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# IMPACT OF TERRORISM ON AGRICULTURAL BUSINESS IN BORNO STATE, NIGERIA

Gylych Jelilov<sup>1</sup>, Ramat Ayinde<sup>2</sup>, Selman Tetik<sup>3</sup>, Bilal Celik<sup>4</sup>, Natalia Olali<sup>5</sup>

<sup>1</sup>Nile University of Nigeria, Economics Department, Plot 681, Cadastral Zone C-00, Research & Institution Area, Jabi Airport Bypass, Abuja FCT, 900001 NIGERIA

<sup>1</sup>jelilov@nileuniversity.edu.ng

<sup>2</sup>Nile University of Nigeria, Economics Department

<sup>2</sup>ayinderamat@nileuniversity.edu.ng

<sup>3</sup>Nile University of Nigeria, Business Administration Department

<sup>3</sup>selman.tetik@nileuniversity.edu.ng

<sup>4</sup>Nile University of Nigeria, Economics Department

<sup>4</sup>bilal.celik@nileuniversity.edu.ng

<sup>5</sup>University of Niger Delta, Department of Mathematics

<sup>5</sup>dr.nataliyagrishchuk@gmail.com

**Abstract:** *This study examines the impact of terrorism on agribusiness in Borno state. Terrorist activities in Borno state dates back to 2009 where a group of Islamic extremists popularly known as Boko Haram (meaning western education is a sin) became violent in their activities. The group operates significantly in north-eastern Nigeria where Borno state is located and since 2009. The presence of the group has led to collapse of socio-economic activities in Borno state among other states. Millions of people have been displaced from their homes and forced to live in camps in neighbouring states. As a result, this study examines the impact of insurgency related activities on agribusiness in Borno State. Agribusiness in Borno state can be measured using four different parameters, amount of area cultivated, annual crop production, rearing of livestock and fish farming. These are the major agricultural business residents of Borno state are engaged in. However due to unavailability of data, rearing of livestock and fish farming are dropped, thus focusing on area cultivated and annual crop production. As a result of these two variables, two models are developed. The first model measures the relationship between amounts of crop produced with insurgency related killings, while the second model measures the relationship between total areas of farmland cultivated with fatalities resulting from terrorist activity. This study employs Ordinary Least Squares methodology and finds that both relationships reveal negative results thus indicating statistically significant negative impact of terrorism on agribusiness in Borno State.*

**Keywords:** : *Insurgency, Agriculture, Borno State, Boko Haram, Nigeria*

(JEL Classification: *Q10, Q18, Q12*)

## INTRODUCTION

The emergence of insurgency in Northern Nigeria dates back to 2009 when an Islamic group popularly known as Boko Haram turned violent. Earlier on, the group which was formed in 2002 had conducted its affairs in a peaceful manner, although with the aim to propagate the creation of an Islamic state where sharia laws apply. In 2009, however, the group rebelled against the order of the Nigerian government with their refusal to wear helmets which was a newly imposed order. This resulted in a clash between the police and the Boko Haram members with about 700 recorded deaths inclusive of the founder and then leader of the Islamic sect, Mohammed Yusuf.

A new leader came on board afterwards and made the sect a violent one such that by 2014, more than 13,000 deaths resulted from years of insurgency and counter insurgency operations in Northern Nigeria since 2009 (ACAPS, 2015). Majorly affected states include Adamawa, Borno, and Yobe, all from northeastern Nigeria. Boko Haram violence heated up in 2014 with about 7,711 deaths occurring in 2014, with a number of cities in Borno, Yobe and Adamawa states taken over by the group (ACAPS, 2014). In Borno states alone, Boko Haram controlled between 40 – 70% of the state (ACAPS, 2014). The continued violence in the Northeast has indirectly affected the entire population of 24.5 million people from Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states.

Approximately 1.9 million people have been displaced and over 4.8 million people are experiencing crisis majorly in terms of food security (ACAPS, 2015).

The impact of the crisis is multidimensional among which is food, shelter, livelihoods, health, security and education. Extremely high price of foods and its limited availability has been the major challenge to food security since the start of insurgency. Insecurity at the markets, the inability of farmers to cultivate and high cost of transportation to affected areas are some factors that account for the high prices of foods and its limited availability. Prices of cereals in northeastern markets were between 74 per cent– 120 per cent higher in January 2017 in comparison with the past two years average price level (FEWS-NET, 2017). OCHA 2017 report identifies about 5.1 million people are food insecure. Homes were destroyed as several villages were burnt down and livelihoods destroyed due to inability of farmers to cultivate their lands and recurrent stealing of livestock. This has led to increase in poverty rate in the northeast from 47.3 per cent in 2011, to 50.4 percent in 2013 (World Bank, 2015). Specifically, 2.3 million people are in need of assistance with regards to shelter and non-food items (OCHA, 2017).

