

AN ASSESSMENT OF AGRICULTURAL PRODUCTION PRACTICES IN DOGON KURMI DISTRICT, KAGARKO L.G.A OF KADUNA STATE, NIGERIA

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ABSTRACT

The main purpose of the research is to assess agricultural production practices in DogonKurmi District, Kagarko L.G.A of Kaduna State. The research seeks to identify the sources and size of farmlands use by people in the area, identify the type of farming practices use on farmlands in the area, examine the sources of the technology used by farmers on their farmland, and to examine the impact and economic implication of modern ways of farming on agricultural production in the area. The study uses hundred numbers (100) questionnaires that were shared to respondents in the study area to obtained information regarding agricultural production practices. The data were analyzed through the use of descriptive statistical techniques and presented using percentage, tables, and figures. Findings from the study showed that local hoes and cutlasses is what most of the farmers in the study area make use of for their agricultural production on their farmland as that is what most of them could afford having 62.2%. The farmers in the area says that since involving in agricultural production, there have been a positive shift in their income and expenditure level and that in a year they do make N60,000 and above in the sale of agricultural produces having 57.14% to meet up with their daily basic need. The study therefore concludes that farmers in the in the study area do not make use of modern technology like tractors and harvester on their farmland but uses implement like local hoes, cutlasses, and cows on their farmland to carry out their agricultural production because most of them could not afford hiring a tractor and harvester on their farmland because it's expensive and the government is not supporting them by providing loans to aid their hire those modern technology.

KEYWORDS

Agriculture, Agricultural Sector, Dogon Kurmi District.

1. INTRODUCTION

Agriculture is the mainstay of many economies. All over the world, the development of an enduring economy goes hand in hand with agricultural development. Agriculture is considered a catalyst for the overall development of any nation. It is thus a critical sector that drives the economic development and industrialization of the developing nation, and also holds the ace for reducing unemployment. Thus, its' development is critically important for ensuring food and nutritional security, income and employment generation, and for stimulating industrialization and overall economic development of the country (Okumadewa, 2011).

Development economists have always assigned the agriculture sector a central place in the development process; however the understanding of that role has evolved overtime. Early development theorists emphasized industrialization, though they counted on agriculture to provide the necessary output of food and raw materials, along with the labour force that would gradually be absorbed by industry. Much later thinking moved agriculture more to the forefront of the development process; the hopes for technical change in agriculture and ‘green revolution’ suggested that agriculture could be the dynamo for growth, (Wilber & Jameson, 2014).

In practical terms, agriculture has worked a tremendous miracle in countries like Mexico, India and China where the Green Revolution is one of the great success stories of modern times. It is the major contributor to the export –led growth pattern of a country like Taiwan which was able to attain notable increases in per capita GNP. Again, according to Wilber & Jameson (2014), Chile’s recent rapid growth has been largely attributed to agricultural exports. In his book titled ‘The End of Poverty’ Jeffrey Sachs describes how the Rockefeller Foundation, fearing the grim possibility of massive hunger because of rapidly rising global population, began developing and promoting high yield varieties of staple crops, first as a pilot project in Mexico, and then replicated it in Asia.

In an agrarian economy like Nigeria, the land as a unit for agricultural production provides the needed fulcrum upon which a sustainable development would blossom. Agricultural production till date remains the mainstay of the Nigerian economy. With a population that is largely agrarian, agriculture has traditionally been the main sources of livelihood for our people. It provides the means of livelihood for over 70 % of the population and a major source of raw materials for the agro-allied industries and potent source of the much needed foreign exchange (World Bank, 1998, Okumadewa, 2011). The agricultural sector after independence, dominated the Nigerian economy, such that the development of the region was hinged on the sector alone. Agriculture accounted for about two-thirds of the Gross Domestic Product (GDP).

In the late 1970s, Nigeria began its own Green Revolution amidst fanfare, soon after, the programme collapsed and the country lapsed back to its unenviable status of a major importer of grains and processed foods. For a country which once earned most of its foreign exchange from agriculture, which taught Malaysia how to produce palm, it is a sad irony, that, the Nigeria Green Revolution failed due to, among others, a misapplication of funds, insincerity, absolute neglect and a general high level of nationalism.

