Available online at https://asric.africa/agricultural-sciences
ASRIC Journal on Agricultural Sciences Vol.4(1)(2023) 92-101

An Assessment of the Effects of Covid 19 Lockdown on Crop Farmers' Anxiety Disorder in Nigeria

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Received 10 April 2024; revised 13 May 2024; accepted 03 June 2024

Abstract

The study investigated on an assessment of the effects of covid 19 lockdown on crop farmers' anxiety disorder in Nigeria. Descriptive statistics, Double difference model, average treatment effect, generalized anxiety disorder scale and Oslo social support scales were the analytical tools used. The results confirmed that the covid-19 lockdown indeed affected the anxiety level of the farmers. The lockdown had a negative effect on their production and it is in turn reduced their income drastically. Age, income, farmer's experience, land size, access to credit, extension visitation, access to technical support from agricultural organizations, access to support from families and neighbours were found to have significant effect on anxiety level. It was also found that most of the farmers received support from their families and neighbours than they did from the government. The anxiety levels of farmers engaged in maize farming were found to be higher than those in cassava farmers due to the fact that the anxiety level has somewhat reduced before the harvest of cassava. The COVID-19 pandemic lockdown also created different anxiety levels in the farmers causing them to be unable to stop or control worrying. In conclusion, farmers were seriously affected by covid 19 lockdown. The study recommended that in order to reduce the anxiety levels of maize farmers, it is necessary to provide good storage facilities and government should provide agricultural support policies, including financial resources and technical assistance can be implemented for those farmers who are heavily affected by the COVID-19 outbreak. These farmers should be supported for early recovery and resilience to anxiety

Keywords: Covid-19, generalized anxiety disorder scale, Oslo social support scales

Introduction

In December 2019, the novel Coronavirus Disease (COVID-19) was first reported in Wuhan China. The disease spread quickly all through the world, causing the passing away of many individuals (Cortignani, Carulli & Dono 2020). The World Health Organisation (WHO) announced this plague to be a pandemic on 11th March 2020. The disease grew into a serious global health challenge killing over 100,000 people in 100 countries and was thereafter declared a pandemic by the World Health Organization on 11 March 2020. After spreading through East Asia, Europe, and North America in early 2020, the COVID-19 global pandemic started affecting countries in Africa and Latin America. Its rapid global spread has affected millions of people already vulnerable to food insecurity and malnutrition due to the effects of conflict and other disasters (Spitzer et al., 2006). With the largest population in Sub-Saharan Africa, and long-standing travel and trade links within Africa and to the rest of the world, it seemed inevitable that the pandemic would eventually reach Nigeria. At that time, various health and safety precautions have been taken in Nigeria in order to forestall the spread of the infection. The rapid spread of the coronavirus disease (COVID-19) in Nigeria has provoked the quick implementation of disease containment and other COVID-19 response measures.

This first case was announced in Lagos, which eventually became the virus epicentre in Nigeria, after which it began to spread throughout Lagos, Ogun State, and the Federal Capital Authority (FCT) area of Abuja. Since then, the coronavirus (COVID-19) pandemic has continued to disrupt life around the world, with a toll on human lives and economic activities (Patnaik *et al*., 2020). The arrival of the pandemic set off a chain of policy actions, including public health and education campaigns, fiscal and monetary measures, restrictions on large sections of the economy, and compensating measures in the form of social protection for poor and vulnerable people (Onyekwena and Amara Mma, 2020). With weak and fragile health infrastructure, Africa was considered a critical playground for the pandemic, and given Nigeria's current dwarfed health systems, response to the pandemic was a major source of concern with infected patients requiring admission into intensive care units (ICUs) for acute respiratory diseases and severe acute respiratory syndrome (SARS COV-2) pneumonia. Outside the health challenge, the pandemic has grim implications for Nigeria, especially as the lockdown affected the movement of goods, services, and humans (Ohia Bakarey & Ahmad 2020).

