

**RESEARCH PAPER****Effect of COVID-19 pandemic on vegetable growers of Maharashtra**

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Abstract : The world is struggling to fight the pandemic, the COVID-19 and the following lockdown has affected all walks of lives. Importantly, the farming community is the major victim of this. The present study was conducted purposively in the Rahuri and Ahmednagar tahsils of Ahmednagar district of Maharashtra State with the objectives to study the profile of the vegetable growers, to assess the effect of the COVID -19 pandemic on Marketing of vegetables, to document the constraints faced and suggestions offered by vegetable growers for future strategies. The five villages from each tahsils and nine respondents from each village thus total 90 respondents *i.e.* 45 farmers from Rahuri tahsil and 45 farmers from Ahmednagar tahsil were selected for the study purposively. The findings concluded that, to face the pandemic situation in future like COVID-19 and to motivate vegetable growers Government should focus on vegetable growers for adoption of sustainable and natural resources like zero energy cool chambers (79%), organizing massive public awareness and trainings campaign to popularizing the Farmer Producer Organizations and e-agriculture platforms for vegetable production and marketing (93%), utilize the services of Agro-Input dealers to enhancing more participation of the farmers and to create the Producers to Consumer marketing system (91%) and providing inputs and financial support by the Govt. (79%) is highly needed . The research study recommended that the State Department of Agriculture, Krishi Vigyan Kendra, Agricultural Universities and Agricultural Inputs Dealers jointly conduct a comprehensive public awareness and training campaign on zero energy cool chamber, Farmer Producer Organizations, e-agriculture platforms and Producers to Consumer marketing system to strengthen the agricultural extension system through Public-Private Partnership (PPP).

Key Words : COVID 19 pandemic, Vegetable growers, Effect of COVID 19 on marketing of vegetable, Zero energy cool chamber, Constraints, Suggestions of vegetable growers towards COVID -19

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INTRODUCTION

As the world is struggling to fight the pandemic, the COVID-19 and the following lockdown has affected all walks of lives. Importantly, the farming community is the major victim of this. Though the COVID-19 is continually

affecting the food supply chain and its consequences might have a long-lasting impact on livelihoods, extension services and marketing support provided by the public and private sectors have significantly contributed to the sustainability of agriculture to a certain extent. While, the government and public sectors have increasingly been

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involved in saving every life. The agricultural value chain in India has been adversely affected by the Covid-19 crisis and the resultant lockdown. Agriculture remains a central pillar of the Indian economy. The sector serves the food consumption needs of the whole country, while also placing among the top exporters of agricultural produce in the world. The COVID-19 pandemic situation adversely affected the inputs availability, harvesting, post harvesting of food grains, horticulture, commercial crops, oilseeds, poultry & livestock, storage, labour shortage and other agricultural practices. Vegetables are the perishable commodity so, COVID-19 pandemic adversely affected the vegetable growers. Considering all these things it is decided to conduct a research project on “effect of COVID-19 pandemic on vegetable growers” with the objectives to study the profile of the vegetable growers, to assess the effect of the COVID - 19 pandemic on marketing of vegetables, to document the constraints faced and suggestions offered by vegetable growers for future strategies

MATERIAL AND METHODS

The “ Ex-Post Facto Research Design “ was used for the study. The present study was conducted purposively in the Rahuri and Ahmednagar tahasils of Ahmednagar district of Maharashtra State. The villages having more number of vegetables growers were selected for the study. The five villages from each tahsils and nine respondents from each village thus total 90 respondents *i.e.* 45 farmers from Rahuri tahsil and 45 farmers from Ahmednagar tahsil were selected for the study purposively. To study the “ Effect of COVID - 19 pandemic on vegetable growers” a structured interview schedule will be developed. The 90 respondents will be interviewed with the help of structured interview schedule personally for this study. The data were tabulated and processed through the primary and secondary tables. The statistical tools like frequency, percentages, weighted means were used for interpreting the data and inferences were drawn.

RESULTS AND DISCUSSION

The experimental findings obtained from the present study have been discussed in following heads :

Socio-economic profile of vegetable growers :

The socio-economic profile of respondents are given

in Table 1. It can be observed from Table 1 that majority (50.00%) of the respondents were in the middle age group, followed by 28.89 per cent in young age category and 21.11 per cent of the respondents were belonging to the old age category. Majority (43.33%) of the farmers had secondary and higher secondary education followed by 30.00 per cent of the respondents having primary education and 26.67 per cent of respondents had completed their graduation. Majority of the farmers belonged to nucleus family. All the respondents had agriculture as their primary occupation and 83.33 of them had dairy as secondary enterprise. Regarding annual income data revealed that nearly half (48.89%) of the respondents were having annual income up to 2.5 lakh and 37.78 per cent having annual income up to 1 lakh, 13.33 per cent of the respondents had annual income above 2.5 lakh.