Since the start of the crisis, availability of healthcare services have substantially reduced; reasons include unavailability of healthcare workers, poor living conditions with millions of people hosted in camps, increased malnutrition, and destruction of healthcare facilities by boko haram. As of February 2017, one-third of the 749 health facilities in Borno state have been completely destroyed and another one-third damaged by the insurgency (WHO, 2017). The on-going insurgency has led to insecurity of civilians due to continuous killing of individuals, destruction of properties, and control of cities by boko haram thus resulting largely in migration of people from the region, which exposes them to exploitation, trafficking, sexual abuse and forced labour. More than 1.5 million people have fled their homes due to the violence (UNICEF, 2015). The education sector also has its share of the negative impact of the insurgency. Boko haram burnt down several schools thus made education inaccessible for children, displacement of teachers and unavailability of teaching materials. According to UNICEF 2015, more than 300 schools have been severely damaged or destroyed and at least 196 teachers and 314 school children were killed in the period between January 2012 and December 2014.

Of the three key states continuously attacked by Boko Haram activities, Borno state is the most affected. According to World Bank 2015, two thirds of damages in terms of deaths, destroyed homes, farmlands and infrastructure arising from insurgency occurred in Borno state which is estimated to about US\$ 5.9 billion for Borno, with Adamawa and Yobe estimated to US\$ 1.6 billion and US\$ 1.2 billion respectively. Three-quarters of the overall damages are on agriculture (US\$ 3.5 billion) and housing (US\$ 3.3 billion). As a result this study examines the direct impact of Boko Haram activities on agriculture in Borno state.

## MATERIALS AND METHODS

### *Emergence of Terrorism in North East Nigeria*

Nigeria have been affected by series of terrorist groups since its independence in 1960, however the most prominent of them and most relevant to this study is Boko Haram. Boko Haram is a radical Islamic Sect with a Hausa term meaning Western Education is forbidden. Although, the group is officially known as Jama'atul Ahlis Sunnah Lidda'watal Jihad meaning 'people committed to the propagation of the Prophet's teaching and Jihad'. The group has been active in Nigeria since 2009 with series of attacks on human lives and properties mostly in the north eastern part of the country and pockets of attack in the central region. The motive behind its formation and the extent of its operation is best understood within the demographics of Nigeria.

Nigeria comprises of hundreds of ethnic groups, although the three largest ethnic groups of Hausa-Fulani, Yoruba and Igbo represent about 71% of the Nigerian population. Nigeria is almost equally divided between Christianity and Islam with larger percentage of Muslims concentrated in the northern, central and south-western zones of the country, while the Christian counterpart dominate the south-east and south-south regions, with few states in the central region such as Plateau and Benue states. The Nigerian economy has always been a developing economy with GDP per capita in 2010 as \$2,396 and 2017 an estimate of 2,695 while an advanced country like the United Kingdom had \$38,665 in 2010 and an estimate of \$49,104 for 2017 (IMF Data, accessed 2017). Thus, in 2015 about 53.5 percent (The World Bank, 2017) of the Nigerian population lives below the income poverty line of PPP \$1.90 per day despite her wealth of petroleum resources, that is, Nigeria being Africa's biggest oil producer, pumping more than two million barrels of crude oil per day. Prominent among the factors affecting the growth of the economy is corruption which prevents the development of appropriate infrastructural facilities, stunt the growth of firms and industries in line with its high population growth rate has results in high unemployment and underemployment and consequently resulted in high poverty rate. The high poverty rate cut across all regions of the country North, South, East and West. However, the Northern region has the largest rate in the country.

The analysis of poverty in Nigeria reveals the north is most affected. The percentage of the population in the north-east and north west regions living below the income poverty line of PPP \$1.90 per day is put at 79% which exceeds the national average of 53.5% (OPHI, 2017). The region's high poverty rate arises out of inadequate economic opportunities for the burgeoning population, cultural and religious practices that influences their level of education and wealth creation especially for women, widening income inequality, and corruption (Ngbea and Achunike (2014), Akubor (2016)).