Technical constraint in Nigeria affects both the upstream and the downstream segments of agriculture. The constraint manifests in poor technology, poor quality of raw materials and inadequate supply of modern inputs. The main causes of the constraint include low support from government, poor government policy, poverty, low level of awareness, lack of adequate research and increases in the prices of inputs (Nwosu, 2015). Poor government support and poor government policy prevent the emergence of provision of necessary modern machine for agricultural farming and innovations from research institutes, thereby curtailing the level of available technically feasible and efficient agricultural practices. Even when they are available, there seem to be communication gaps between farmers (end-users of research efforts) and the researchers (Nwosu, 2015).

From the perspective of sustainable agricultural growth and development in Nigeria, one of the fundamental constraints is the peasant nature of the production system, with its low productivity, poor response to technology adoption strategies and poor returns on investment (Onu, 2005). It is recognized that agricultural commercialization and investment are the key strategies for promoting accelerated modernization, sustainable growth and development and, hence, poverty reduction in the sector. However, to attract investment into agriculture, it is imperative that those constraints inhibiting the performance of the sector are first identified with a view to unlocking them and creating a conducive investment climate in the sector (Olomola, 2010).

The development challenges of Nigeria's agriculture are, therefore, those of properly identifying and classifying the growth and development constraints of the sector, unlocking them and then evolving appropriate strategies for promoting accelerated commercialization and investment in the sector such that, in the final analysis, agriculture will become one of the most important growth points in the economy (Olomola, 2010).

It is little surprising that the study of modern ways of farming on agricultural production, even though important has received comparatively little attention in the past. This gap is to be filled by this study. This paper seeks to formulate these stated objectives below to achieve the goal of the work.

The specific goals of this research are to: identify the sources and size of farmlands use by people in the area, identify the type of farming practices use on farmlands in the area, examine the sources of the technology used by farmers on their farmland and to examine the impact and economic implication of modern ways of farming on agricultural production in the area.

2. MATERIALS AND METHODS

2.1 Study Setting

DogonKurmi is in Kagarko Local Government area of Kaduna state, in Northern Nigeria, which lies between latitudes 9°26'17.6" and 9°27'01.9" North of the equator and longitudes 7°46'13.6" and 7°46'16.7" East of the Greenwich meridian showing the square coordinate of the village. The elevation of DogonKurmi is 633.07 metre above sea level. The Village is within DogonKurmi District in Kagarko Local Government Area of Kaduna state. The coordinate of the village was collected using a conventional survey method, which GPS instrument was use in capturing the data in the field by me the researcher.