Table 1 : Socio-economic profile of vegetable growers

Sr. No.	Particulars	No. of respondents (n=90)	
		Frequency	Per cent
1.	Age		
	Young (Below 35 years)	26	28.89
	Middle (36 to 55 years)	45	50.00
	Old (Above 56 years)	19	21.11
2.	Education		
	Illiterate (can't read and write)	00	0.00
	Primary (Up to VII th std.)	27	30.00
	Secondary and Higher Secondary (VIII th to XII th)	39	43.33
	Graduate and above	24	26.67
3.	Type of family		
	Joint	29	32.22
	Nuclear	61	67.78
4.	Occupation		
	Agriculture	90	100.00
	Agriculture+ Dairy	84	83.33
5.	Annual income		
	less than 100000/-	34	37.78
	100001/- to 2,50,000/-	44	48.89
	More than 2,50,000/-	12	13.33

The effect of the COVID -19 pandemic on marketing of vegetables :

In the present study taking into consideration the six parameter of effect of Covid-19- pandemic on supply chain, market functioning, labour management, price

fluctuations, availability of infrastructure facilities and mode of payment.

Effect of Covid-19- pandemic on- supply chain:

The results of Table 2 gives that majority (97.77%) of the respondents were expressed that the effect of covid-19 pandemic on supply chain was due to decrease in price realization for farmers. This might result in farmers planting less of summer and *Kharif* vegetables leading to higher prices during rainy season and winters for consumers and retailers. The 96.66 per cent experienced that there was maximum drop in arrivals of major vegetables at market centres leading to an increase in average retail price of vegetables for domestic consumers followed by 88.88 per cent experienced that bulk demand reduction from the closure of hotels, airlines and restaurants has rendered farmers and vendors as the worst impacted from supply disruptions.

Effect of Covid - 19 - pandemic on - market functioning:

The findings of Table 3 shown that majority (98.88%) of the respondents were expressed that the

effect of covid-19 pandemic on market functioning was due to active hours of markets have been reduced for only 3 to 4 hours/day and in hotspot regions of outbreak government was allowing only for 1-2 days a week followed by the 97.77 per cent of the respondents were expressed that the effect of covid-19 pandemic on market functioning was after the arrival and attack of Covid-19 pandemic in India from first week of March 2020 In the initial period of lockdown there was no function of Markets, APMCs.

Effect of Covid - 19 - pandemic on - labour management :

The findings of Table 4 shown that majority (93.33%) of the respondents were expressed that the effect of covid-19 pandemic on labour management was during the pick period for harvesting *Rabi* vegetables skilled and unskilled labour is required and demand of vegetables was huge in that period. Because of shortage of labour most of the vegetable were ripened in field without harvesting them resulting in quality deterioration. The 91.11 per cent respondents were expressed that because of low labour availability farmers were throwing

Table 2 : Distribution of the respondents according to their effect of Covid-19- pandemic on- supply chain

Sr. No.	Particulars	Frequency (n= 90)	Percentage
1.	There was maximum drop in arrivals of major vegetables at market centres leading to an increase in average retail price of vegetables for domestic consumers	87	96.66
2.	Due to decrease in price realization for farmers. This might result in farmers planting less of summer and <i>Kharif</i> vegetables leading to higher prices during rainy season and winters for consumers and retailers.	88	97.77
3.	Farmers do not have any access to proper storage facilities for their perishable vegetables during the reduction in price of vegetables	77	85.55
4.	Lack of transportation options to reach Markets themselves and were uncertain of consumer demand in the . As a result they were forced to sell their produce directly to the middlemen at much lower prices	75	83.33
5.	Bulk demand reduction from the closure of hotels, airlines and restaurants has rendered farmers and vendors as the worst impacted from supply disruptions	80	88.88

Table 3 : Distribution of the respondents according to their effect of Covid-19- pandemic on- market functioning

Sr. No.	Particulars	Frequency (n= 90)	Percentage
1.	After the arrival and attack of Covid-19 pandemic in India from first week of March 2020 In the initial period of lockdown there was no function of Markets, APMCs .	88	97.77
2.	Even after liberalizing the rules, markets are not functioning up to the mark, situation at ground level was different and there were only limited activities in the Market	82	91.11
3.	Active hours of Markets have been reduced for only 3 to 4 hours/day and in hotspot regions of outbreak government was allowing only for 1-2 days a week	89	98.88

their produce on roads and dumping in compost pits. (Tomato) followed by 84.44 were experienced that wholesalers and vendors had been facing huge shortage of labour though they were opening the markets; there were no labour to unload and upload produce in and around markets.

