



Effect Of Covid-19 On Okra Production Activities Among Lower Niger River Basin Development Authority Farmers

*Ajibade L. A¹., Ibrahim Baba-Ibrahim²., Aganbi M. D³., Olajide-Taiwo F. B¹., Malomo Olorunfemi⁴

1. National Horticultural Research Institute, Idi-Ishin, Ibadan, Oyo State, Nigeria
2. Lower Niger River Basin Development Authority, Ilorin, Kwara State, Nigeria
3. Federal University of Technology, Akure, Ondo State, Nigeria
4. University of Ilorin, Kwara State, Nigeria

Abstract

The COVID-19 pandemic has exerted a substantial influence on diverse domains of society, encompassing the agricultural/horticultural sector. This study examines the COVID-19 pandemic on the cultivation of okra by farmers affiliated with the Lower Niger River Basin Development Authority (LNRBDA) in Nigeria. The objectives are to ascertain the socio-economic characteristics of the participants, assess the impact of the COVID-19 lockdown on horticultural crop farming activities, evaluate the measures taken to prevent the spread of COVID-19, analyze the difficulties encountered during the COVID-19 pandemic with respect to agricultural production, and gauge the perceptions of the participants regarding the COVID-19 pandemic. The research utilized a purposive sampling methodology to determine the sample population. The findings indicate that the COVID-19 outbreak had a noteworthy influence on the okra cultivation of farmers belonging to the LNRBDA, thereby disrupting their regular activities, output, and financial gains.

Keywords: COVID-19; Lower Niger River Basin Development Authority; Okra

INTRODUCTION

The worldwide spread of the novel coronavirus illness (COVID-19) is attributed to the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) (Ilesanmi, Bello, and Afolabi, 2020; Afolabi and Ilesanmi, 2021). According to the World Health Organisation (WHO, 2020), on January 30, 2020, COVID-19 was declared a public health emergency, and on March 11, 2020, it was proclaimed a pandemic. The COVID-19 pandemic has had far-reaching effects throughout many areas of society, including but not limited to education, medicine, the economy, and agriculture (Bas *et al.*, 2022). The impacts of the COVID-19 epidemic have been severe worldwide, but in low and low-middle-income countries they have been felt most acutely. As of 9 January 2021, COVID-19 had been documented in 218 countries, resulting in more than 86 million illnesses and 2 million deaths (John, 2022). In terms of COVID-19 cases, Africa accounted for 3.3% (2,830,462) of the global burden during the reference period and 3.6% (72,121) of the worldwide burden in terms of deaths (Bas *et al.*, 2022). Although this seems like a lot, the lack of resources in many African countries magnifies the effects of the COVID-19 pandemic.

The COVID-19 outbreak has had a disproportionately big impact in many African countries due to a lack of sufficient resources, despite the very modest number of cases. Africa took Public Health Safety Measures (PHSM) to stop the spread of COVID-19. Social isolation, frequent hand hygiene, school closures, mask usage recommendations, prohibitions on public gatherings, border restrictions, and lockdown procedures are all documented as interventions in pandemic preparedness and response plans by Chia *et al.*, (2021). According to Chia, Oyeniran, and Iorfa (2021), Nigeria's agriculture sector experienced severe losses during the early phases of the COVID-19 pandemic. This happened despite efforts to keep the transmission of the virus within controlled bounds by employing PHSM. Preparedness is key to minimizing damage caused by the COVID-19 pandemic's second wave.

At 207 million as of December 2020, Nigeria, which is in the Western sub-region, is the most populous nation in Africa (Wegbom *et al.*, 2021). Agriculture is a common practice in many Nigerian communities, serving as a source of both revenue and local food (Adenubi *et al.*, 2021). Food is a necessity, thus changes in demand for other commodities and services are less likely to have an impact on it. Producing and supplying food commodities fall under the purview of the agricultural industry. As a dependable source of growth for the national economy, it also creates job possibilities (Lenshie *et al.*, 2021). Informing the Nigerian people about the disruption of the food supply chain requires an assessment of the COVID-19 pandemic's consequences on the agriculture industry. The expansion of national capability for better mitigation of Nigeria's further pandemic preparedness will require knowledge acquired in this area.