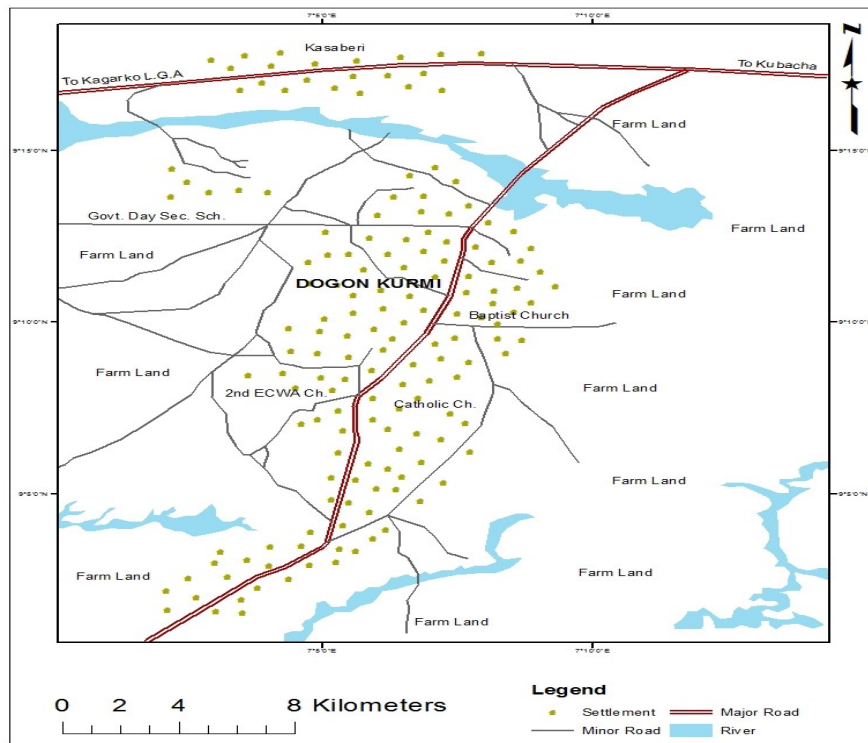


Figure1: Map Showing Dogon Kurmi District
Source: Kaduna State Geographic Information Service, 2020

DogonKurmi experiences two climatic seasons, the dry and wet season. The dry season consists of hot and harmattan period stretching between the months of November and March. The rainy season is experienced between the months of April and October. The rain storms are usually intense and windy sometimes accompanied with thunder and lightning. The average annual rainfall is 164mm while its highest temperature ranges between 27°C – 32°C (90-105°F) in April, and lowest between 14°C – 18°C (45-60°F) in January. The water table is quite high, and wells are sunk to a depth of about 2092ft (UNDP, 2012).

According to National population census (2006) projected population of 2020. DogonKurmi comprises of few scattered settlements with a population of about 363,824 people. The dwellers of DogonKurmi largely depend on agricultural practices, and also other forms of farming. Koro people are the dominant ethnic groups in the area and few other tribes who are from southern Kaduna. DogonKurmi community is served, by a single centrally located Government secondary and primary school built and operates primarily by the local government; private school operates by individual, a private clinic that provides basic preventive and curative services to the people of the community (Chief of DogonKurmi, 2020).

Economically, DogonKurmi is a village that the majority are agro farmers, and few civil servants. They engaged into irrigation farming of perishable farm products during the dry season and also cultivate crops like: ginger, ground nut, soya beans, white beans, guinea corn, millet, maize, and some other crops during rainy season. Their major crop is ginger, follow by maize and millet. These crops are taking to the market sold out to buyers from far and neighboring settlements,

which from the agricultural production and selling they make their living. Some of their farm lands are inheritance giving to some members of a family which is very much, that they can't cultivate it all so they rent out part to generate income for themselves (Populaces of DogonKurmi, 2020).

2.2 Procedure for Data Collection

A cross sectional research design was adopted for the study. It involves the selection of a sample to represent the target population of households in the study area. Hundred (100) respondents were selected out of 363,824 projected population of 2020 using growth rate of 3 in Kaduna state according (NPC, 2006) population that makes up DogonKurmi District was selected through simple random sampling technique to cover the study area.

A wide range of primary data required for the study include: demographic characteristics of respondents; sources and size of farmlands; farming practices use on farmlands; sources of technology use by farmers; and impact of agricultural production. The responses sought for were through a series of questions with a number of options for the respondents to tick appropriately the ones that appeal to them, but may freely make comments. Other information for the study, such as population of the study area were obtained from National Population Commission, Kaduna Office, map of DogonKurmi was obtained from Kaduna Geographic Information Service, while relevant literature were gotten from textbooks, articles in academic journals and through internet searches.

A semi-structured questionnaire was constructed for the data collection exercise from the field, which served as the main instrument. In order to test the validity of the instrument, a pilot study was conducted in the study area, to detect ambiguous questions and difficult expressions to make amends before the real field exercise.

100 copies of questionnaire were distributed to household heads, selected randomly from the study area; all the questionnaires were dully filled and returned for analysis.

Descriptive statistical technique was employed, facilitated through the use of software, Microsoft excel 2010. Data from the field were collated, summarized and presented in frequency counts, percentages, and chart. Other information was obtained from secondary sources particularly, textbooks, articles in learned journals and internet searches.

3. RESULTS

This section presents and discusses the findings of the study using descriptive statistical technique, particularly, frequency counts, percentages, and charts.

3.1 Demographic Characteristics of Respondents

The profile of the respondents have been determined and presented in tables and charts below.