The outbreak of covid-19 pandemic has caused different economic problems and it has increased the anxiety of many farmers in the world especially in Nigeria. The federal government of Nigeria instituted a lockdown at the end of March. The lockdown came as a shock to crop farmers in Nigeria because of the fact that the restriction of movement was indiscriminately implemented thus making them unable to go to their farms especially in far distance locations. It has reduced the living standards and has greatly affected the mental health of many rural farmers. Although, these measures were taken to protect the public from the pandemic, the mental health of many people has been adversely affected as a result of both pandemic anxiety and restricted lifestyle imposed by measures to control the spread of the disease. Before the outbreak of the virus, rural farmers are already subjected to anxiety disorder because of different uncertainties like climate change, soil fertility, lack of inputs and lack of storage facilities. The covid-19 lockdown made rural farmers more anxious because of the different challenges they faced during the lockdown. Farmers also could not have access to transport facilities so they had to sell their produce cheaply to middlemen. They also faced the problem of increase in the price of agricultural inputs such as fertilizers, herbicides and seeds because the lockdown affected the import and transportation of such goods.

Considering all these challenges rural farmers encountered during the lockdown, the farmer's mental health was greatly affected. Most farmers became depressed because they could no longer meet up their standard of living. Studies that critically look into the effect of covid-19 lockdown on farmer's anxiety disorder especially in the study area are scanty. The study seeks to address the following objectives: to determine the socio-economic characteristics of respondents, to evaluate the impact of covid-19 lockdown on agricultural production of rural farmers, to examine the level of anxiety of rural farmers in the study areas during the covid-19 lockdown and to determine the effect of social support and social economic variables.

Methodology

This research was carried out in Kwara and Oyo states, Nigeria. The capital of Kwara state is Ilorin. Kwara is situated within the North central geopolitical zone of Nigeria. Kwara state shares boundary with the Republic of Benin and with five states in Nigeria. These states are Niger in the north, Oyo, Osun, Ekiti in the South, and Kogi in the East. The state lies approximately within latitude 8°.30'N, 5°00'E, with 16 Local Government Areas, a total land area of 36,825 km² and an estimated population of 3,192,900 (Ajadi *et al*, 2017). The rainy season begins towards the end of April and last till October. The dry seasons begin in November and end in April. The temperature of the state ranges from 33°C to 35°C from November to January and from 34°C to 37°C from February to April. The total annual rainfall ranges from 990.3mm to 1318mm. The rainfall exhibits double maximal pattern. Relative humidity ranges from 75% to 88% from May to October and 35% to 80% during the dry season (Ajadi *et al*, 2017).

Oyo state is located between latitude 6º55'– 8º45'N and longitude 2º50'–3º56'E respectively in south-western Nigeria, West Africa. Its shared border with the Republic of Benin, Kwara state, Osun state and Ogun state on the west, north, east and south respectively. With a projected population of 7,976,100 in 2023 Oyo state is the fifth most populous in Nigeria. The state has a tropical climate type with distinct periods of wet and dry season. The mean Annual temperature is 21ºC while the annual rainfall ranges from 1000 mm to 1500 mm. The Wet season is between 230 to 260 days/year. Most soil in Oyo state belongs to the savannah group of soil (Poudel & Subedi (2020). Even during the rainfall months, average temperatures are between 24°C and 25°C, while annual range of temperature is about 6°C. Rainfall figures over the state vary from an average of 1200mm at the onset of heavy rains to 1800mm at its peak in the southern part of the state to an average of between 800mm and 1500mm at the northern parts of the State.

A three-stage sampling technique was employed. The first stage involved the random selection of three Local Government Areas in each state because virtually all local government areas are known for maize and cassava production. The second stage involved the random selection of four villages each from the three Local Government Areas in the two states. The third stage involved random selection of ten (10) respondents from each selected village. Forty respondents were sampled from each local government.

This study employed descriptive and inferential statistics base on the objectives. The analytical tools include:

1. Descriptive statistics
2. Inferential statistics which include: Double Difference Model, Generalized anxiety disorder scale (GAD-7) and Oslo social support scale (OSSS-3)

Descriptive Statistics

Descriptive statistics such as frequency, percentage, averages and means were used to describe the socio-economic characteristics of the farmers. Descriptive statistics was used to determine the socio-economic characteristics of respondents

Double Difference Model

The double difference analytical tool was used to measure the short term or long-term program effects or impacts on respondents (Verner and Verner, 2005). It is a quantitative method often used to estimate and compare changes in outcome before and after program for respondents (Chen *et al*, 2006). In order to use the estimator in question, there must be information on the respondents, all the individuals must be observed both before and after the program (Verner and Verner, 2005).

