). Due to the pandemic outbreak vegetable growers were struggling to sell their products as the supply chain has been disrupted (Sharma et al., 2020; Joshi and Khandelwal, 2022). Massively decreased demand for restaurant and commercial food services in combination with restrictions in labour, processing capacity and/or storage has led to farmers discarding their output in mass. Quarantine measures are severely affecting labour availability for key time-critical farming from sowing vegetable crops to picking fruit (Stephens et al., 2020). Food and Agriculture

Organization (2020) reported that the demand for food has decreased, although little, due to decreased purchasing power which may further worsen if the pandemic continues. Food demand and thus food security were greatly affected due to mobility restrictions, reduced purchasing power, and with a greater impact on the most vulnerable population groups. The seed industry was heavily affected due to the worldwide lock down and negative impact on supply and demand of seed might lead food security at risk (Siche,2020). A study conducted by Chaudhary *et. al* in 2020 revealed that the major constraints faced by the growers of carrot were unavailability of improved seed, lack of remunerative price of production, shortage and high wages of labour etc. Moreover, the pandemic had affected production and marketing through labour and logistical constraints, while the negative income shock restricted access to markets and increased prices of food commodities affecting the consumption pattern (Cariappa et al., 2021). From the aforementioned literature it can be inferred that thorough out the value chain stakeholders

were impacted by the pandemic. Also, it was found that there was dearth of literature with a focus on holistic study of the commodity value chain in the backdrop of COVID-19 pandemic. Therefore, the current study aims to highlight the constraints faced by the value chain stakeholders associated with Paddy Commercial variety Pusa Basmati 1121 and Carrot Commercial variety Pusa Rudhira.

OBJECTIVES

- (1) To identify the constraints faced by different stakeholders during Covid-19 pandemic
- (2) To analyse the constraints based on their severity

METHODOLOGY

The study was conducted in the year 2022. The research design was ex-post facto in nature. The constraints that emerged due to the pandemic were collected from extant review of literatures, pilot study and incorporated in the interview schedule. To accomplish the objective, both farmers and market functionaries including contractors, commission agents, wholesalers, processors/millers, retailers, and exporters were selected as respondents. The respondents were asked to rank the constraints on a four-point continuum from “most severe constraint”, “severe constraint”, “least severe constraint”, and “no constraint”. After collecting the responses, Rank Based Quotient (RBQ) method was used

to rank the responses. The study was conducted in national capital region which included two states i.e. Uttar Pradesh and Haryana and one Union Territory i.e. Delhi. These locations were selected purposively as successful value chains of paddy cv. Pusa Basmati 1121, and carrot cv. Pusa Rudhira were already available. In all 210 respondents were selected for the study including 160 farmers, and 50 stakeholders associated with the value chain were randomly selected. For paddy cv. Pusa Basmati 1121, forty farmers from Village Khwajpur and forty from village Sangohi were taken. Similarly for carrot cv. Pusa Rudhira forty farmers from Soodhna and forty from Nizampur were selected. For the stakeholders dealing with paddy cv. Pusa Basmati 1121, from Sangohi and Khwajpur, 9 stakeholders each, including commission agents (2), wholesaler (2), miller (3), and retailer (2) were taken. Besides, 10 exporters were contacted to record their responses. For Pusa Rudhira 13 stakeholders from Nizampur i.e. contractors (5), commission agents (2), wholesalers (2), processors (2), and retailers (2) were selected. From Soodhna, 9 stakeholders including commission agents (2), wholesaler (2), processor (2), retailer (3) were selected.

RESULTS AND DISCUSSION

The constraints identified through focus group discussion, extant review of literature and consultation with experts were given in Table 1.

