Impact of covid-19 public health containment measures (lockdown) on agricultural activities and livestock sub-sector: A case of Southwest, Nigeria

^aOjediran, J. T., ^{b*}Ojediran, T. K., ^cFanifosi, G. E., ^aAdeola, R. G., ^cAjao, O. A.,
^dBabarinde, S. A., ^dAjiboye, O., ^cShittu, M. D., ^cOlayeni, T. B., ^bOdunsi, A. A., ^bEmiola, I.
A., ^fOlabode, S. O., ^fAkanbi, W. B. and ^gAjayi, A. F.

^aDepartment of Agricultural Extension and Rural Development,

^bDepartment of Animal Nutrition and Biotechnology,

^cDepartment of Agricultural Economics,

^dDepartment of Crop and Environmental Protection,

^eDepartment of Animal Production and Health,

^fDepartment of Crop Production and Soil Science,

^gDepartment of Physiology,

Ladoke Akintola University of Technology, Ogbomosho, Nigeria.

*Corresponding author: tkojediran@lautech.edu.ng

Abstract

The impact of COVID-19 pandemic and lockdown surpasses the health sector. A multi-disciplinary team of experts in agriculture including crop, livestock, economics and extension drew out a questionnaire on areas of impact, mitigation and constraints imposed by COVID-19 and accompanied lockdown. The survey was administered online to farmers in South-west, Nigeria. A total of 1,080 respondents from Oyo, Osun, Ekiti, Ogun, Ondo and Lagos States (319, 225, 119, 213, 202 and 78, respectively) responded. Obtained data for this study were analyzed using descriptive statistics (frequency count, percentage, mean and standard deviation). The study revealed that COVID-19 pandemic and lockdown had a devastating impact on Agriculture/livestock activities and the value chain. Most of the respondents were married, active males ($x=44$ years) and livestock farmers. The respondents perceived that producer/farmers and marketers (64-66%) were profoundly affected while agro-processors and input/agrochemical merchants (53%) were moderately affected. Majority of the respondents agreed that the pandemic and lockdown changed agriculture with the threat to life and livelihoods (94.44%), with looming food/feed crises (92.96), increased cost of food/feed production (90.65%), economic loss (x WMS = 4.32), reduced quality food availability ($x=4.18$), increased income insecurity ($x=4.18$) and social vices ($x=4.50$) as a result of logistical (transportation/ movement) restrictions and border closures. Our study, therefore, suggests that there is a need for collaborative effort from the government and the stakeholders to strengthen the agricultural sector through finance to increase production and enhanced value chain. This will go a long way in achieving self-sufficiency in food and industrial raw materials post-COVID-19 period.

Keywords: Agriculture, Covid-19, livestock, pandemic

Impact de la mesure de confinement de la santé publique covid-19 (confinement) sur les activités agricoles et le sous-secteur de l'élevage: un cas du sud-ouest, Nigéria

Résumé

L'impact de la pandémie et du confinement du COVID-19 dépasse le secteur de la santé. Une équipe multidisciplinaire d'experts en agriculture, y compris les cultures, le bétail, l'économie et la vulgarisation, a élaboré un questionnaire avec les domaines d'impact,

Impact of COVID-19 public health containment measures (lockdown)

d'atténuation et les contraintes imposées par COVID-19 et le confinement accompagné. L'enquête a été administrée en ligne aux agriculteurs du sud-ouest du Nigéria. Au total, 1 080 répondants des États d'Oyo, d'Osun, d'Ekiti, d'Ogun, d'Ondo et de Lagos (319, 225, 119, 213, 202 et 78, respectivement) ont répondu. Les données obtenues pour cette étude ont été analysées à l'aide de statistiques descriptives (nombre de fréquences, pourcentage, moyenne et écart-type). L'étude a révélé que la pandémie et le confinement du COVID-19 avaient un impact dévastateur sur les activités agricoles / de bétail et la chaîne de valeur. La plupart des répondants étaient mariés, des hommes actifs (= 44 ans) et des éleveurs. Les répondants ont perçu que les producteurs / agriculteurs et les commerçants (64-66%) étaient profondément affectés tandis que les agro-transformateurs et les commerçants d'intrants / agrochimiques (53%) étaient modérément affectés. La majorité des répondants ont convenu que la pandémie et le confinement ont changé l'agriculture avec une menace pour la vie et les moyens de subsistance (94,44%), avec des crises imminentes pour les denrées alimentaires et les aliments pour animaux (92,96), une augmentation du coût de la production de denrées alimentaires / aliments pour animaux (90,65%), des pertes économiques ($x=4,32$), une disponibilité alimentaire de qualité réduite ($x=4,18$), une insécurité accrue des revenus ($x=4,18$) et des vices sociaux ($x=4,50$) en raison des restrictions logistiques (transport / mouvement) et des fermetures de frontières. Notre étude suggère donc qu'il est nécessaire de déployer des efforts de collaboration de la part du gouvernement et des parties prenantes pour renforcer le secteur agricole par le biais du financement afin d'augmenter la production et d'améliorer la chaîne de valeur. Cela contribuera grandement à atteindre l'autosuffisance en matières premières alimentaires et industrielles après la période COVID-19.