Table 1: Sex of Respondents

Variable	Frequency	Percentage (%)
Male	77	79
Female	21	21
Total	98	100

Source: Field Survey, 2020

The above table 1 shows that 79% of the respondents were male, while only 21% of the respondents were female. The result implies that male were the major constituent in the study area engage in agricultural production for subsistence purpose while some of the male and female carried out agricultural production for commercial purpose. This finding is similar to that of Idrisa *et al.* (2012) where the percentage of male respondents was 87.7%.

Table 2: Marital Status of Respondents

Variable	Frequency	Percentage (%)
Single	30	31
Married	55	56
Divorced	3	3
Widow	10	10
Total	98	100

Source: Field Survey, 2020

Table 2 shows that 56% of the respondents were married. 31% of the respondents were single, about 10% of the respondents were widow, while only 3% of the respondent says divorced. Findings from the result above show that married ones were those fully engaged in agricultural production in the study area. This finding is similar to that of Umar *et al.* (2014) who found that majority of the farmers in the study area were married.

Table 3: Occupations of Respondents

Variable	Frequency	Percentage (%)
Farmer	60	61.2
Trader	18	18.4
Student	9	9.2
Civil servant	11	11.2
Total	98	100

Source: Field Survey, 2020

Table 3 above shows that 61.2% of the respondents were farmers and 18.4% of the respondents were traders. About 11% of the respondents were civil servant while only 9.2% of the

respondents were students. The major occupation of people in the area is farming and as such prompt their engagement in agricultural production as it brings shift in their income and expenditure level. This finding is similar to that of Issa *et al.* (2016) who found that majority of respondents in the study area were farmers.

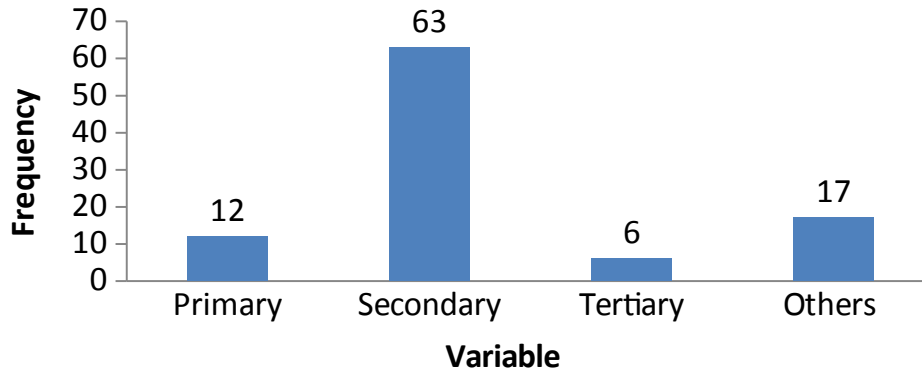


Figure 1: level of education of respondents

Source: Field Survey, 2020

Figure 1 above shows that 64.29% of the respondents attended secondary level of education. About 17.35% had no formal education, 12.24% attended primary level of education while only 6.12% attended tertiary level of education. The result indicated that majority of the respondents are literate looking that the good number attended secondary level of education. This result negates the finding of Jamil *et al.* (2014) who found low level of education among maize farmers.

4. SOURCES AND SIZE OF FARMLANDS

This section looks at the sources and size of farmlands in the study area. Respondents were accordingly required to respond to those identifiable variables. Underneath here is a table showing detail of results.