Table 1. Ranking of aforementioned constraints as perceived by the farmers (n=160)

Constraints	R.B.Q Score, Kwajpur, UP(Pusa Basmati 1121)	Rank	R.B.Q Score, Sangohi, Haryana (Pusa Basmati 1121)	Rank	R.B.Q Score, Soodhna, UP (Pusa Rudhira)	Rank	R.B.Q Score, Nizampur, Delhi (Pusa Rudhira)	Rank
Shortage of Labourer	85.22	V	94.09	II	84.54	VI	94.54	I
Price fluctuation	92.04	II	91.81	III	99.09	I	95.45	II
Unavailability of farm inputs	75.68	VIII	74.54	XI	82.5	VII	89.31	VI
Wastage of produce	73.63	X	80.68	IX	98.63	III	94.31	III
Difficulty in repayment of debt	73.18	XI	84.77	VI	80.68	IX	80.45	X
Increase in prices of farm inputs	74.09	IX	75.22	X	74.77	XI	74.09	XI
Difficulty in getting buyer	95.68	I	95.68	I	98.86	II	91.36	V
Increase in marketing cost	90.22	III	90.22	IV	82.04	VIII	84.73	IX
Hike in labour charge	84.09	VI	87.50	V	93.18	IV	92.72	IV
Difficulty in getting farm implements for hiring purpose	78.86	VII	84.09	VII	85.22	V	81.13	VIII
Difficulty in transportation to different market	87.50	IV	82.72	VIII	77.72	X	85.22	VII

Table 1 depicts the constraints faced by the farmers of the village, Khwajpur, Sangohi, Soodhna and Nizampur. For Khwajpur the constraint at Rank I was, “difficulty in getting buyer for their produce with a score value of 95.68”. The constraint at Rank II was “fluctuation in the prices of commodity (92.04)”. The other constraints in their order of severity were “increase in marketing cost (Rank III, 90.22)”, “difficulty in transportation to different market” (Rank IV, 87.50), “shortage of labour” (Rank V, 85.22), “hike in labour charges” (Rank VI, 84.09), “difficulty in getting farm implements for hiring purpose” (Rank VII, 78.86), “unavailability of farm inputs” (Rank VIII, 75.86), “increase in prices of farm inputs” (Rank IX, 74.09), “wastage of produce” (Rank X, 73.63), and “difficulty in repayment of debt” (Rank XI, 73.18)

Similarly, the number one constraint faced by the respondents of the village Sangohi (Haryana) was “difficulty in getting buyer” (Rank I, 95.68) The other constraints were, “shortage of labour” (Rank II, 94.09), “price fluctuation” (Rank II, 91.81), “increase in marketing cost” (Rank IV, 90.22), “hike in labour charges” (Rank V, 87.50), “difficulty in repayment of debt” (Rank VI, 84.77), “difficulty in getting farm implements for hiring purpose” (Rank VII, 84.09), “difficulty in transportation to different market” (Rank VIII, 82.72), “wastage of produce” (Rank IX, 80.68), “increase in prices of farm inputs” (Rank X, 75.22), and “difficulty in getting farm inputs” (Rank XI, 74.54).

For village Soodhna, the rank I problem faced by the farmers was “price fluctuation” of the produce with a RBQ score of value 99.09. This was followed by “difficulty in getting buyer for their produce (Rank II, 98.86). “Wastage of the produce” was the III Ranked constraint with a RBQ score of 98.63. The R.B.Q scores of the first three constraints showed a very little variation in their value. The constraint with the fourth highest value was “hike in labour charges” with a value of 93.18 (Rank IV) followed by “difficulty in getting farm implements for hiring purpose” (Rank V, 85.22), “shortage of labour” (Rank VI, 84.54), “unavailability of farm inputs” (Rank VII, 82.5), “increase in marketing cost” (Rank VIII, 82.04), “difficulty in repayment of debt (Rank IX, 80.68)”, and “difficulty in transportation to different market (Rank X, 77.72)”. The constraint with the least score was “increase in prices of farm inputs with a score of 74.77 (Rank XI)”. Thus, the price fluctuation was the major issue perceived by the respondents, increase in prices of farm inputs was the least severe constraint.