Mots clés: Agriculture, Covid-19, bétail, pandémie

Introduction

The global health crisis occasioned by the COVID-19 pandemic has impacted sectors and economies (IFAD, 2020) through impact on human manpower and measures like lockdown to curtail its spread. These important measures had impact on agriculture and livestock subsector through disruptions in supply both intra and internationally. Currently, The International Food Policy Research Institute (IFPRI) revealed that 140 million additional people apart from around 820 million people all over the world are experiencing chronic hunger out of which 113 million are coping with acute hunger already (FAO, 2020a) could fall into extreme poverty as a result of the virus while a United Nation University study projects worldwide poverty could soar for the first time since 1990. Worrisome is the phenomenal impacts on vulnerable groups already threatened by poverty, lack and hunger in sub – Sahara Africa, home to a

large number of these people (IFAD, 2020). The public health containment measures (physical distancing, household isolation, massive lockdown and border closures) to slow the spread of the new virus is no doubt working but not without delivering a significant fall in economic activity. The demand and supply of goods had been in shocks (FAO, 2020b) because selective transportation of people and products reduced investment flows according to the United Nations Conference on Trade and Development (UNCTAD, 2020). ILO, (2020) had predicted employment crises, while the WTO (2020) awaits world trade to plummet by between 13 and 32% in 2020. The IMF and Organisation for Economic Co-operation and Development (OECD), had confirmed an impending worst economic downturn and that the lockdown will directly alter sectors that estimated for one-third of GDP in major economies (OECD, 2020; Oxford Economics, 2020; EIU, 2020). Restriction of movement

owing to COVID-19 has resulted in food chain disruptions from production to consumption, caused declined and delay in timely distribution of agricultural inputs; shortage of informal labour for intensive agriculture; disruption of existing pre-modern social collaboration among smallholder farmers for employment during peak agricultural activities and labour layoff (Forsido *et al.*, 2020). A similar outbreak of Ebola virus disease led to hunger and malnutrition, labour shortages, produce loss which was worsened by transport or movement restrictions (FAO, 2020a, c).

Africa's First index case of COVID-19 was reported in Egypt. Nigeria had its index case on February 27, 2020, in Lagos State, spread to neighbouring states in the south-western states and other regions before the lockdown was announced on March 29, 2020. Fatalities had been on the increase globally. It is therefore essential to evaluate the effect of COVID-19 and lockdown on agricultural and livestock activities in south-western, Nigeria and constraints against relief measures.

Materials and methods

A multidisciplinary team of experts in agriculture including crop, livestock, economics and extension were established for conducting expert opinion assessment on the effect of COVID-19 on Agriculture and farmers. The Team had sessions to fashion probable areas of impact, mitigation and constraints imposed by COVID-19 and drew out a questionnaire which was later made into Google form doc format for smooth distribution online to the respondents across various strata of the agriculture value chain. The soft copy of the questionnaire was sent via email and social media platforms to different farmer groups in the southwest Nigeria. Hence, the distribution was without geographic barrier.

Study area

The study was conducted across the southwest region of Nigeria. The area is made up of 6 states comprising of Lagos, Ogun, Oyo, Osun, Ondo and Ekiti covering about 955.5km² of the landmass. The population is estimated at 32.5 million people, approximately 21% of the national population (AOAV, 2013). The region is bounded northward by the middle belt state of Kwara, in the west by the Republic of Benin, in the East by the South-south region of Edo and Delta states and in the south by the Atlantic ocean. All states have various forms of agriculture activities.

Sampling procedure and sample size

The respondents selected for this study included people in the agriculture value chain, the farmers involved in crop production, livestock farming and their allied ventures such as producers; intermediaries, processors, agricultural economists and extension agents. The respondents were 1,080 in total corresponding to 319 respondents from Oyo, 225 from Osun, 119 from Ekiti, 213 from Ogun, 202 from Ondo and 78 from Lagos states respectively. The data collection lasted for five weeks

Data analysis

The data obtained were analyzed using descriptive statistics, including frequency count, percentage, mean, standard deviation.

Results and discussion

The observed respondents size could be attributed to method of questionnaire administration, agrarian nature of some states, land mass available for agriculture and education status of farmers. Lagos state is the commercial capital of Nigeria being the former capital territory and this may have accounted for the low number of respondents.