Agricultural production around the world has been severely impacted by the COVID-19 outbreak. The agricultural value chain, which includes the production, processing, and marketing of agricultural products, has been disrupted in Nigeria as a result of the pandemic. Farmers in the Lower Niger River Basin Development Authority (LNRBDA) rely heavily on the production of okra, a lucrative horticultural crop in Nigeria. Research on how COVID-19 affects LNRBDA farmers' okra production, however, is scant. To address this knowledge vacuum, this study investigates how COVID-19 has affected okra farming among LNRBDA farmers. This research will illuminate the difficulties that local farmers are encountering and provide ways to lessen the epidemic's effect on okra farming. The overarching goal of this study was to ascertain the effect of COVID-19 on the routine production practices of the LNRBDA okra farmers. The specific objectives are to:

- i. Identify the socio-economic parameters of the respondents
- ii. Determine the horticultural crop farm activities affected by the COVID-19 lockdown
- iii. Identify the preventive measures (coping strategies) used against the COVID-19 pandemic
- iv. Determine the challenges faced during the COVID-19 pandemic on agricultural production
- v. Determine the perception of respondents on the COVID-19 pandemic

Research hypotheses

H₀₁: There is no significant relationship between the socioeconomic characteristics of the respondents and the challenges faced during the COVID-19 pandemic.

H₀₂: There is no significant relationship between Horticultural crop farm activities affected by COVID-19 and the challenges faced during the COVID-19 pandemic.

H0₃: There is no significant relationship between Health and safety precautions against the COVID-19 pandemic and the challenges faced during the COVID-19 pandemic.

METHODOLOGY

The research was conducted in Ejiba, a town in Yagba West Local Government Area of Kogi State, Nigeria. To the north lies the Baruten LGA in Kwara State, and to the south is the Mopa-Muro LGA in Kogi State, both of which border the town of Ejiba. Seasonal differences between dry and wet are prominent. Ejiba town experiences a fair amount of rainfall and moderate temperatures between April and October, with average daily highs ranging from 21.1°C to 25°C and highs of 30°C to 35°C. Agriculture is the backbone of the economy of the community and the people engage in the cultivation of crops such as yam, cassava, maize, groundnut, and vegetables. They also engage in livestock farming such as cattle, goats, and sheep. In recent times, there has been an increase in the number of people engaging in small-scale businesses and trading.

The Lower Niger River Basin Development Authority (LNRBDA) is a government organization in Nigeria that bears the responsibility of overseeing the development and administration of water resources within the Lower Niger River Basin (Adekunle, Oladipo, and Busari, 2015). The establishment of the authority dates back to 1987, as stipulated by the River Basin Development Authorities Act of the Federal Government of Nigeria. The LNRBDA is a regional development agency that operates within the boundaries of two Nigerian states, namely Kwara and Kogi (Babatolu, & Akinnubi, 2014). Its central administrative hub is located in Ilorin, which is situated in Kwara State. The mandate of the authority is to facilitate the advancement of sustainable development of the water resources of the basin, with a focus on irrigation, hydropower generation, domestic water supply, and other related applications (Oyewole and Aliyu, 2021). In addition to its primary mandate, the LNRBDA offers agricultural extension services to farmers and lends its support to rural development initiatives within the basin (Abiodun *et al.*, 2019).

The study employed a purposive sampling technique to select its participants. A total of 50 respondents were selected from the water user association (WUA) farmers of LNRBDA, who offered their consent to participate in the study. The data was obtained through a questionnaire applying a semi-structured interview schedule. The collected data were subjected to analysis to derive findings for the study, using descriptive statistics and a chi-square approach.

RESULTS AND DISCUSSION

Socio-economic characteristics of the participants

The socioeconomic status of the study population is presented in Table 1. According to the findings, the average age of the participants was 39, with a sizable proportion (38%) falling within the 40-49 demographic and a close second (30% of the population) falling within the 30-39 age group. This suggests that the agricultural producers living in the study area are at an age where they can actively participate in farming. In addition, the findings show that the vast majority (76%) of participants were male, 88% of them were married, and 70% of them identified as Muslims. The majority of respondents (94%) are predominant farmers, with a sizeable share (52%), and engaged in agricultural activities on a landholding of one (1) hectare. Notably, a sizeable proportion (42%) of the participants have accumulated a significant level of knowledge spanning 10–19 years. The vast majority of respondents (76%) were members of cooperative organizations, which promote the supply of mutual aid among members, and 94% were connected with a farmers' group or association.