The current insecurity challenges of Boko Haram bedeviling the northern region of Nigeria has been considered by studies as emanating from two factors: the high poverty

rate observed in the region and the fact that northerners are mostly Muslims (Itulua-Abumere (2016), Akinola (2015), Shuaibu and Salleh (2015), CFC (2013)). By extension, some studies attribute the cause of Boko Haram as the result of weakness in the institution of politics and security services whereby issued threats by a group of aggrieved individuals to control politics are ignored and thus results in violence (Walker (2012), Barna (2014), Mbah et al (2017)). With regards to poverty and conflict, there is a direct relationship between these two as the existence of conflict and insecurity aids poverty and with increasing poverty comes conflict. In the case of Northern Nigeria, high rate poverty created a vibrant ground for the growth of Boko Haram.

Several studies relate Boko Haram to have been created in 2002 by Mohammed Yusuf (1970 – 2009), a radical Islamist Cleric in Maiduguri, Borno state. He created an Islamic school where poor Muslim parents are able to send their children to acquire knowledge. However, being an Islamic cleric with radical views, his ulterior motive for the school is to propagate the creation of an Islamic state with the use of sharia laws (Chothia, 2012). The fact that northern Nigeria is Muslim dominated accounts for his ulterior motive. Although Islamic Sharia law was adopted in Borno state and across the northern states in the 1990s, the cleric desired for strict application of sharia law in the state. He deeply opposed any Western form of democracy and cited the education system which was implemented by the Christian British colonial rulers as the cause of corruption and social ills which pervades the Nigerian society. Hence, the school soon became a recruiting ground for future jihadist (Islamic fighters) which was in no way a difficult task due to the high level of poverty in the state. He gathered like-minded individuals who are aggrieved about the economic condition of the state of poor governance and corruption, hence desired for the Islamic laws as the only option for a moral upright society and economically vibrant state. In addition, ragged boys popularly known as Almajiri who roam about the street also became members of the group as they were admitted to acquire Islamic education. Although at the initial stage the group was peaceful in conducting its affairs and thus he successfully gained huge followership comprising of youths majorly from poor families. Later on, the membership of the group extended to neighbouring countries of Chad and Niger Republic. At the same time, Yusuf extended his base from just Borno state to other Northern states such as Bauchi, Gombe, Kano, Katsina, and Yobe establishing small camps and schools all over.

The peaceful phase of Boko Haram activities ended in 2009 when Boko Haram had a direct confrontation with the Nigerian Police. Then Nigeria just passed a law mandating the wearing of motorcycle helmets by all motorcyclists, however, Boko Haram members outrightly refused to wear their helmets during one of their outings and this infuriated the Nigerian police who are to implement the law on behalf of the government (Forest, 2012). During this confrontation 17 members of the Boko Haram members were shot dead and the group retaliated few days later by attacking police stations, schools, prison, police barracks and churches in Borno and

Bauchi states (Perouse De Montclos, 2014). The Nigeria government deployed Nigerian army to assist the overwhelmed police forces to bring back peace and orderliness. In response, the leader of the group – Yusuf – was arrested alongside some other sect members who were publicly executed outside a police station in Maiduguri, Borno state. This led to the transition of the group from the peaceful state to violent state.

New leaders for the group emerged with Imam Abubakar Shekau as the spiritual leader and Kabiru Abubakar Dikko Umar, alias “Kabiru Sokoto” as the operational commander (Perouse De Montclos, 2014), who acted in more violent manner than the initiator of the group – Muhammed Yusuf. The group became sophisticated in their operations, from the use of machetes and small arms, but later moved on to the use of guns and improvised explosive devices. Their attacks also spread from just Borno and Bauchi states to other Northern states of Kano, Katsina, Plateau, Yobe, Taraba, Adamawa, Gombe and the country’s capital Abuja. In addition, terrorist violence worsened with attacks spilling over to neighbouring countries like Chad, Niger and Cameroon. In Nigeria, Boko Haram activities greatly affected the socio economic activities of these states.

Boko Haram attacks active between 2009-2017, hundreds of people were killed and billion Naira worth of properties were destroyed including buildings, schools, markets and offices, which paralysed socioeconomic activities in some states as residents flee for their safety. By the end of year 2014, more than twenty towns and villages majorly from Adamawa, Yobe and Borno states were under the control of the Boko Haram militants. The Northern part of Nigeria is well known for agricultural activities and the presence of Boko Haram militancy has impacted on the agricultural business and causing food insecurity. This research concentrates on Borno state and as such review studies in that direction.