Farmer's demographic characteristics

Table 1 indicates the demographic characteristics of the respondents. The

respondent's age ranged from 21 – 68 years. The highest age range concentration of the respondents was found to be at 50 – 59 years of age representing 35.28%, closely followed by the age range between 41 – 50 years representing 26.76%, while 21.67% fell within 31 - 40 years. Those respondents within the age range of 21 – 29 years accounted for 15.19%, while those above 60 years of age represents 1.11%. The average age of the respondents was 44years. This confirms the report of Adebo (2014) and Adeola and Adetunbi (2015) that most farmers in south-west Nigeria were still in their active and productive age.

Moreover, 63.24% of the respondents were males, while 36.76% were female. This showed the dominance of the male in the farming profession. These findings probably indicated that farming activities are an energy-demanding work; hence men are more involved in production while the women are more engaged with food processing and marketing in agriculture (Oyediran *et al.*, 2015).

The result on marital status showed that 71.30% of the respondents were married, 13.89% were widowed, 14.17% were single, and 0.65% was divorced. The cultural inclinations on married people according to Ahmed *et al.* (2016) confers responsibility of providing for the wellbeing of their household which may thus make such individuals settle for agricultural activities either as a primary or secondary occupation. It also denotes that the household members were needed in most agricultural operations (Ogunsumi, 2005). Observation on the household size indicated that 43.24% of the respondents had up to five persons while 56.76% had between 6 – 10 persons in their household. On average, a family had six persons. This implied that the household size of the respondents was relatively large. Thus, this may positively influence farming activities. This agrees with the earlier findings of

Omoare *et al.* (2014) that large family size is an indicator of the availability of labour for various farming activities.

The respondents attained various forms of education. Although, 2.22% had no formal of education, 0.56% had a primary school, 13.43% had secondary education, 2.22% had NCE qualification, 1.11% had vocational training, 0.56% had adult education while 79.91% had higher diploma or degree. It was observed that 97.78% of the respondents had formal education. The means of data collection may have accounted for the top form of educated respondents because filling google forms needed a certain level of education. The high form learning among the respondents, according to Oyediran *et al.* (2015) may encourage acceptance of innovation.

The result on farming experience indicates that 21.76% of the respondents had up to five years farming experience while 72.69% had been farming for between 6 – 10 years, while others had more than ten years farming experience. The mean farming experience was observed to be seven years. Experience is an asset that inspires the farmer's decision-making process and rationalizes the farmers' stand. The result of this study contradicts the report of Adeola and Adetunbi, (2015) and Ojo *et al.* (2020).

Primary and secondary occupation of the respondents

Table 2 shows the primary and secondary occupation of the respondents. Majority of the farmers (46.67%) were livestock farmers while 23.98% were crop farmers. Other primary occupations engaged by the respondents include agricultural extension agents (1.85%), agricultural economic researcher (2.13%), civil servant (9.35%) and students (16.02%) indicated as their specific primary occupation. The respondents who had crop farming as their secondary occupation were 40.28%.

Table 1: Respondent's demographic characteristics

Characteristics	Frequency	Percentage	Mean	SD
Age (years)				
21 – 30	164	15.19	44	9.98
31 – 40	234	21.67		
41 – 50	289	26.76		
50 – 59	381	35.28		
Above 60	12	1.11		
Gender				
Male	683	63.24		
Female	397	36.76		
Marital Status				
Single	153	14.17		
Married	770	71.30		
Divorce	7	0.65		
Widow	150	13.89		
Household size (number)				
1– 5	467	43.24	6	3.34
6 - 10	613	56.76		
Educational qualification				
None	24	2.22		
Primary	6	0.56		
Secondary	145	13.43		
NCE	24	2.22		
Vocational	12	1.11		
Adult Education	6	0.56		
HND/Degree	863	79.91		
Farming Experience				
1-5	235	21.76	7	3.30
6-10	785	72.69		
11-15	18	1.67		
16-20	30	2.78		
Above 20	12	1.11		

Source: Field Survey, 2020. SD – standard deviation

Similarly, 49.17% of the respondents were livestock farmers. Only 10.55% of the respondents were students. This shows that most of the respondents were livestock and crop farmers. A host of the respondents were students and at the same time, practising farmers. This is not unexpected since farmers were the target respondents (Ogunsumi, 2010).