The table also shows a strong link between the participants' yield percentages. A minimum of one basket weighing 50kg and a maximum of 250 baskets were produced, indicating that participants achieved a suitable output in the context of this study. About a third of the group (those who participated) saw returns in the basket range of 1 to 50. The next highest output was between 150 and 200 baskets, achieved by 20% of the sample. A significant proportion of the participants, comprising 30%, achieved yields falling within the 1-50 baskets range. This was closely followed by 20% of the participants who obtained yields within the 151-200 baskets range. Furthermore, the results show that a sizable percentage (62%) of respondents engage in the practice of selling their products directly to wholesalers. The fact that 98% of respondents were unhappy with their farming throughout the epidemic proved points that the COVID-19 pandemic had a major impact on the farmers' daily routines. The participants have gained prominence for their extensive horticulture crop production. Notably, pepper is the second most produced crop after okra, accounting for 42% of their total yield

Table 1: Socio-economic characteristics of the respondents

Variables	Frequency	Percentage	Mean
Age			
Below 20	2	4.0	
20-29	7	14.0	
30-39	15	30.0	39
40-49	19	38.0	
50-59	5	10.0	
Above 59	2	4.0	
Sex			
Male	38	76.0	
Female	12	24.0	
Marital Status			
Single	5	10.0	
Married	44	88.0	
Separated	0	0.0	
Divorced	0	0.0	
Widow	1	2.0	
Widower	0	0.0	
Religion			
Christianity	15	30	
Islam	35	70.0	
Traditional	0	0.0	
Occupation			
Farming	47	94.0	
Artisan	0	0.0	
Civil Servant	1	2.0	
Trader	2	4.0	
Main Source of Income			
Agriculture	47	94.0	
Salary	0.0	0.0	
Artisan	0	0.0	
Trading	3	6.0	
Farm size (Hectare)			
0 – 1	26	52.0	
1.1 – 2	14	28.0	
2.1 – 3	8	16.0	
3.1 – 4	1	2.0	
4.1 – 5	1	2.0	
Above 5			

Years of Experience in okra Farming		
0 – 9	10	20.0
10 – 19	21	42.0
20 – 29	9	18.0
30 – 39	8	16.0
Above 39	2	4.0
Do you belong to any group/association		
Yes	47	94.0
No	3	6.0
Main Business of the group/association		
Cooperative society	12	24.0
Farmers association	38	76.0
Level of Production		
Subsistence	3	6.0
Commercial	47	94.0
Yield per Hectare (in baskets)		
1 – 50	13	26.0
51 – 100	15	30.0
101 – 150	7	14.0
151 – 200	10	20.0
200 – 250	4	8.0
Above 250	1	2.0
Who do you sell to after harvesting		
Wholesalers	31	62.0
Retailers	13	26.0
Consumers	5	10.0
Are you satisfied with your farming activities during Covid-19?		
Yes	1	2.0
No	49	98.0
Other horticultural crops planted		
Pepper	21	42.0
Garden Egg	3	6.0
Vegetables	9	18.0
Ewedu	6	12.0
Rice	3	6.0
Tomatoes	5	10.0
Maize	2	4.0
Citrus	1	2.0
Total	50	100

Source: Field survey (2022)

Horticultural crop farm activities affected by COVID-19 lockdown

Table 2 illustrates the impact of the COVID-19 lockdown on horticultural crop farm activities, along with the corresponding degree of severity. The findings indicate that the farming operations in the studied region were significantly impacted by the COVID-19 pandemic. According to the findings, a significant proportion of the participants (98.0%) reported that their land preparation was impacted by the COVID-19 pandemic. Additionally, 92.0% of the respondents attested to the pandemic's influence on their agricultural activities. Family labour (88.0%) was utilized as a viable alternative, despite the availability of hired labour, comprising the workforce. The findings indicate that a significant proportion of farmers were able to successfully obtain seed (88%), acquire fertilizer (64%), and administer pesticides (66%). The findings reveal that a significant proportion of respondents (88.0%) reported that farm supervision was impacted by the COVID-19 pandemic. Further, all participants (100.0%), reported that the marketing of Okra was affected greatly by the pandemic.