## AGRICULTURAL BUSINESS AND INSURGENCY IN BORNO STATE

Borno state is located in the North eastern part of Nigeria, bordered by three Nigerian states and three countries. Borno state shares borders with the Republics of Niger to the North, Chad to the North-East and Cameroon to the East. Within Nigeria, it is bordered with Adamawa State to the South, Gombe State to the West and Yobe State to the North-West.

It occupies 70,898sq km which makes it the second largest states in Nigeria in terms of area. It has 27 local government areas with several ethnic groups. The Kanuri group is the dominant ethnic group and Maiduguri is the capital of the state. Farming is the mainstay of the people of Borno state with occupation in crop production, livestock production and fish farming. The major crops cultivated in the State are millet, sorghum, maize, groundnut, wheat, cowpea, soybeans and vegetables such as onions, pepper, tomatoes, garden eggs and leafy vegetables. Also they are well known for fishing significantly around Lake Chad. Major livestock reared in the State are cattle, camel, sheep and goats. Borno state trades its agricultural produce both within and outside Nigeria. Given



its international boundaries, there exist a healthy relationship between the state and her neighboring countries for trading not only in agricultural produce but also in manufactured goods, trade in craft and craft products since the pre-colonial era. From this era through to the post-colonial period, the development of trade and commerce in Borno have given the region its popularity and importance such that by the end of 1916, there were about eight European and Levantine firms in the region (Balami, 2009). In addition the need to meet the demands of the foreign firms propelled production in trade items like ground nut, cotton and gum. Furthermore, the fact that the Borno region and its immediate neighbors from other countries have similar features in terms of language, religion and cultural belief further facilitates trade relations. Also, the presence of unequal resource endowment at one point or the other for the Borno region and its neighbors indicates the strength of their trading relations. For instance, during the Nigeria civil war, this trade relations was relied upon for supplies and a similar gesture was repaid during the Chad civil war (Balami, 2009). It is observed that unrecorded transnational trading activities in Borno state amounts to nearly 95% of total transborder trading activity with about 5 different trading routes (Balami, 2009). Borno state serves as the channel for the exchange of both raw agricultural produces and manufactured goods, thus creating employment opportunities for its residents and of course a source economic growth for the region. However, this growth has been greatly affected by the activities of Boko Haram since its first attack in 2009.

Due to the insurgency, large hectares of farmland were destroyed, markets were burnt down, emigration of people from affected area meant cultivation of farmland, animal rearing as well as fishing were abandoned, the imposition of curfew for days meant the restriction of business activities and the closing of international frontiers within the region limited crossborder trade. Socioeconomic activities dropped drastically, as most of the regions were under the control of the insurgents, educational system was grounded with public schools burnt down. The health sector was not left out with primary health care centers burnt down and physicians recruited by the insurgents for their personal use. By 2016, conditions started to improve due to the change of Nigerian government who was able to tackle the Boko Haram menace head-on. However, 7 years of continuous attacks in the northern region has left so much damage. According to the World Bank report (2016), an estimate of about 20,000 citizens have been killed in Borno state during the violence, more than 2.0 million people were displaced, 956,453 (nearly 30 percent) out of 3,232,308 private houses were destroyed, 5,335 classrooms damaged across primary, secondary and tertiary institutions. In addition, 1,205 municipal, local government or ministry buildings, 76 police stations, 35 electricity offices, 14 prison buildings, 201 health centres, 1,630 water sources, 726 power sub-stations and distribution lines (World Bank, 2016). It is also estimated that parks, game, forest and grazing reserves, orchards, river basins and lakes have been poisoned in 16 of the 27 areas, and 470,000 livestock killed or stolen (World Bank, 2016). The total cost of damage was put at \$5.9 billion.