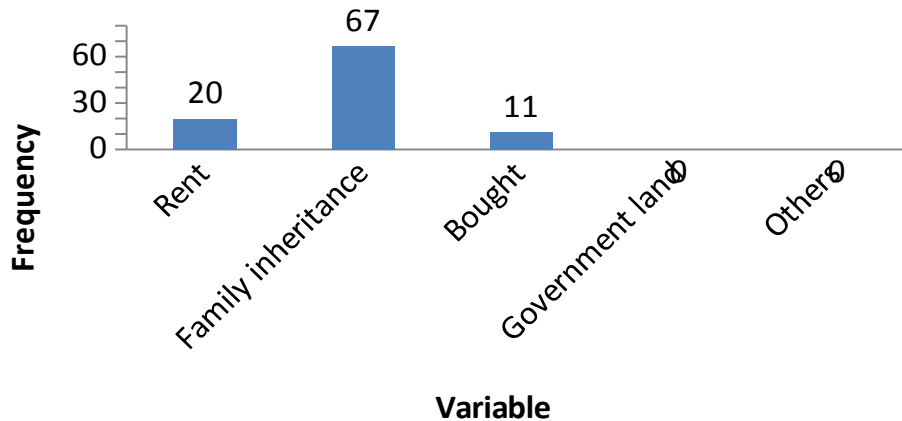


Figure 2: Sources of Farmland for Agricultural Production

Source: Field Survey, 2020

Figure 2 above reveals that 68.4% of the respondent’s source of farmlands is family inheritance, 20.4% of the respondents sources of farmland are rent, while only 11.2% of the respondents bought the farmland they are using for agricultural production. The result reveals that sources of farmland for agricultural production for respondents in the study is family inheritance owing that farm implement is what most of them spend money on since their farmland is family inheritance. This finding is similar to that of Issaet *al.* (2016) who found that majority (78.3%) of the respondents owned their farm by inheritance.

Table 4: Years of Cultivation on Farmland

Variable	Frequency	Percentage (%)
1-10 years	6	6
11-20 years	7	7
21-30 years	25	26
31 years and above	60	61
Total	98	100

Source: Field Survey, 2020

Table 4 above shows that 61% of the respondents have been cultivating on their farmland for over 31years and above, 26% for the period of 21-30 years, 7% for the period of 11-20 years while 6% of the respondents have been cultivating on their farmland for the period of 1-10 years. The result deduces that those that cultivates on their farmland for the period of 31 years and above, cultivated on family inheritance land. This finding is similar to that of Komolafeet *al.*

(2014) who found high farming experience among farmers based on years of cultivation on their farmland.

Table 5: Size of Farmland Respondents Cultivate on

Variable	Frequency	Percentage (%)
1-5 plots	23	23.5
6-10 plots	61	62.2
11-15 plots	10	10.2
16 and above plots	4	4.1
Total	98	100

Source: Field Survey, 2020

Table 5 above shows that 62.2% of the respondents size of farmland for their cultivation is between 6-10 plots, 23.5% of the respondents size of farmland is between 1-5 plots, 10.2% of the respondents size of farmland is between 11-15 plots, while only 4.1% of the respondents size of farmland for their cultivation is 16 plots and above. Those that cultivate 16 plots of land and above are commercial farmers and they cultivate mostly ginger on the farmland. This result agrees with Issaet *al.* (2016) finding, who found that 91.7% of farmers had between 1-3 hectares of land thereby operated on small scale farming.

Table 6: Do You Cultivate The Whole of Your Farmland During Agricultural Production Each Season?

Variable	Frequency	Percentage (%)
Yes	65	66
No	33	34
Total	98	100

Source: Field Survey, 2020

Table 6 above reveals that 66% of the respondents cultivate the whole of their farmland during agricultural production while 34% of the respondents do not cultivate the whole of their farmland during agricultural production. This finding is similar to that of Issaet *al.* (2016) who found that majority of the farmers cultivate their whole farmland during agricultural production.

4.1 Farming Practices Use on Farmlands

This section looks at the farming practices use on farmlands in the study area. Respondents were accordingly required to respond to those identifiable variables. Underneath here is a table showing detail of results.