The impact of COVID-19 on farm activities was assessed, and a mean value of 1.40 was calculated. Consequently, farm activities with a mean value greater than or equal to 1.40 were deemed to have been significantly impacted by the COVID-19 lockdown, while those with a mean value less than 1.40 were considered to have been less affected. Hence, the COVID-19 lockdown has had a significant impact on various farm activities, including seed procurement (1.82), family labour (1.88), fertilizer application (1.64), and pesticide application (1.66).

Table 2: Horticultural crop farm activities affected by COVID-19 lockdown

Activities	Yes	No	Effect			
	F (%)	F (%)	Very high	High	Low	Mean
Land preparation	49(98.0)	1(2.0)	5(10.0)	30(60.0)	12(24.0)	1.02
Seed procurement	9(18.0)	41(82.0)	1(2.0)	5(10.0)	5(10.0)	1.82*
Hired labour	46(92.0)	4(8.0)	5(10.0)	30(60.0)	12(24)	1.08
Family labour	6(12.0)	44(88.0)	1(2)	4(8.0)	2(4.0)	1.88*
Fertilizer application	18(36.0)	32(64.0)	4(8.0)	12(24)	2(4.0)	1.64*
Pesticide application	17(34.0)	33(66.0)	7(14.0)	10(20.0)	2(4.0)	1.66*
Farm supervision	44(88.0)	6(12.0)	12(24.0)	28(56.0)	4(8.0)	1.12
Marketing	50(100)	0(0.0)	44(88.0)	2(4.0)	4(8.0)	1.00

Source: Field survey (2022)

*Figures in parentheses represent the percentage

Health and safety precautions against the COVID-19 pandemic

The farmers' responses to the impact of COVID-19 on their farming operations are depicted in Table 3. The table shows that 30.0% of the respondents wash their hands under running water, 58.0% wear face masks, 16.0% practice physical separation, 12.0% use hand sanitizer, 14.0% follow the "no handshake" rule, and 6.0% cough into their elbow as preventative measures against the COVID-19. The results suggest that wearing a face mask (58.0%) scored highest, which may be attributable to a legal need for its use in public.

Table 3: Health and safety precautions against the COVID-19 pandemic

Coping mechanisms	Yes (%)	No (%)
Washing of hands under running water	15(30.0)	35(70.0)
Using of face mask	29(58.0)	21(42.0)
Physical distancing	8(16.0)	42(84.0)
Sanitizing the hand	6(12.0)	44(88.0)
No handshake	7(14.0)	43(86.0)
Coughing into the elbow	3(6.0)	47(94.0)

Source: Field survey (2023)

*Figures in parentheses represent the percentage

Challenges faced during the COVID-19 pandemic

Farmers in LNRBDA suffered the same difficulties as people in other professions around the country during COVID-19. Table 4 shows that 100.0% of the respondents had problems getting their farm goods to market, leading to 100.0% waste because of low demand. Animals grazing on farmland and crop destruction was a problem for 96.0% of respondents, while inadequate post-harvest handling was an issue for 98.0%. In addition, 94.0% of respondents experienced high transportation costs, 80.0% experienced pest and disease infestation due to inadequate farm visits, 70.0% experienced high labour costs, 58.0% experienced pilfering issues, 44.0% experienced the high cost of agro-chemicals, 40.0% experienced increase in the cost of seeds, and the minimal 16.0% experienced poor yield.

The average mean is calculated as 1.24, hence challenges with a mean higher than or equal to 1.24 are regarded to be moderately difficult, while those with a mean lower than or equal to 1.24 are considered to be moderate. An increase in the price of seeds (1.60), low yield (2.24), expensive agrochemicals (1.78), pilfering (1.42), and expensive labour (1.30) are the predominant challenges as a result of the COVID-19 pandemic.