Studies on the impact of Boko Haram activities in Nigeria are concentrated on the effect of insurgency on food security basically due to the challenges of the affected individuals to meet their basic food needs. In Awodola and Oboshi (2015), the impact of the activities of Boko Haram on the food security in Maiduguri, the capital of Borno state is examined. Using fieldwork data for the period of 2012-2013 from 222 respondents, they find that foreign business individuals deserted their businesses, virtually all businesses and markets in Borno state has collapsed completely, the most affected sector is the agricultural sector with high cost of farm produce. In a similar study by Mohammed and Ahmed (2015), the impact of Boko Haram insurgency in Borno state is examined using both primary and secondary data. Primary data are generated from 300 respondents. Study reveals that prior to insurgency, annual grain flow between Borno and her trade partners was 294,940 tons, however flow of grain decrease to 94,500 tons by 2nd quarters of 2014. In addition, all traditional trade routes were no longer available. The report by AGI (2014), the impact of conflict in Northern Nigeria on Agricultural Value chains is examined for Borno state. 4 value chains are concentrated upon with 4 respondents who are all farmers and experienced the conflict in its entirety. For the crop value chain, a substantial decline is observed in the average production of major crops like rice, millet, maize, cowpea. In addition, the amount of fish harvested during the period dropped drastically by almost 80%. For livestock production, inability to access markets led to high cost of livestock. Lastly, the agriculture related value chain experienced a negative impact as investors' confidence dropped and less investment in agricultural project is observed for areas most affected by Boko Haram activities.

On the international scale, recent studies have found adverse effect of terrorism and insurgency on agricultural and economic development of nations including Burundi, Colombia, India and Iraq. Singh (2012) focuses on Punjabi farmers' labor-related decisions in the face of insurgent violence. This insurgency emanated out of the demand for a Sikh-dominated Punjabi-speaking independent state, to be called Khalistan, which the government of India refused to grant hence resulting in violence since which is focused on India's government and its representative. Using micro-level farmer expenditure surveys for the period 1981-1993 to focus on the monetary amount spent by farmers on two types of hired labour, permanent and casual labour and how it relates to insurgency related violence. It is found that insurgency-related violence adversely affected farmstead spending on permanent, but not temporary hiring basically because workers wanted short duration contracts. Although this effect was not generalized for the entire households surveyed as it was found only for the richer half of the surveyed households. In a related study in Singh (2011), the presence of major terrorist incidents in the district of Punjab is found to reduce long term fixed investment in agriculture by as much as 17% in a year.

Grun (2008) examine the impact of 2 kinds of violence endemic in Colombia, guerrilla warfare and common delinquency households portfolio to invest in fixed assets or

mobile assets. Using a survey of 11,500 households it finds that fixed asset investment in fixed assets would go down to the benefit of it mobile counterparts in the presence of guerrilla and paramilitaria because they cannot be carried away in case of displacements. However, thereverse is the case in the presence of common delinquency. In Guerrero-Serdan (2009), wave of violence and turmoil thatstarted in Iraq since 2003 is seen to have profound effects on the nutritional outcomes of children, as children born in areas with high levels of violence are shorter than children born in low violence areas. In Peru, Leon (2009) finds a negative impact of Peruvian civil conflict on human capital accumulation for children exposed to the conflict. The Peruvian conflict is an internal conflict in Peru between the government and several terrorists groups starting in 1980 and still on going. The negative impact observed exist both in the short run and long run. A similar conclusion was reached by Chamarbagwala and Moran (2008), who finds strong negative impact of the civil war in Guatemala on female education for girls exposed to the war than for those not exposed. Bundervoet et al (2009) examined the impact of Burundi's civil war on health status of children exposed to the war and finds that children exposed to war during early childhood are negatively affected. This effect is seen to grow stronger the longer the child is exposed to the war.

In general, the studies reviewed show that civil conflict vis a vis insurgency and terrorist related violence do have impact on income level, health outcomes, educational attainment, agricultural development among other sectors. Hence as a result, this study aims to examine the impact of insurgency activities of Boko haram in Nigeria on agricultural development on Borno state. It tries to examine the immediate adverse effect on agricultural activities of insurgency.

## RESULTS AND DISCUSSION

Five data sets are used in the analysis: annual insurgency related killings, value of loan received by farmers, annual rainfall, annual area cultivated, and annual crop production. Data obtained relates specifically to Borno state on an annual basis for the time period 1998 – 2015, although data on insurgency related killings begins in 2009. The data on annual insurgency related killings was obtained from the Global Terrorism Database (GTD) maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START, 2017). The value of loan received by farmers and annual rainfall were extracted from the Central Bank of Nigeria Statistical Bulletin 2016 and annual crop production and area cultivated were both obtained from National Bureau of Statistics yearly agricultural reports.