Effect of COVID-19 and lockdown on agricultural sub-sections and value chain

The effect of COVID-19 and lockdown on agricultural sub-sections and value chain is shown in Table 3. The respondents perceived that producers/farmers (64.44%) were profoundly affected, 31.67% believed that they were moderately affected, while

3.89% perceived that the farmers were lowly affected. 52.87% observed that agro-processors were moderately affected. However, 42.8/% was perceived to be profoundly affected, while 4.26% were lowly influenced. The respondents that perceived that input/agrochemical/drug sellers were moderately affected were 53.80%. 38.89% were perceived to highly affected, while 7.22% were lowly controlled. The respondents perceived that 65.30% of the market/producer sellers were highly affected, 28.24% believed that they were moderately affected, while 5.46% recognized that the farmers were lowly affected. WFO (2020) reported that this pandemic of coronavirus, lockdown and

Impact of COVID-19 public health containment measures (lockdown)

borders closure has impacted on the entire food supply chain by actively changing farmers' access to input like seeds, fertilizers, feed, drugs and agrochemicals because they are inter-related. Food/feed distributors, wholesalers and retailers in the middle of the supply chain had been reported to be hit because the closure of shops, markets places, restaurants, schools, worship centres and tourism had importantly reduced the market space and demand for agricultural products with significant impact on the sector. This report showed that the farmers and produce sellers are highly impacted, while the agro-processors and input/agrochemical/drug sellers were moderately affected. This may be attributed to the perishable nature of farmer produce like vegetables and lowered demand occasioned by the lockdown (Forsido *et al.*, 2020).

General perception statements on the effect of COVID 19 and lockdown on agriculture and farmers

Table 4 shows the general perception statements on the effect of COVID 19 and lockdown on agriculture and farmers.

Between 89-94% of the respondents believed that COVID-19 threatened lives and livelihood; disrupted farming and discouraged farmers because of indiscriminate lockdown; there could be a risk of looming food crises and nutritional insecurity; COVID-19 affected food/feed production because of indiscriminate lockdown; while 35.74% perceived that only low-income earners are vulnerable or at risk (FAO (2020a) reported that COVID-19 and lockdown had brought a threat to lives and livelihood, disrupt farmers, agricultural activities including inputs, transportation and processing thus affecting food/feed production. This could predispose the populace to the risk of looming food crises, nutritional insecurity mainly rural population and low-income earners are at risk (FAO, 2020d, 2020e) unlike in FAO, IFAD, UNICEF, WFP and WHO (2019). There was reduced market demand for eggs in the south-west as this may prompt farmers to shift to crop production. COVID-19 lockdown and border closure have impact labour migration needed for farming activities (WFO, 2020).

Table 2: Occupation of the respondents

Occupation	Primary		Secondary	
	Frequency	Percentage	Frequency	Percentage
Student	173	16.02	114	10.55
Civil servant	101	9.35	0	0.00
crop farmer	259	23.98	435	40.28
livestock farmer	504	46.67	531	49.17
Extension agent	20	1.85	0	0.00
Economic researcher	23	2.13	0	0.00
Total	1,080	100.00	1,080	100.00

Table 3: Effect of COVID-19 and lockdown on agricultural sub-sections and value chain

Agricultural subsections	High		Moderate		Low	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Producers/farmers	696	64.44	342	31.67	42	3.89
Agro-processors	463	42.87	571	52.87	46	4.26
Agro-chemical/drug sellers	421	38.98	581	53.80	78	7.22
Market/producer sellers	716	66.30	305	28.24	59	5.46

Table 4: General perception statements on the effect of COVID 19 and lockdown on agriculture

Statements	Yes		No	
	Freq	Perc	Freq	Perc
COVID-19 threatened lives and livelihood	1,020	94.44	60	5.56
COVID-19 disrupted farming and discouraged farmers because of indiscriminate lockdown	957	88.61	123	11.39
There could be risk of looming food crises and nutritional insecurity	1,004	92.96	76	7.04
Only low-income earners are vulnerable or at risk	386	35.74	694	64.26
COVID-19 indiscriminate lockdown affected food/feed production	979	90.65	101	9.35

Perceived effect of COVID-19 lockdown on crop production, processing and marketing

The result presented in Table 5 shows the perceived effect of COVID-19 lockdown on crop production and processing. From the table, the respondents agreed that COVID-19 lockdown affected the cost of production; this had the highest weighted mean score of 4.50. The perishability nature of crops influence the decision of most of the respondents that lockdown as a result of the novel pandemic COVID-19 caused harvest losses especially for vegetable farmers ($x=4.32$), and that it affected sales of farm inputs and scarcity of seeds, chemicals and fertilizer looms this cropping season ($x=4.31$). The restriction on movement and global agricultural trade affected the commodity price of farming inputs and the low rate of processing of agricultural produce also affected commodity prices ($x=4.29$). Agricultural production in Nigeria is mainly rain-fed, and productivity declines whenever farmers planting time is disrupted (Martins, 2020). Food demand is increasing due to increasing population. Low modern farming techniques, diseases and pest, crude ways of farming, insurgence, farmer-herder conflict and weather variability were affecting food production before COVID 19 pandemic. This invariably affects the supply of food and the supply fall short of demand (Forsido *et al.*, 2020). This is evident as Nigeria still remain a net importer of food (Olomola, 2015) in Africa. Thus the price of food hiked because of