Table 4: Challenges faced during the COVID-19 pandemic

Challenges faced	Yes	No	Severity of challenges			Mean
			Very severe	severe	Not severe	
Increase in cost of seeds	20(40.0)	30(60.0)	5(10.0)	9(18.0)	6(12.0)	1.60*
Poor yield	8(16.0)	42(84.0)	2(4.0)	7(14.0)	1(2)	2.24*
Inadequate post-harvest handling practices	49(98.0)	1(2)	16(32.0)	26(52.0)	2(4.0)	1.02
Inability to transport farm produce to market	50(100.0)	0(0.0)	33(66.0)	14(28.0)	0(0.0)	1.00
Spoilage of farm produce due to lack of patronage	50(100.0)	0(0.0)	19(38.0)	24(48.0)	4(8.0)	1.00
High cost of agro-chemicals	22(44.0)	28(56.0)	4(8.0)	13(26.0)	8(16.0)	1.78*
Pest and diseases infestation due to inadequate visits to the farm	40(80.0)	10(20.0)	5(10)	23(46)	10(20.0)	1.20
Pilfering	29(58.0)	21(42.0)	8(16.0)	12(24.0)	10(20.0)	1.42*
Animal grazing on the farmland and destroying crops	48(96.0)	2(4.0)	36(72.0)	8(16.0)	0(0.0)	1.04
High labour cost	35(70.0)	15(30.0)	8(16.0)	20(40.0)	7(14.0)	1.30*
High cost of transportation	47(94.0)	3(6.0)	32(64.0)	14(28.0)	1(2.0)	1.06

Source: Field survey, (2023)

*Figures in parentheses represent the percentage

Perception of the respondents on COVID-19

Table 5 presents the respondents' perception of COVID-19 as indicated by the obtained results. The study's results indicate that a majority of the respondents, specifically 66.0%, held the belief that COVID-19 is not a genuine phenomenon. The majority of respondents (80%) hold a pessimistic view regarding the possibility of their family contracting COVID-19. Regarding palliative measures, 70.0% of the participants reported that they did not receive any form of palliative care, while a minority (24.0%) reported receiving only basic food supplies.

The impact of the COVID-19 pandemic was primarily experienced by the participants in terms of their income (26.0%) and business operations (20%). The estimated monetary loss was substantial, with 36.0% of respondents experiencing losses ranging from ₦ (50,000-100,000) in the year 2020. In 2021, 38.0% of respondents experienced losses of ₦(≤50,000), while 34.0% experienced losses of ₦(50,001-100,000). The preponderance (32.0%) of participants hold the perspective that COVID-19 has resulted in unemployment for individuals.

Table 5: Perception of the respondents on the COVID-19

Variables	Frequency	Percentage
In your opinion is COVID-19 real?		
Yes	17	34.0
No	33	66.0
Do you have the perception that you or your family member could contract COVID-19?		
Yes	10	20.0
No	40	80.0
Did you benefit from any palliative measures from the government?		
Yes	12	24.0
No	35	70.0
If Yes, Indicate what you benefited		

Foodstuffs	12	24.0
Kindly share how COVID-19 personally affects you or your family		
Poor farm monitoring	4	8.0
Low income	13	26.0
Reduced business activities	10	20
Poor sales/market	4	8.0
No sales	2	4.0
Restriction of movement	5	10.0
Low farming activities	3	6.0
Loss of investment	1	2.0
Low yield	1	2.0
Idleness	1	2.0
Kindly Estimate your monetary loss on your Okra farm due to COVID-19 in 2020		
50,000 – 100,000	18	36.0
100,001 – 150,000	5.0	10.0
150,001 – 200,000	12	24.0
200,001 – 250,000	1	2.0
250,001 – 300,000	8	16.0
300,001 – 350,000	3	6.0
350,001 – 400,000	3	6.0
Kindly Estimate your monetary loss on your Okra farm due to COVID-19 in 2021		
1 – 50,000	19	38.0
50,001 – 100,000	17	34.0
100,001 – 150,000	9	18.0
150,001 – 200,000	5	10.0
Share your beliefs about COVID-19		
No more COVID-19	13	26.0
COVID-19 is deadly	3	6.0
COVID-19 made people lose their job/lesser opportunities	16	32.0
COVID-19 should be prevented	5	10.0
COVID-19 coping mechanism helped	4	8.0
COVID-19 is real	5	10.0
COVID-19 is not real	4	8.0

Source: Field survey (2023)

Test of Hypotheses

H₀: There is no significant relationship between the socioeconomic characteristics of the respondents and the challenges faced during the COVID-19 pandemic

The study's results indicate a significant correlation between various socio-economic characteristics, including age ($p = 0.000 \leq 0.05$), sex ($p = 0.000 \leq 0.05$), marital status ($p = 0.003 \leq 0.05$), religion ($p = 0.000 \leq 0.05$), occupation ($p = 0.000 \leq 0.05$), the primary source of income ($p = 0.000 \leq 0.05$), farm size ($p = 0.000 \leq 0.05$), years of experience in okra farming ($p = 0.000 \leq 0.05$), level of production ($p = 0.000 \leq 0.05$), yield ($p = 0.000 \leq 0.05$), and the individuals to whom respondents sell their farm produce after harvest ($p = 0.000 \leq 0.05$). Consequently, the alternative hypothesis would be deemed acceptable for all of the socio-economic characteristics.