The baseline data used to provide data for 'before' the COVID-19 lockdown were the farmers' maize and cassava output production in the year 2019 while farmers' maize and cassava output production in the year 2021 were used to provide data for 'after' the COVID-19 lockdown. The year 2020 was used to provide data of their maize and cassava output production during the lockdown. The differences between the average output production of these farmers were estimated using the simple form of the Double Difference.

The simple version of the Double Difference model is specified as follows:

$$LC = \frac{(Y2019 - Y2020) - (Y2021 - Y2020)}{Y2020} \quad \text{Equation 1}$$

Where:

LC = COVID-19 Lockdown

Y2019 = Output production of maize and cassava before the lockdown

Y2020 = Output production of maize and cassava during the lockdown

Y2021 = Output production of maize and cassava after the lockdown

The Double Difference has the advantage of netting out the effects of additive factors that have fixed (time-invariant) impacts on output indicator. If the mean Double Difference in the output is positive, it indicates that the COVID-19 lockdown has a positive effect (increase) on the output of the respondents while if it is negative, it means the COVID-19 lockdown has not increased the output of the respondents (Spitzer et al., 2006; Simonyan *et al*., 2012; Wakawa, 2014). It was expected *a priori* that the respondents will have lesser outputs after the lockdown.

Generalized Anxiety Disorder Scale (Gad-7)

Generalized anxiety disorder (GAD) is a chronic and highly prevalent disorder in the adult population. Though it occurs at a substantial frequency, the rate of GAD diagnosis is low (Konkan. *et al.*, 2013). The Generalized Anxiety Disorder (GAD-7) Scale is widely used in clinical practice and research due to its diagnostic reliability and efficiency. The GAD-7 is reported to be a valid, brief test in clinical, investigational, and general population samples (Konkan. *et al.*, 2013 Johnson. *et al*., 2019).

This scale was used examine the level of anxiety of the respondents during the covid-19 lockdown with a 4-point Likert scoring system (0: not at all, 1: a few days, 2: more than half of the days, 3: almost every day). A cut-off value of 10 for the GAD-7 total score was determined to be the threshold value for a diagnosis of GAD.

Oslo Social Support Scale (Osss-3)

OSSS-3 consists of three items that evaluate the level of social support. It is used for epidemiological and population-based research. Study participants was asked three questions on how many close friends they have, how involved other people are in their lives, and the availability of help from their neighbours. The response categories were assessed independently for each of the three questions, and a sum score was created by adding the three scores. The Oslo Social Support Scale has been used in several studies, thus supporting its feasibility and predictive validity with respect to psychological distress (Kocalevent.*et al*, 2012; Obayori, Nchom & Yusuf (2020)). This study was in accordance with the principles expressed in the Declaration of Helsinki. Gazi University Ethics Committee Number is 2021-398.

Results and Discussion

Socio-economic Characteristics of Respondents

The result of socio-economic characteristics of respondents is presented in Table 1. The result shows that 73.33% of the respondents were males, 26.67% were females in Oyo state while 76 67% were males and 23.33% were females in Kwara state. It shows that farming in the locality is predominantly done by males. This might have profound implications on production efficiency. It also shows that the average age of respondents is 52 years in Oyo state and 56 years in Kwara state. This implies that the active age participates predominantly in agricultural production in the study areas. This might have implication on productivity in farming since the respondents of this age categories are expected to be energetic and perhaps to have gained great farming experience that can enhance their productivity. A further analysis of the result shows that they were still in their productive age and could still actively engage in farming. Distribution of respondents according to their marital status shows that majority of respondents were married in both states, 63.33% in Oyo state while 90% in Kwara state. This implies that there is a possibility to have more people in the household of the respondents that are married. In an African society, the amount of family labour available to an individual is closely related to the marital status of the household head and household size (Muhammad -Lawal *et al*, 2009). Also, all things being equal an average farmer first exhaust all sources of labour in his family before hiring labour in order to reduce cost of production. A lot of respondents 59.17% have primary education in Oyo state while more farmers have secondary education in Kwara state 40.00%. This implies that most of the farmers can read and write while some farmers cannot and this shows that they can easily have access to new innovations and techniques. Education is assumed to have positive influence on the adoption of improved technologies because its ability to obtain process, understand and

interpret the agricultural information coming to farmers from any direction (Bamire *et al*, 2002). This is also in line with Eric et al (2014) which stated that education is vital for improving agricultural productivity such that it helps give farmers better farming methods and keep them abreast with changing innovation and ideas. This table also shows the majority of respondents have income more than ₦300000 in the both states. This shows that most of the respondents have average reasonable income and their agriculture activities are successive.