lockdown, transport and import restrictions occasioned by COVID 19. The production of seeds, seedlings and sawmilling was also affected ($x=4.32$), and farming activities as a whole was affected ($x=4.32$). This was observed to affect the quality of produce for sale further and thus impacted human health ($x=4.17$), and thus affected the availability of labour for land preparation ($x=4.06$). These results correspond with the report FAO (2020a, c), that movement restriction imposes on people during Ebola epidemics led to a shortage of labour especially during the harvesting period which eventually amounts to increased agricultural wastes. On the contrary, most of the respondents disagree on the improvement of farmers' income ($x=2.90$), the welfare of the farmers ($x=2.90$), quality of living ($x=2.88$) and improvement in production ($x=2.66$). This agrees with (FAO, 2020a) that human and economic toll will be severe, especially with low-income and middle-income countries.

Perceived effect of COVID-19 lockdown on livestock production, processing and marketing

The perceived effect of COVID-19 lockdown on livestock production, processing and marketing is shown in Table 6. With compulsory lockdown, quarantine and disruption and hike in transportation, economic activities in the country were on a standstill. This influenced the decision of most of the respondents that COVID-19 lockdown increased cost of animal feed ($x=4.55$) and also caused an upsurge economic losses ($x=4.51$), in consonance

Impact of COVID-19 public health containment measures (lockdown)

Table 5: Perceived effect of COVID-19 pandemic and lockdown on crop production/ processing.

Statements	SA	A	U	D	SD	WMS	Rank
COVID-19 affected the availability of labour for land preparation	472 (43.67)	351 (32.50)	185 (14.05)	152 (5.33)	63 (4.45)	4.03	7
COVID-19 lockdown affected cost of production and vices	699 (64.73)	305 (28.22)	55 (3.70)	21 (1.99)	15 (1.36)	4.50	1
COVID-19 improved farmers' welfare	172 (16.00)	208 (19.30)	250 (23.15)	233 (21.6)	215 (19.9)	2.88	9
COVID-19 caused harvest losses eg for vegetable farmers because of lockdown	652 (60.35)	271 (25.07)	99 (9.19)	25 (2.27)	34 (3.11)	4.32	2
COVID-19 affected the quality of produce for sale and thus impact human health	527 (48.75)	365 (33.81)	110 (10.16)	40 (3.71)	38 (3.56)	4.18	6
COVID-19 affected farming activities negatively because of lockdown	637 (59.00)	267 (24.70)	123 (11.41)	26 (2.45)	26 (2.44)	4.27	5
COVID-19 may improve farmers' income	195 (18.06)	215 (19.93)	291 (22.01)	238 (17.55)	253 (23.44)	2.94	8
COVID-19 affect sales of farm inputs and scarcity of seeds, chemicals and fertilizer looms this cropping season because of indiscriminate lockdown	599 (55.50)	327 (30.28)	105 (9.70)	25 (2.30)	24 (2.20)	4.31	3
Low rate of processing affected commodity prices	542 (50.14)	433 (40.13)	60 (5.53)	21 (1.94)	24 (2.20)	4.29	4

SA – Strongly agreed, A – Agreed, U – Undecided, D – Disagreed, SD – Strongly Disagreed

Table 6: Perceived effect of COVID-19 pandemic and lockdown on livestock production/ processing.

Statements	SA	A	U	D	SD	WMS	Rank
COVID-19 lockdown caused increased cost of feed	756 (70.01)	248 (23.00)	20 (1.88)	10 (0.91)	34 (3.11)	4.55	1
COVID-19 lockdown negatively impacted disease control	382 (35.40)	397 (36.76)	177 (16.47)	73 (6.80)	49 (4.57)	3.95	9
COVID-19 lockdown reduced livestock productivity	507 (47.00)	375 (34.71)	102 (9.41)	5 (4.48)	4 (4.40)	4.14	7
COVID-19 lockdown increased animal protein consumption	200 (18.50)	219 (20.32)	156 (14.50)	186 (17.20)	318 (29.48)	2.81	10
COVID-19 lockdown caused economic losses	712 (65.97)	276 (25.60)	52 (4.84)	10 (0.91)	29 (2.73)	4.51	2
COVID-19 lockdown caused poor market availability	643 (59.59)	335 (31.01)	49 (4.55)	34 (3.18)	18 (1.67)	4.43	3
COVID-19 lockdown impacted the importation of drugs negatively	617 (57.16)	295 (27.30)	92 (8.48)	43 (3.94)	34 (3.11)	4.31	6
COVID-19 lockdown caused livestock mortality	455 (42.09)	412 (38.11)	138 (12.75)	43 (4.04)	33 (3.04)	4.10	8
COVID-19 lockdown caused product loss	571 (52.83)	378 (35.00)	63 (5.89)	34 (3.18)	29 (2.65)	4.31	5
COVID-19 lockdown affected day old chicks' production and distribution	581 (53.78)	400 (37.03)	33 (2.97)	34 (3.14)	21 (1.98)	4.39	4