Table 5: Relationship between the socioeconomic characteristics of the respondents and the challenges faced during the COVID-19 pandemic

Socio-economics characteristics vs. Challenges faced	Chi-square value	Degree of Freedom	P-value	Decision
Age	42.922	1	0.000	Significant
Sex	45.888	9	0.000	Significant
Marital status	39.119	18	0.003	Significant
Religion	36.111	9	0.000	Significant
Occupation	55.299	18	0.000	Significant
The main source of income	50.000	9	0.000	Significant
Farm size (in Hectares)	175.275	36	0.000	Significant
Years of experience in Okra farming	166.787	36	0.000	Significant
Level of production	50.000	9	0.000	Significant
Yield (in Hectare)	193.138	45	0.000	Significant
Who do you sell your produce to	68.885	18	0.000	Significant

Source: Field survey, (2023).

H0₂: There is no significant relationship between horticultural crop farm activities affected by COVID-19 and the challenges faced during the COVID-19 pandemic

According to the findings presented in Table 4.6, the calculated r-value is 0.841, exceeding the tabulated value of 0.000. As a result, the null hypothesis is rejected. It can be inferred that the horticultural crop farming sector was impacted by various challenges encountered amidst the COVID-19 pandemic.

Table 4.6: Correlation between Horticultural crop farm activities affected by COVID-19 and Challenges faced during the COVID-19 pandemic

		Horticultural crop farm activities by COVID-19	Challenges faced during the COVID-19 pandemic
Horticultural crop farm activities affected by COVID-19	Pearson Correlation	1	.841
	Sig. (2-tailed)		.000
	N	50	50
Challenges faced during the COVID-19 pandemic	Pearson Correlation	.841	1
	Sig. (2-tailed)	.000	
	N	50	50

Source: Field survey, (2023)

** Correlation is significant at the 0.01 level (2-tailed)

H0₃: There is no significant relationship between health and safety precautions against the COVID-19 pandemic and challenges faced during the COVID-19 pandemic.

Table 4.7 indicates that the calculated r-value is 0.764, surpassing the table value of 0.000. As a result, the null hypothesis is rejected. The aforementioned statement suggests that the participants were successful in mitigating the difficulties encountered amid the pandemic by adhering to appropriate health and safety measures.

Table 4.7: Correlation between Health and safety precautions against the COVID-19 pandemic and Challenges faced during the COVID-19 pandemic

		Health and safety precautions adopted	Challenges faced
Health and safety precautions against the COVID-19 pandemic	Pearson Correlation	1	.764
	Sig. (2-tailed)		.000
	N	50	50
Challenges faced during the COVID-19 pandemic	Pearson Correlation	.764	1
	Sig. (2-tailed)	.000	
	N	50	50

Source: Field survey, (2023)

** Correlation is significant at the 0.01 level (2-tailed)

CONCLUSION AND RECOMMENDATION

The horticultural sector in Nigeria, specifically the production of okra among farmers in the Lower Niger River Basin Development Authority (LNRBDA), has been significantly affected by the COVID-19 pandemic. This has caused significant disruptions in the agricultural value chain, resulting in reduced revenue and productivity. The research revealed that the COVID-19 outbreak had a noteworthy influence on the socio-economic attributes of the participants, horticultural crop farming operations, and measures taken to ensure health and safety. The research additionally revealed that the global health crisis exerted a significant influence on the difficulties encountered by the participants in the context of agricultural cultivation.

To alleviate the adverse effects of the COVID-19 pandemic and other future occurrences of such on okra cultivation within the LNRBDA farming community, it is advisable that governmental bodies and pertinent stakeholders:

1. Invest in research and development to identify more resilient crops that can withstand the impact of pandemics such as COVID-19.
2. Provide monetary assistance to farmers for procuring agricultural inputs, including seeds, fertilizers, and pesticides.
3. Educate farmers regarding alternative marketing strategies, such as online marketing, to expand their reach to a broader audience.
4. Consider forming farmers into cooperatives as a means of consolidating their resources and enhancing their capacity to negotiate favourable terms.

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