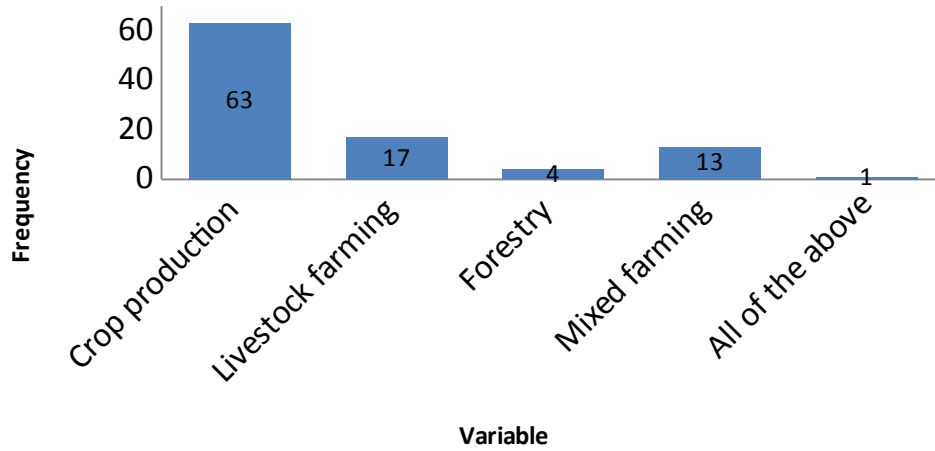


Figure 3: Farming Practices on Farmland

Source: Field Survey, 2020

Figure 3 above shows that 64.3% of the respondents farming practices use on their farmlands is crop production, 17.3% practiced livestock farming, 13.3% practice mixed farming, 4.1% practiced forestry while 1% practiced all of the above farming practices. Findings reveals that the predominant farming practices in the study area is crop production with few livestock and mixed farming practices. This finding is similar to that of Issa *et al.* (2016) who found that majority of farmers in the study area are into crop farming.

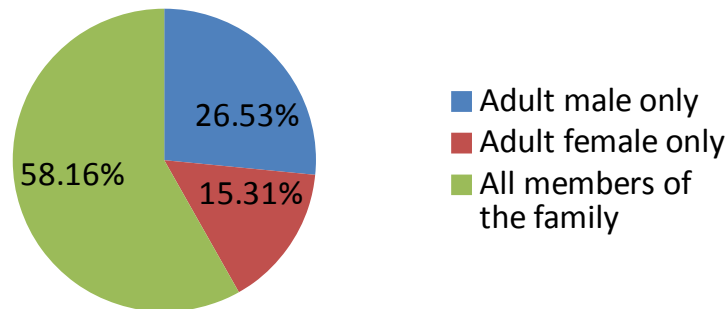


Figure 4: Those Responsible For the Agricultural Production

Source: Field Survey, 2020

Figure 4 above shows that 58% of the respondents admitted that members of their family are responsible for agricultural production, 27% of the respondents admitted that adult male only while 15% of the respondents admitted that only adult female were responsible for agricultural production. The result deduces that all members of the family are responsible for agricultural production in the area which helps them in cultivating good yield in large quantity. This finding

agrees with the findings of Issaet *al.* (2016) who found that majority (75.8%) of farmers used family labour exclusively implying that all members of the family are responsible for agricultural production in the area.

Table 7: Type of Crops Cultivated on Farmland

XVariable	Frequency	Percentage (%)
Ginger	22	22.4
Cassava	18	18.4
Maize	34	34.7
Guinea corn	10	10.2
Rice	5	5.1
Mixed cropping	9	9.2
Total	98	100

Source: Field Survey, 2020

Table 7 above reveals that 34.7% of the respondents cultivate maize on their farmland, 22.4% cultivate ginger, 18.4% cultivate cassava, 10.2% cultivate guinea corn respectively, 9% cultivate mixed cropping on their farmland while only 5.1% of the respondents cultivate rice on their farmland. The result shows that majority of the farmers in the study area cultivate more of maize in the area followed by ginger. Ginger produced in the study area are majorly for commercial purpose and as it is every member of a family are fully engage in the cultivation looking at the income they derived from it. This finding is similar to that of Issaet *al.* (2016) who found that majority of the farmers in the area cultivate maize.

4.2 Sources of Technology Use by Farmers

This section looks at the sources of technology use by farmers in the study area. Respondents were accordingly required to respond to those identifiable variables. Underneath here is a table showing detail of results.