Similarly, at Nizampur (Delhi), for farmers growing carrot cv. Pusa Rudhira the major constraint was “price

fluctuation”, with a R.B.Q value (95.54). The constraint at Rank II was “shortage labour” (94.54), which was not that severe in the earlier village. Similarly, the other constraints with their order of severity were “wastage of produce” (Rank III, 94.54), “hike in labour charges” (Rank IV, 92.72), “difficulty in getting buyer” (Rank V, 91.36), “unavailability of farm inputs” (Rank VI, 89.31), “difficulty in transportation to different market (Rank VII, 85.22)”, “difficulty in getting farm implements for hiring purpose (Rank VIII, 81.13)”, “increase in marketing cost (Rank IX, 84.73)”, “difficulty in repayment of debt” (Rank X, 80.45) and “increase in prices of farm inputs” (Rank XI, 74.09).

To ascertain whether the constraints faced by respondents in different villages were statistically different from each other, Kruskal Wallis test was conducted. Results are presented in Table 1 (a&b).

H_0 : There was no significant difference in the constraints faced by the stakeholders at different villages mentioned above.

H_1 : There was no significant difference in the constraints faced by the stakeholders at different villages mentioned above.

Table 1a. Kruskal-Walli’s test

Constraints due to Covid-19	n	Mean Rank
Peer Nagar Soodhna	40	24.05
Nizampur	40	26.68
Khwajpur	40	17.41
Sangohi	40	21.86

Table 1b. Test statistics^{a,b}

	Constraint score
Chi-square	3.082
Df	3
Asymp. Sig.	0.379

a= Kruskal-Wallis Test b. Grouping variable

From the value of the test statistic, i.e. chi-square (3.082) with degrees of freedom (3) and p-value of 0.379, we were failed to reject the null hypotheses. Thus, it can be inferred that, there was no significant difference between respondents of the four villages with respect to constraints faced due to Covid-19.

Constraints faced by the exporters of Pusa Basmati 1121 in decreasing order

Hike in freight charges (97.5, I), Shortage of container (95.21, II), Shortage of labour (93.75, III), Delay in shipment to the buyer (92.5, IV), Purchasing price of the produce was high (88.75, V), Decrease in margin (81.25, VI),

Hike in store house rent (80.13, VII), Wastage of produce (77.5, VII).

Constraints faced by the stakeholders (Commission agents, Millers, Wholesalers, Wholesalers, Retailers) as collected from review of literatures, focus group discussions, and discussion with experts were given in Table 2.

Table 2: Ranking of the constraints

(n=40)

Constraints	R.B.Q Score, Kwajpur, UP (Pusa Basmati 1121)	Rank	R.B.Q Score, Sangohi, Haryana (Pusa Basmati 1121)	Rank	R.B.Q Score, Soodhna, UP (Pusa Rudhira)	Rank	R.B.Q Score, Nizampur, Delhi (Pusa Rudhira)	Rank
Unavailability of labour	88.88	V	93.82	II	92.77	IV	92.77	IV
Increase in transportation cost	81.48	VII	71.60	IX	83.95	VI	83.95	VI
Delay in payment from the buyer	91.35	III	81.48	VI	76.54	VII	76.54	VII
Price fluctuation	95.06	I	96.29	I	97.53	I	97.53	I
Wastage of produce	77.77	VIII	76.54	VII	96.82	II	96.82	II
Difficulty in accessing marketing credit	74.07	IX	85.18	V	74.07	VIII	74.07	VIII
Increase in indebtedness due to reduced income	83.95	VI	75.30	VIII	69.13	IX	69.13	IX
Difficulty in marketing	90.12	IV	92.59	III	93.82	III	93.82	III
Difficulty in getting supply	92.35	II	86.41	IV	88.88	V	88.88	V

The constraints faced by the stakeholders of Khwajpur, UP was “price fluctuation” with a RBQ score of 95.06. which was followed by “difficulty in getting timely supply” with a RBQ score value of 92.35. The other constraints were “delay in payment from the buyer” (Rank III, 91.35), “difficulty in marketing” (Rank IV 90.12), “unavailability of labour (Rank V, 88.88)”, “increase in indebtedness due to reduced income” (Rank VI, 83.95), “increase in transportation cost (Rank VII, 81.48)”, “wastage of produce (Rank VIII, 77.77)” and “difficulty in accessing to marketing credit (Rank IX, 74.07)”.