SA – Strongly agreed, A – Agreed, U – Undecided, D – Disagreed, SD – Strongly Disagreed, WMS - Weighed mean score

with the finding of Martins (2020) and FAO (2020a). The result further revealed that the lockdown imposed on people due to the novel COVID-19 pandemic caused reduced market availability ($x=4.43$) (Buchler, 2020), as it also affected the production of chicks' production ($x=4.39$) and lead to the loss of livestock products ($x=4.31$). This is similar to the report of AFSN (2020) food security will be affected.

Also, from the table, the respondents agreed that COVID-19 lockdown had impacted the importation of drugs ($x=4.34$). Most of the livestock farmers considered a reduction in livestock production ($x=4.14$) as part of the effect of the lockdown, in which there was increased mortality of the animals ($x=4.10$). The lockdown had a negative impact on disease control ($x=3.95$) and most of the respondents disagree that COVID-19 lockdown increased animal protein consumption ($x=3.95$). The effects of lockdown were significant on production processing and marketing of livestock in the study. The result corresponds with the observation of Forsido *et al.*, (2020), where they accurately identify the dairy and fishery products as the most affected by lockdown. Nevertheless, egg glut was observed among the south-west poultry farmers. Absence of market outlet for these animal products deterred increased production and processing, which invariably resulted in economic loss. This was also reported by AFSN (2020); Poudel *et al.* (2020) and WEF (2020)

Expected measures from the government

Table 7 shows the expected measures from the government. About 96.90% of the respondents supported the fact that farming must be seen as an essential service for a pass during the lockdown, farmworkers should be given support (96.97%) financial intervention for farming households (92.91%), Creation of transparent nutritional support (91.28%), food and financial aid should be demand-driven

(80.59%), food and financial support should be community-based (80.36%), food and financial support should be for everyone (88.25%), Commercial and mechanized farming needs to be encouraged (94.26%), FAO (2020a) suggested that governments should meet the immediate food needs of their vulnerable populations, boost their social protection programmes, adjust their cost to trade and tax policies. FAO (2020f) advice that availability of and stabilizing access to food for the most acute food-insecure populations while Buchler (2020) proposed that governments across sub-Saharan Africa minimize disruptions in food supply chains, while AFSN (2020) suggested increased health efforts to protect workforce along the whole food supply chain. Martin (2020) reported that China government supported farmers with information on planting, incentives and mechanization to eliminate labour shortages, resumption of operation of feed, slaughtering, and meat processing enterprises were made essential services.

Constraints to expected measures from the government

Constraints to expected measures from the government are shown in Table 8. The respondent's result showed that poor record was a minor constraint (45.64%), 43.12% agreed that it's a significant constraint while 11.14% believed that it is not a constraint. Corruption among government officials, insincerity among the farmers, deception among government officials and diversion of support were agreed as a significant constraint at 89.39%, 63.00%, 80.44% and 62.24% respectively unlike 2.81%, 8.19%, 7.73% and 26.38% as minor obstacles. In comparison, 7.81%, 28.82% 11.83% and 11.37% agreed that those factors were not a constraint to expected measures from the government. Commodity port (2019) reported inadequate record keeping as one of the five major problems facing agriculture in Nigeria. Ladele and Oyelami

Impact of COVID-19 public health containment measures (lockdown)

(2015) had earlier reported sharp practices across implementation levels of agriculture intervention programmes in the past which

was admitted by FMARD, (2014) from government officials, accreditation/redemption centres and even farmers.

Table 7: Expected measures from the government

Statement	Yes		No	
	Freq	Percent	Freq	Percent
Farming must be seen as an essential service for a pass during the lockdown	1,046	96.90	34	3.10
Farm workers should be given support	1,047	96.97	35	3.03
Financial intervention for farming households	1,003	92.91	77	7.09
Creation of transparent nutritional support	985	91.20	95	8.80
Food and financial support should be demand-driven	870	80.59	210	19.41
Food and financial support should be community-based	868	80.36	212	19.64
Food and financial support should be for everyone	953	88.25	127	11.75
Commercial and mechanized farming needs to be encouraged	1,021	94.62	59	5.38

Table 8: Constraints to expected measures from the government

statement	Major Constraints		Minor Constraints		Not a constraints	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Lack of adequate records	465	43.06	496	45.93	119	11.02
Corruption among government officials	968	89.63	37	3.34	75	6.94
Insincerity among the farmers	688	63.70	102	9.44	290	26.85
Insincerity among government officials	867	80.28	84	7.78	129	11.94
Diversion of support	686	63.52	277	25.65	117	10.83