Also, the results reveal that greater percentage (55%) of the respondents had farming experience above 15 years in study areas. This indicates that farming is an age-long venture to the respondents in the study areas. Over 57% belong to cooperative society while more than 42.50% are non-member of a cooperative society in two states. This implies that most of the farmers have access to credit from cooperative societies. Membership to a cooperative society has been founded to influence the adoption of agricultural technologies. It allows cross fertilization and fast transmission of ideas among farmers as implied by Akinola *et al*, (2010). Thus, this agrees with the findings of Owombo *et al*, (2011) who stated that, if the farmers have free access to credit facilities, they may be more interested in investing on improved technologies; therefore, it is expected to influence adoption of new technologies positively. Also, the result revealed that majority of respondents (91.67%) in Oyo state and (70.83%) in Kwara state did not have contact with extension agents during covid-19 lockdown while (8.33%) in Oyo state and (29.17%) in Kwara state have contact with extension agents during covid-19 lockdown. This suggested that during COVID-19 lockout, rural farmers have limited access to extension agents.

Table 1: Socio-Economic Characteristics of the Respondents (n= 120)

	Oyo State		Kwara State	
Characteristics	**Freq**	**Percent (%)**	**Freq**	**Percent (%)**
Gender				
Female	32	26.67	28	23.33
Male	88	73.33	92	76 67
Total	120	100.00	120	100.00
Age				
≤30	20	16.67	15	12.5
31-40	26	21.67	7	5.83
41-50	34	28.33	28	23.33
51-60	34	28.33	44	36.67
Above 60	6	5.00	26	21.67
Total	120	100.00	120	100.00
Marital Status				
Single	15	12.50	1	0.83
Married	76	63.33	108	90.00
Divorced	8	6.67	0	0.00
Widowed	21	17.50	11	9.17
Total	120	100.00		
Educational Level				
No Formal Education	7	5.83	29	24.17
Primary	71	59.17	31	25.83
Secondary	25	20.83	48	40.00
Tertiary	17	14.17	12	10.00
Total	120	100.00	120	100.00
Farm Size				
≤5	91	75.53	103	85.83
6-10	21	17.50	16	13.33

Above 10	8	6.67	1	0.83
Total	120	100.00	120	100
Farm Experience(years)				
1-5	19	15.83	11	9.17
6-10	19	15.83	17	14.17
11-15	16	13.33	27	22.50
Above 15	66	55.00	65	54.17
Total	120	100.00	120	100
Income (#)				
≤50000	3	2.50	10	8.33
51000-100000	6	5.00	8	6.67
101000-200000	10	8.33	12	10.00
201000-300000	6	5.00	30	25.00
Above 300000	95	79.17	60	50.00
Total	120	100.00		
Cooperative Membership				
Yes	69	57.50	71	59.17
No	51	42.50	49	40.83
Total	120	100.00	120	100.00
Extension Contact				
No access to extension	110	91.67	85	70.83
Access to extension	10	8.33	35	29.17
Total	120	100.00	120	100

Source: Field Survey, 2022

Effect of Covid-19 Lockdown on Crop Production of Maize and Cassava Farmers in Oyo and Kwara States

Result on the impact of COVID 19 lockdown on crop production is presented in table 2a. The result revealed that the farmers' productivity before, during and after covis-19 lockdown and differences within and between the years. The average productivity of maize production of farmers prior to covid-19 lockdown was 1421.23kg, and decreased to 820kg during the lockdown. The average productivity of cassava was 32120kg before covid-19 and reduced to 12214.23kg during lockdown. Likewise, it is also clear that once the COVID-19 lockdown was removed, the average output of maize production climbed from 820kg to 1326kg. Similar to how the average output of cassava production went from 12214.23 kg during the lockout to 16015 kg following the lockdown, as seen in Table 2. This suggests that as a result of the population being subjected to the COVID-19 lockdown measure, agricultural productivity, such as maize, has decreased by around 38.16%, while cassava production has decreased by about 23.73%. This could translate to retrogression in quest to half food security in the country which in turn led to spike in household food prices. This is well explicated by Gakpo (2020) who stated that the announcement of the lockdown had prompted food insecurity fears in Africa, which has triggered rising prices, panic buying and import-export disruptions. Libby (2020) revealed that COVID-19 lockdown had severely triggered scarcity and high prices of the main staple food beyond the reach of some people. In the same vein, Ojo (2020) noted that food shortages and price shocks for the consumers are key components of the lockdown crisis in Nigeria. All things being equal, spike in food prices reduces the quantity of food at household level, and low quantity of food is a potential threat to households' food security. This is because it limits the availability of food, which is a key component of food security. The foregoing was well captured in WFP (2020) report, which shows that COVID-19 lockdown measure is exacerbating food shortages in Nigeria. In table 2b, is presented