Table 8: Types of Implements Use for Farming

Variable	Frequency	Percentage (%)
Local hoes/cutlasses	61	62.2
Cows/animals	13	13.3
Tractors	5	5.1
Hired laboures	19	19.4
Total	98	100

Source: Field Survey, 2020

Table 8 above shows that 62.2% of the respondents used local hoes/cutlasses for farming, 19.4% of the respondent make use hired laboures who also used local hoes, 13.3% of the respondents make use cows/animals while 5% of the respondents make use of tractors as implement for farming on their farmland, this 5% are farmers who are capable enough to hire tractors for their farm work where maize and others crops are what they cultivate on the land. The result shows that people in the study area have no much access to modern technology which makes them not make use of them on their farmland but make use of local hoes/cutlasses for farming on their farmland. This finding is similar to that of Issa *et al.* (2016) who found that majority of farmers used family labour exclusively and making used of crude tools such as local hoes and cutlasses.

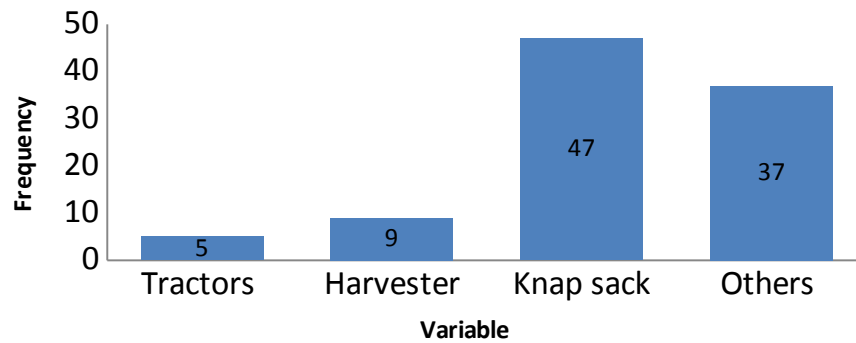


Figure 5: Type of Modern Technology Use by Framers for Agricultural Production

Source: Field Survey, 2020

Figure 5 above shows that 48% of the respondents make use of modern technology for their agricultural production on their farmland which is knap sack, 38% make use of others modern technology, 9% make use of harvester while 5% of the respondents make use of tractors. The result implies that majority of the farmers in the area makes use of knap sack as modern technology for their agricultural production since that is what they can afford and its mostly use for spraying herbicide, insecticide and pesticide on farmland. This finding is similar to that of Benin *et al.* (2009) who found that most modern technologies are expensive which makes it difficult for many farmers, especially those in rural areas where poverty is endemic to be able to acquire and utilise them without assistance in the form of supply of affordable credit and other financial services

Table 9: Have You Experience Any Change, Since the Use of Knap Sack as Modern Technology?

Variable	Frequency	Percentage (%)
Yes	75	77
No	23	23
Total	98	100

Source: Field Survey, 2020

Table 9 above shows that 77% of the respondents admitted that they have experience some changes on their farmland since making use of knap sack on their farmland, while only 23% of the respondents have not experience changes since the use of knap sack on their farmland as modern technology on their farm land. The result shows that respondents who make use of knap sack as modern technology to spray herbicide for weed control, insecticide for insect control and pesticide for pest control experience a great positive change on their agricultural production in the area. This result negates the finding of Abdul *et al.* (2016) who found that tractors, planters and harvester were modern technology used on farm and there are changed experienced in agricultural production in the area.

5. IMPACT OF AGRICULTURAL PRODUCTION

This section looks at the impacts of agricultural production in the income of farmers. Respondents were accordingly required to respond to those identifiable variables. Underneath here is a table showing detail of results.

Table 10: Do You Experience Any Positive Shift In Your Income And Expenditure Level While Carrying Out Agricultural Production?

Variable	Frequency	Percentage (%)
Yes	98	100
No	0	0
Total	98	100

Source: Field Survey, 2020

Table 10 above reveals that 100% of the respondents experience a positive shift in their income and expenditure level while carrying out agricultural production in the area. This finding is similar to that of Issaet *al.* (2016) who found that majority of farmers used experienced positive shift in their income and expenditure level.

Table 11: Money Make From Agricultural Production in a Year

XVariable	Frequency	Percentage (%)
N5000-N10000	6	6.12
N20000-N30000	14	14.29
N40000-N50000	22	22.45
N60000 and above	56	57.14
Total	98	100

Source: Field Survey, 2020

Table 11 above shows that 57.14% of the respondents make above N60,000 from agricultural production in a year, 22.45% of the respondents makes N40,000-N50,000, 14.29% of the respondents makes between N20,000-N30,000, while only 6.12% of the respondents makes between N5,000-N10,000 from agricultural production. The result implies that those engaged in agricultural production in the area and make use of modern technology makes good amount of money above 60,000 naira in a year in the study area.