Effect of Covid-19- pandemic on - price fluctuations:

The findings of Table 5 shown that majority (97.77%) of the respondents were expressed that the effect of covid-19 pandemic on Price fluctuations was due to the demand increased the price was changed instantly followed by 94.44 were expressed that prices of vegetables fell up to 15-20 per cent due to shutting down of hotels, restaurants, temples, hostels and Canteens. While 85.55 per cent said that demand was destructed instead of B2B; the demand of B2C was increased so the prices fell because of less engagement of middlemen.

Effect of Covid-19- pandemic on - availability of infrastructure facilities :

The findings of Table 6 shown that majority (85.55%) of the respondents were expressed that the effect of covid-19 pandemic on availability of infrastructure facilities was there is very less use of refrigerated trucks even in case of highly perishable products. Due to these reasons farmers were unable to store their produce in right time at right place; in normal circumstances followed by 81.11 per cent expressed that presence of integrated cold chain infrastructure is low for vegetables and 76.66 per cent were told that the non-availability of farm level postharvest infrastructure is the major drawback and the problem was eye opener for the government.

Effect of Covid-19-pandemic on -mode of payment:

The findings of Table 7 shown that majority (95.55%) of the respondents were expressed that the positive effect of covid-19 pandemic on mode of payment

Table 4 : Distribution of the respondents according to their effect of Covid-19- pandemic on- labour management

Sr. No.	Particulars	Frequency (n= 90)	Percentage
1.	Reverse migration of labours made huge hit to vegetable growers starting from end of March	79	87.77
2.	During the pick period for harvesting rabi vegetables skilled and unskilled labour is required and demand of vegetables was huge in that period. Because of shortage of labour most of the vegetable were ripened in field without harvesting them resulting in quality deterioration.	84	93.33
3.	Because of low labour availability farmers were throwing their produce on roads and dumping in compost pits.(Tomato)	82	91.11
4.	Wholesalers and vendors had been facing huge shortage of labour though they were opening the markets; there were no labour to unload and upload produce in and around markets	76	84.44
5.	Due to lockdown of nation the transportation between inter-states and intra-state got disrupted for labour management	82	91.11

Table 5 : Distribution of the respondents according to their effect of Covid-19- pandemic on- price fluctuations

Sr. No.	Particulars	Frequency (n= 90)	Percentage
1.	There was panic of bulk purchase at beginning. Sellers utilized the situation and hiked price up to 30-40 per cent.	73	81.11
2.	As the demand increased the price was changed instantly.	88	97.77
3.	prices of vegetables fell up to 15-20 per cent due to shutting down of hotels, restaurants, temples, hostels and Canteens.	85	94.44
4.	Demand was destructed instead of B2B; the demand of B2C was increased so the prices fell because of less engagement of middlemen.	77	85.55
5.	Because of low harvesting the supply decreased and demand increased again leading to increase in prices.	74	82.22

was the producers and consumers diverted towards digital marketing era through phone pay, Netbanking, Bhimapp etc. instead of hard cash followed by 88.88 per cent were expressed that e-illiteracy among the vegetable growers facing the major constraints for consumers and 75.55 per cent vegetable growers were directly selling their produce to various e-commerce platforms, urban cooperative housing societies.

Constraints faced by vegetable growers during the Lockdown :

The findings of Table 7 shown that the constraints faced by the vegetable growers during the lockdown were non-availability of storage facility and transport for the marketing of farm produces (98.88%), less demand and low price of the produce due to the non-availability of producers to consumer market linkage (91.11%), non-availability of storage facilities like zero energy cool chamber at farm level (84.44%) and e-illiteracy about digital marketing, utilization of various e-commerce platforms and various mode of e-Payment (78.88%), respectively.

The suggestions offered by vegetable growers for future strategies :

The findings of Table 8 shown that the suggestions

made by the vegetable growers for future strategies were Farm populations must be protected from the corona virus to the extent possible by testing for the virus, vaccinations and practicing social distancing (98.88%), market intelligence and information centres at Taluka level (97.77%), availability of University Seed to avoid malpractices by private companies (97.77%), availability of digital marketing at village and block level with safety measures (93.33%), need of market- and export-oriented production technology and Govt. procurement system (92.22%) and provision to vegetable growers to directly selling their produce to various e-commerce platforms with safety mode of e-Payment (91.11%), respectively.

Implication :

Due to change in eating habits globally after Covid-19 outbreak shifting to vegetables is a good sign. Every crisis gives opportunities converting opportunities to key driver's matters. Government should act proactive and come forward strategically to mitigate the loss of farmers. Governments should concentrate at root level problems and to resolve them which will benefit the farmers. Waving of farm loans, giving subsidies, offering free schemes etc to the vegetable growers on priority basis.