the result of the Double Difference impact analysis in Kwara state. It shows the average output(kg) of the farmers' maize and cassava production before, during and after the effect of the COVID-19 lockdown and the differences within and between these years. The result shows that the average output(kg) of maize production of the farmer before the COVID-19 lockdown was 1515.66kg. This decreased to 960kg during the lockdown. For cassava production, also the average output(kg) was 20330kg before the COVID-19 lockdown and decreased to 10174.17kg during the lockdown. This shows that the COVID-19 lockdown has caused a decrease in the output of the farmer's maize and cassava production.

However, it can also be seen that the average output of maize production increased from 960kg during the lockdown to 1294kg after the COVID-19 lockdown was lifted. Same as for the average output of cassava production which increased from 10174.17kg during the lockdown to 13905kg after the lockdown as shown in Table 2b. The percentage difference in maize output indicates that the COVID-19 lockdown had a negative effect of 25.81% on maize production. For the percentage difference in cassava output, as shown in Table 2b, it indicates that COVID-19 lockdown had a negative effect of 26.83% on cassava production. These resulted in hike in prices of maize and cassava in the market and low income to the farmers.

Table 2a. Effect of Covid 19 lockdown on farmers' productivity in Oyo State

	Before lockdown (kg)	**During lockdown (kg)**	**After lockdown (kg)**	**Percentage difference (%)**
Maize	1421.23	820.00	1326.00	**38.16**
Cassava	32120.00	12214.23	16015.00	**23.73**

Source: Field Survey Data, 2022.

Table 2b: Effect of Covid 19 lockdown on farmers' productivity in Kwara state.

	Before lockdown (kg)	**During lockdown (kg)**	**After lockdown (kg)**	**Percentage difference (%)**
Maize	1515.66	960.00	1294.00	25.81
Cassava	20330.00	10174.17	13905.00	26.83

Source: Field Survey Data, 2022.

Anxiety Level of Crop Farmers in Oyo State

The result anxiety level of crop farmers in Oyo State presented on Table 3 indicated that the GAD7 anxiety score of 46.67% of the respondents in the study area fell within 10-14 which means they have moderate anxiety, about 34% have GAD7 score ranged between 5–9 (were found to have mild anxiety); meanwhile 10.83% have score not more than 4(were found to have minimal anxiety) and 8.33% had between 15 – 21(were found to have severe anxiety), the average anxiety score in the study area was estimated to be 9.4. The result indicated that most of the respondents had moderate anxiety The Result was support by Rudolphi *et al*. (2020).

Table 3: GAD7score

Variables	**Freq.**	**Percent**	**Remark**
≤4	13	10.83	Minimal anxiety
5 - 9	41	34.17	Mild anxiety
10 - 14	56	46.67	Moderate anxiety
15 - 21	10	8.33	Severe anxiety
Mean = 9.4			
Total	120	100.00	

Source: Field Survey, 2022

Effect of Social Support and Anxiety Determinants of the Farmers in Oyo State

The result in Table 4 shows the effect of social support and anxiety determinants of the farmers during the covid-19 lockdown. From the result, it was deduced that most of the respondents(X=3.42) got motivational support during the covid-19 lockdown and it ranked first among the supports they were given. This is followed by family and relative support which ranked second (X=2.89) was also received by most farmers during the lockdown. Government palliatives ranked third (X=2.57) and technical support from agricultural organizations ranked fourth (X=1.71) which implies that few of the respondents got technical support

from agricultural organizations. This result implies that since most of the farmers did not get support from agricultural organizations, the anxiety of those farmers might be greater than those of the farmers who got support from agricultural organization. According to this result, farmers with strong social support had lower anxiety than farmers with less social support. The specific conditions of agriculture in every country require that this sector be protected and supported directly by the state or through institutions authorized by the state (Abay *et al*, 2017).