Similarly, the constraints faced by the stakeholders of Sangohi (Haryana) were, “price fluctuation” (Rank I, 96.29). The other constraints based on their order of severity were, “unavailability of labour” (Rank II, 93.82), “Difficulty in marketing” (Rank 92.59, III), “difficulty in getting supply (Rank IV, 86.41)”, “difficulty in accessing marketing credit (Rank V, 85.18)”, “delay in payment from buyer (Rank VI, 81.48)”, “wastage of produce (Rank VII, 76.54)”, and “increase in transportation cost (Rank IX, 71.60)”.

At Soodhna (Uttar Pradesh) “price fluctuation” with a RBQ score value of “97.53” was the number one constraint.

The other constraints, in their order of severity were “wastage of produce (Rank II, 96.82)”, “difficulty in marketing (Rank III, 93.82)”, “unavailability of labour (Rank IV, 92.77)”, “difficulty in getting supply (Rank V, 88.88)”, “increase in transportation cost (Rank VI, 83.95)”, “delay in payment from the buyer (Rank VII, 76.54)”, “difficulty in accessing marketing credit (Rank VIII, 74.07)”, and “increase in indebtedness due to reduced income (Rank IX, 69.13)”.

Lastly, for stakeholders at Nizampur (Delhi) the Rank I was the shortage of labourer with a RBQ score of 99.14. The magnitude of the score reflects the severity of the problem. This was followed by “price fluctuation of the produce” with a RBQ score of 97.43. the other constraints, based on their order of severity were “wastage of produce (Rank III, 95.72)”, “difficulty in getting supply (Rank IV, 94.87)”, “increase in transportation cost (Rank V, 94.01)”, “difficulty in marketing (Rank VI, 83.76)”, “increase in indebtedness due to reduced income (Rank VII, 81.19)”, “delay in payment from buyer (Rank VIII, 79.48)”, and “difficulty in accessing to market credit (Rank IX, 72.64)”.

To ascertain whether the constraints faced by stakeholders in different regions were statistically different

from each other Kruskal Wallis test was conducted.

H₀: There was no significant difference in the constraints faced by the stakeholders at the four different areas mentioned.

H₁: There was significant difference in the constraints faced by the stakeholders at the four different areas mentioned.

Table 2 (a) Kruskal-Wallis test

Constraints due to Covid-19	n	Mean Rank
Hapur	9	17.11
Delhi	9	22.11
Gautam Buddha Nagar	9	18.17
Karnal	9	16.61

Table 2 (b) Test statistics a,b

	Constraint score
Chi-square	1.514
Df	3
Asymp. Sig.	0.679

a= Kruskal-Wallis Test b. Grouping variable

From the value of the test statistic, i.e. chi-square (1.514) with degrees of freedom (3) and p-value of 0.679, we were failed to reject the null hypothesis. Thus, it can be inferred from the above table that, there was no significant difference between respondents of the four regions with respect to constraints faced due to Covid-19.

CONCLUSION

From the findings of the study, it can be concluded that the COVID-19 had severe effects on all the stakeholders of the value chain. The major constraints faced by the farmers were, difficulty in getting buyers, price fluctuation, increase in marketing cost and shortage of labour. Hike in freight charges, and shortage of containers were the prime concerns of Exporters of Pusa Basmati 1121. For other stakeholders, price fluctuation, shortage of labour, difficulty in getting buyer were the major concerns. The study could highlight the difficulties faced by the value chain stakeholders of the two crop varieties, which could be taken into consideration.

POLICY IMPLICATION

The coping strategies for such pandemic or endemic may consider the findings of this study to give direction to the programmes and policies of National disaster management.

In addition to this, the concerns of the exporters may be given due importance.

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CONFLICT OF INTEREST

No conflict of interest among the researchers and stakeholders.

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