Establishing new infrastructure, improving rural

Table 6 : Distribution of the respondents according to their effect of Covid-19- pandemic on- availability of infrastructure facilities

Sr. No.	Particulars	Frequency (n= 90)	Percentage
1.	Non-availability of farm level postharvest infrastructure is the major drawback and the problem was eye opener for the government.	69	76.66
2.	Farm level collection centres are mostly absent; sorting, grading, washing, packaging and other crop specific postharvest activities are virtually absent at the farm proximate level.	65	72.22
3.	Presence of integrated cold chain infrastructure is low for vegetables	73	81.11
4.	There is very less use of refrigerated trucks even in case of highly perishable products. Due to these reasons farmers were unable to store their produce in right time at right place; in normal circumstances	77	85.55
5.	Very less use of refrigerated trucks for transport of vegetables	67	74.44
6.	produce in on-board was getting rotten without unloading because of transporting under uncontrolled conditions.	71	78.88

Table 7 : Distribution of the respondents according to their effect of Covid-19- pandemic on- mode of payment

Sr. No.	Particulars	Frequency (n= 90)	Percentage
1.	Vegetable growers directly selling their produce to various e-commerce platforms, urban cooperative housing societies.	68	75.55
2.	Digital marketing era through phone pay, Netbanking, Bhimapp etc. instead of hard cash	86	95.55
3.	e-illiteracy among the vegetable growers facing the major constraints for consumers	80	88.88

Table 8: Constraints faced by vegetable growers during the Lockdown

Sr.No.	Constraints	Frequency (n= 90)	Percentage
1.	Non-availability of storage facility and transport for the marketing of farm produces	89	98.88
2.	Non-availability of buyers and the buyers from a long-distance have not come to purchase the produces	86	95.55
3.	Non availability of laborers and High cost of laborers for farm operations	84	93.33
4.	Less demand and low price of the produce due to the non availability of producers to consumer market linkage	82	91.11
5.	High cost of inputs and non-availability of inputs	80	88.88
6.	Non-availability of storage facilities like zero energy cool chamber at farm level	76	84.44
7.	Farmers stopped taking second crops due to non-availability of labours	73	81.11
8.	e-illiteracy about digital marketing, utilization of various e-commerce platforms and various mode of e-Payment	71	78.88
9.	Due to curbs by the Govt. Police problems while carrying produce to markets or going for input purchase	67	74.44
10.	Farmers have not prepared their land for next <i>Kharif</i> season	65	72.22

Table 8a : Distribution of the respondents according to their suggestions

Sr. No.	Suggestions	Frequency (n= 90)	Percentage
1.	Need for formation of selected vegetable-wise clusters like tomato cluster, brinjal cluster, pea cluster, leafy vegetable cluster etc. on massive scale	78	86.66
2.	Provision to vegetable growers to directly selling their produce to various e-commerce platforms with safety mode of e-Payment.	82	91.11
3.	Availability of digital marketing at village and block level with safety measures	84	93.33
4.	Farm populations must be protected from the coronavirus to the extent possible by testing for the virus, vaccinations and practicing social distancing	89	98.88
5.	Market intelligence and information centres at Taluka level	88	97.77
6.	Cool chain management transport and on-farm cold storage and warehouse facilities	71	78.88
7.	Need of market- and export-oriented production technology and Govt. procurement system	83	92.22
8.	Requirement of on-farm primary processing centre	69	76.66
9.	Cooperative transportation facilities	79	87.77
10.	Availability of University Seed to avoid malpractices by private companies	88	97.77

facilities, increasing and sustainable use of natural resources, providing inputs and financial support will make sustain to the vegetable growers by the Govt. Ample quantity of University released Vegetable Seed production by the *Mahabeej* for vegetable growers to avoid the malpractices by private seed companies. Farmers and Agricultural workers should be included in the Govt assistance package and any social protection programs addressing the Covid crises. To face the pandemic situation in future like COVID-19 and to motivate vegetable growers Government should focus on vegetable growers for adoption of sustainable and natural resources like zero energy cool chambers (79%), organizing massive public awareness and trainings

campaign to popularizing the Farmer Producer Organizations and e-agriculture platforms for vegetable production and marketing (93%), utilize the services of Agro-Input dealers to enhancing more participation of the farmers and to create the Producers to Consumer marketing system (91%) and providing inputs and financial support by the Govt. (79%) is highly needed. The research study recommended that the State Department of Agriculture, Krishi Vigyan Kendra, Agricultural Universities and Agricultural Inputs Dealers jointly conduct a comprehensive public awareness and training campaign on zero energy cool chamber, Farmer Producer Organizations, e-agriculture platforms and Producers to Consumer marketing system to strengthen

the agricultural extension system through Public-Private Partnership (PPP).

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