Conclusion and recommendation

It can be concluded from this study that COVID-19 pandemic and public health containment measures especially the lockdown had a deleterious effect on all agricultural activities including the livestock subsector and the value chains. Most of the respondents were active. The respondents perceived that producer/farmers and market or produce sellers were profoundly affected while agro-processors and input/agrochemical/drug sellers were moderately affected. Majority of the respondent agreed that the pandemic and lockdown affected agriculture with a threat to life and livelihoods, with looming food/feed crises, increased cost of production, increased economic losses, poor quality food/feed

availability, increased income insecurity and delayed transportation. Therefore, the government must see agriculture and its value chain as an essential service, establish food banks with demand or community based financial support devoid of corruption and insincerity from government officials and farmers without diversion to cope with the post-pandemic effect of COVID-19 infection.

Acknowledgement

The Dean, Faculty of Agricultural Sciences, Ladoke Akintola University of Technology is highly appreciated for his support at sending the Google form to the Association of Deans of Agricultural Sciences in Nigeria for onward transfer to farmer groups for extensive coverage. Dr Ajayi A. F. is

appreciated for his motivations and volunteering to draw the Google form.

References

- Adebo, G. M. 2014.** Effectiveness of E-Wallet Practice in Grassroots Agricultural Services Delivery in Nigeria - A Case Study of Kwara State Growth Enhancement Support Scheme. *Journal of Experimental Biology and Agricultural Sciences*. 2(4): 410-418.
- Adeola, R. G. and Adetunbi, S. I. 2015.** Farmer's perception of sustainable Agriculture in South-western Nigeria: Implication for the rural economy. *International Journal of Applied Agriculture and Apiculture Research*, 11 (1-2): 86-92.
- AFSN. 2020.** COVID-19 and Food System. Available at https://www.shareweb.ch/site/Agri_culture-and-Food_Security/focusareas/Pages/COVID19.aspx (Cited April 24, 2020)
- Ahmed, F. F., Yusuf, A. B. and Dumah, F. J. 2016.** Effect of Growth Enhancement Support Scheme (GESS) on food security status of rural farming households in Adamawa state, Nigeria. *EPRA International Journal of Economics and Business Review*. 4(5): 14-24.
- AOAV. 2013.** The violent road: Nigeria's Southwest. Available at <http://www.aoav.org.uk/2013> (Cited April 28, 2020).
- Buchler, S. 2020.** What Impact Will Covid-19 Have On Food Security In Africa □ Available at <https://iclg.com/alb/11717-what-impact-will-covid-19-have-on-food-security-in-africa> (Cited May 11, 2020)
- Commodity port 2019.** Five Major Problems Facing Agriculture In Nigeria. Available at <https://www.commodity-port.com/five-major-problems-facing-agriculture-in-nigeria/> (cited May 28 2020).
- Economist Intelligence Unit (EIU). 2020.** COVID-19 to send almost all G20 countries into a recession. Available at www.eiu.com/n/covid-19-to-send-almost-all-g20-countries-into-a-recession (Cited April 17 2020).
- FAO. 2020a.** Q&A: COVID-19 pandemic – impact on food and agriculture. Rome. Available at https://fscluster.org/sites/default/files/documents/fao_qa_impact_on_food_and_agriculture.pdf. (Cited April 24, 2020).
- FAO. 2020b.** COVID-19: Channels of transmission to food and agriculture. Rome. Available at <https://doi.org/10.4060/ca8430en> (Cited May 14, 2020).
- FAO, 2020c.** COVID-19: Addressing the impacts of COVID-19 in food crises. Available at <https://doi.org/10.4060/ca8497en> (Cited May 14, 2020).
- FAO. 2020d.** Agri-food markets and trade policy in the time of COVID-19. Rome. Available at <https://doi.org/10.4060/ca8446en>. (Cited May 14, 2020).
- FAO. 2020e.** COVID-19 and the risk to food supply chains: How to respond? Rome. Available at <https://doi.org/10.4060/ca8388en> (Cited May 14, 2020).
- FAO. 2020f.** Coronavirus disease 2019 (COVID-19): Addressing the impacts of COVID-19 in food crises. Rome. Available at (Cited May 22, 2020).
- FAO, IFAD, UNICEF, WFP & WHO.**