Table 4: Effect of Social Support and Anxiety Determinants of The Farmers in Oyo State

Variables	S.D F (%)	Disagree F (%)	Neutral F (%)	Agree F (%)	S.A F (%)	Total	Mean score	Rank
Technical support from agricultural organization	72 (60.0)	27 (22.50)	10 (8.33)	6 (5.00)	5 (4.17)	120 (100.0)	1.71	4th
Family and relatives support	17 (14.1)	28 (23.33)	33 (27.50)	35 (29.1)	7 (5.83)	120 (100.0)	2.89	2nd
Government palliative	32 (26.6)	37 (30.83)	13 (10.83)	27 (22.5)	11 (9.17)	120 (100.0)	2.57	3rd
Motivational support	16 (13.3)	12 (10.00)	32 (26.67)	26 (21.6)	34 (28)	120 (100)	3.42	1st

Source: Field Survey, 2022 (S.D= Strongly Disagree, S.A= Strongly Agree, F = Frequency)

Effect of Social Support and Anxiety Determinants of the Farmers in Kwara state

The result in Table 5 shows that the effect of social support and anxiety determinants during the COVID-19 lockdown. From the result, it was discovered that most of the respondents (M.S = 3.44) got support from their families during the COVID-19 lockdown and it ranked first among the supports they were given. This is followed by practical help from friends which ranked second (M.S = 2.89) was also received by most of the farmers during the lockdown. Technical support from agricultural organizations ranked sixth (M.S = 1.98) and government palliative support ranked seventh (M.S = 1.71) which implies that few of the respondents of the farmers got palliative support from the government. This result implies that since most of the farmers did not get support from the government, the anxiety of those farmers might be greater than those of the farmers who got palliative support from the government.

Table 5: Effect of Social Support and Anxiety Determinants of The Farmers in Kwara State

Variables	None Freq (%)	Rarely Freq (%)	Sometimes Freq (%)	Often Freq (%)	Always Freq (%)	Total	Mean Score
Technical support from agricultural organizations	46 (38.33)	39 (32.50)	28 (23.33)	6 (5.00)	1 (0.83)	120 (100.00)	1.98
People to count on, if there are great personal problems	28 (23.33)	39 (32.50)	37 (30.83)	12 (10.00)	4 (3.33)	120 (100.00)	2.35
Interest and concern people show	25 (20.83	32 (26.67)	37 (30.83)	21 (17.50)	5 (4..17)	120 (100.00)	2.58
Practical help from friends	23 (19.17)	23 (19.17)	34 (28.33)	24 (20.00)	16 (13.33)	120 (100.00)	2.89
Support from neighbours	28 (23.33)	16 (13.33)	33 (27.50)	29 (24.17)	14 (11.67)	120 (100.00)	2.88
Government palliative support	60 (50.00)	41 (34.17)	13 (10.83)	6 (5.00)	0 (0.00)	120 (100.00)	1.71
Family and relatives support	12 (10.00)	25 (20.83)	21 (17.50)	22 (18.33)	40 (33.33)	120 (100.00)	3.44

Source: field survey, 2022

Conclusion

The results confirmed that the covid-19 lockdown indeed affected the anxiety level of the farmers. The lockdown had a negative effect on their production and it in turn reduced their income drastically. Age,

income, farmer's experience, land size, access to credit, extension visitation, access to technical support from agricultural organizations, access to support from families and neighbours were found to have significant effect on anxiety level. It was also founded that most of the farmers received more support from their families and neighbours than they did from the government. The anxiety levels of farmers engaged in maize farming and were found to be higher than those in cassava farmers due to the fact that the anxiety level has somewhat reduced before the harvest of cassava. The COVID-19 pandemic lockdown also created different anxiety levels in the farmers causing them to be unable to stop or control worrying. These farmers should be supported for early recovery and resilience to anxiety. The study recommended that in order to reduce the anxiety levels of maize farmers, it is necessary to provide good storage facilities and government should provide agricultural support policies, including financial resources and technical assistance can be implemented for those farmers who are heavily affected by the COVID-19 outbreak

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