The empirical specification is as follows:

$$AC_t = \beta_1 + \beta_2(INS)_t + \beta_3(LOAN)_t + \beta_4(RAIN)_t + \epsilon_t(1)$$

$$CP_t = \alpha_1 + \alpha_2(INS)_t + \alpha_3(LOAN)_t + \alpha_4(RAIN)_t + \gamma_t(2)$$

Where

- AC is the annual area cultivated for farming in Borno state
- CP represents the annual crop production in tons for 7 crops including cassava, cotton, garlic, ginger, shea-

nut, sesame seed and gum arabic.

- INS represents the total number of fatalities in insurgency related activities.
- LOAN represents the value of annual loan (in Naira) received by farmers.
- RAIN is the annual level of rainfall recorded in millimeters.

Singh (2011) and Singh (2012) are followed very closely in the design of the models above. Here the 2 equations are estimated in which equation 1 analyses the relationship between farm area cultivated and number of killings in insurgency related activities after controlling for other factors such as value of loan and amount of rainfall which has the tendency to influence the farm area cultivated. Hence the coefficient of interest here is  $\beta_2$ , for which if positive indicates insurgency has a positive impact on agriculture and if  $\beta_2$  is found negative then there is a negative relationship between the insurgency and agribusiness. Equation 2, on the other hand, analysis the relationship between crop production and number of killings in insurgency related activities after controlling for other factors as done in equation 1. Again, the focus is on  $\beta_2$  which we expect to have a negative sign indicating that crop production is negatively affected by insurgency in Borno state. The summary statistics for the data is shown in table 1.

Table 1: Summary Statistics

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
AC	18	20,566.67	11,061.97	5260.00	54500.00
LOAN	18	67,334.83	56092.45	854.00	194,570.00
RAIN	18	643.25	138.00	393.00	917.30
INS	18	696	1591	0	5529
CP	18	50261.11	34,919.55	3340.00	129700.00

Source: Authors computation from data

Table 2: Effect of terrorism on agribusiness in Borno state

	(1)	(2)
	AC	CP
INS	-0.753	-10.047**
	(1.456)	(4.846)
LOAN	0.109**	57.431
	(0.045)	(60.767)
RAIN	44.608**	-0.111
	(18.262)	(0.148)
Observations	18	18
R <sup>2</sup>	0.418	0.342

\*indicates results significant at p-value <1% and \*\* signifies results significant at p-value < 5%

Source: Authors compilation from data.

Table 2 displays the results for the two models. Results for model 1 is shown in column 2 of the table which identifies a negative relation between killings related to insurgency and the hectares of land cultivated in Borno state with the other two variables in the model with a positive relationship. The signs in terms of positivity or negativity for the three variables in model 1 reveal results which are very much expected. That is area cultivated increases with increase in rainfall and increase in the value of loan available to farmers. However, area cultivated decreases with increase in the number of insurgency related killings. A similar result is obtained for model 2 with the exception of rainfall. Model 2 indicates that the amount of crop produced decreases with increase in the number of insurgency related deaths. Although results for area cultivated and insurgency is not significant, the relation between crop production and insurgency is statistically significant at 5%. The R-squared for the two models is quite low with value less than 50%. The major challenge here is the limited number of independent variables present in the models, which occurred due to unavailability of data. This is discussed in detail in the last section.

*Table 3: Correlation Matrix for Model Variables*

	AC	LOAN	RAIN	CP	INS
AC	1.000000	-	-	-	-
LOAN	0.340793	1.000000	-	-	-
RAIN	0.350044	-0.398302	1.000000	-	-
CP	0.093218	-0.237470	0.359885	1.000000	-
INS	-0.221240	-0.067805	-0.135375	-0.476447	1.000000

*Source: Authors compilation from data*

From the correlation matrix displayed above, the relationship between crop production and insurgency on the one hand and area cultivated and insurgency on the other hand are both negative, however, a stronger relation exists for insurgency killings and amount of crops produced in comparison with the other relationship.

In conclusion, this study examines the relation between agribusiness and insurgency in Borno state for the period 1998 - 2015. Agribusiness in this case is classified into 4 groups. That is, the amount of area cultivated, annual crop production, rearing of livestock and fish farming which are major agricultural activities residents of Borno state are engaged. Due to limited availability of data for analysis, the livestock rearing and fish farming were dropped, with this study focusing on area cultivated and total crop production. Among other factors that may influence agriculture is the availability of loan and favorable weather conditions hence the reason for their inclusion in the models estimated. Results for the two models indicate the presence of insurgency influence agribusiness negatively in Borno state.

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