2019. *The State of Food Security and Nutrition in the World. Safeguarding against economic slowdowns and downturns*. Rome Available at <http://www.fao.org/3/ca5162en/ca5162en.pdf> (Cited April 30, 2020).
- FMARD. 2014.** Federal Ministry of Agriculture and Rural Development, Agricultural Transformation.
- Forsido, S. F., Mitiku, F., Lemessa, F., Tolemariam, T., Belew, D., Berecha, G., Garedew, W., Bekele, Y., Geda, F. and Eneyew, A. 2020.** COVID-19 probable impacts on Ethiopian Agriculture and potential mitigation and adaptation measures: No food-No health-No life. Jimma, Ethiopia: Jimma University, 2020. Pp 1-68)
- IFAD. 2020.** IFAD'S response to the COVID-19 crisis-protecting and enhancing rural resilience. Available at ifad.org/en/web/latest/new (Cited April 21, 2020).
- International Labour Organization (ILO). 2020.** *Almost 25 million jobs could be lost worldwide as a result of COVID-19*, ILO. Geneva. [Cited April 17 2020]. www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_738742/lang--en/index.htm (Cited April 19 2020).
- Ladele, A. A and Oyelami, B. O. 2015.** Incidence Of sharp practices in growth enhancement support scheme Redemption Centres Of Oyo State. *Nigerian Journal of Rural Sociology*, 16 (1): 67-75.
- Lederer, E. M. 2020.** UN Chief says COVID-19 is worst crises since World war II. Associated Press. Available at www.abcnews.go.com/US/wireStory/chief-covid-19-worst-crisis-world-war-ii-69905340 (Cited May 23, 2020)
- Martin, V. 2020.** Mitigating the Impact of COVID-19 on the Agriculture Sector in China. EAI commentary 13. Available at <http://www.EAIC13-20200325> (Cited April 30, 2020).
- Organization for Economic Co-operation and Development (OECD). 2020.** *OECD updates G20 summit on the outlook for the global economy*, Geneva. <http://www.oecd.org/newsroom/oecd-updates-g20-summit-on-outlook-for-globaleconomy.Htm> (Cited April 19, 2020).
- Ogunsumi, L. O. 2005.** Resource Use Pattern and Farmers' Productivity in South-West, Nigeria. *Journal of Central European Agriculture*, 6:2, 1 9 5 - 2 0 2 . <https://doi.org/10.5513/jcea.v6i2.269>
- Ogunsumi, L. O. 2010.** Sustainability of agricultural technologies in Southwest, Nigeria: The case of cassava farmers. *Journal of Agricultural Extension and Rural Development*, 2(7): 123-132.
- Ojo, T. O., Ogundeji, A. A., Babu, S. C. 2020.** Estimating financing gaps in rice production in Southwestern, Nigeria. *Economic Structures* 9, 12 (2 0 2 0) . <https://doi.org/10.1186/s40008-020-0190-y>
- Omoare, A. M., Fakoya, E. O., Fapojuwo E. O. and Oyediran, W. O. 2014.** Assessment of value addition in the value chain of sweet potato (*Ipomoea batatas* (L.) Lam) in Osun State, Nigeria. *World Academy of Science, Engineering and Technology (WASET)* 85:537 – 540.
- Oxford Economics. 2020.** Global

- economic prospects: World GDP to fall 2.8% in 2020, exceeding financial crisis toll. Available at <http://resources.oxfordeconomics.com/world-economic-prospects-executive-summary-interests-economic-topics=macro-economics&interests-trending-to-pics=coronavirus>
- Poudel, P. B., Poudel, M. R., Gautam, A., Phuyal, S., Tiwari, C. K., Bashyal, N.**
- Bashyal, S. 2020.** COVID-19 and its Global Impact on Food and Agriculture. *J Biol Today's World*, 9 (5) : 221 . <https://www.lexispublisher.com/articles/covid19-and-its-global-impact-on-food-and-agriculture.pdf>
- Oyediran, W. O., Dick, T. T., Owolade, E. O., and Oluade, E. A. 2015.** Contributions of Growth Enhancement Support Scheme (GESS) programme to food security and poverty alleviation of Agricultural Cooperatives in Ogun State, Nigeria. *Journal of Educational Policy and Entrepreneurial Research (JEPER)*. 2(6):13-22.
- United Nations Conference on Trade and Development (UNCTAD). 2020.** *Coronavirus could cut global investment by 40%, new estimates show* <https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2313> (Cited April 17 2020).
- WFO. 2020.** COVID-19 pandemic outbreak: Overview of the impact on the Agricultural Sector. Available at https://www.wfo-oma.org/wp-content/uploads/2020/05/COVID19-WFO-technical-assessment_005082020.pdf (Cited May 25, 2020).
- World Economic Forum 2020.** COVID-19 is exacerbating food shortages in Africa <https://www.weforum.org/agenda/2020/04/africa-coronavirus-covid19-imports-exports-food-supply-chains> (Cited May 17 2020).
- World Trade Organization (WTO). 2020.** *Trade set to plunge as COVID-19 pandemic upends global economy* [online]. Geneva. Available at www.wto.org/english/news_e/pr20_e/pr855_e.htm (Cited May 27 2020).

Received: 12th October, 2020

Accepted: 5th February, 2021