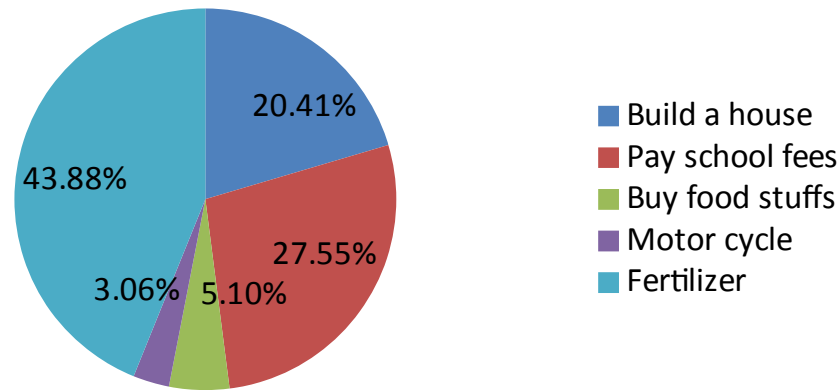


Figure 6: What Money Makes from Agricultural Production use for.

Source: Field Survey, 2020

Figure 6 above shows that 44% of the respondents use the money they get from agricultural production to buy fertilizer for their agricultural production, 28% of the respondents use the money to pay children school fees, 20% of the respondents use the money to build houses, 5% of the respondents use the money buy food stuffs, while 3% of the respondents use the money they get from agricultural production to buy motor cycle. The result reveals that income makes from agricultural production by respondents was used for building house, paying of children school fees, buying of food stuff, motor cycle and fertilizer for agricultural production.

Table 12: Does Agricultural Production Affect Your Environment In Any Way?

Variable	Frequency	Percentage (%)
Yes	98	100
No	0	0
I don't know	0	0
Total	98	100

Source: Field Survey, 2020

Table 12 above reveals that 100% of the respondents admitted that agricultural production positively affect their environment in the study area as people from outside come in the area to buy agricultural produce from their market thereby making the area known.

6. LIMITATION OF THE STUDY

Some of the challenges faced by the researcher include lack of cooperation from some respondents and difficulties during gathering data as some of the respondents could not read and write.

7. MAJOR FINDINGS

Findings shows that majority of the farmers in the study area cultivate on a small scale of about 6-10 plots of land as most modern technologies are expensive which makes it difficult for many farmers, especially those in the areas where poverty is endemic to be able to acquire and utilise them without assistance in the form of supply of affordable credit and other financial services available as such extensive family labour is practice in the area.

Findings shows that knap sack is one of the major modern technology used by most farmers in the area to spray herbicides, insecticides and chemical fertilizer on their farmland to aid their agricultural production.

based on findings from the study, income and expenditure level of farmers in the area rise due to improve in agricultural production, as such money acquired from sale of farm produce were used for buying fertilizers, building house and paying of their wards school fees.

8. CONCLUSION AND RECOMMENDATIONS

From the study, it was concluded that farmers in the in the study area do not make use of modern technology like tractors and harvester on their farmland but uses implement like local hoes, cutlasses, and cows on their farmland to carry out their agricultural production because most of them could not afford hiring a tractor and harvester on their farmland because its expensive and the government is not supporting them by providing loans to aid them hire those modern technology.

The study as well concludes that farmers who involve in agricultural production in the area do experience a shift in their income and expenditure level having 100% because they do release good amount of money from sales of the agricultural produces and make use of the money to build house, pay children school fees and do some other things.

Lastly the study concludes that farmers in the study area need modern technology in order to improve their agricultural production and increase their standard of living.

From the findings of this research and the conclusion therein, the following recommendations are made:

- i. Government should make available soft loans to farmers that will aid in their agricultural production which will give them money that they can hire modern technology on their farm to increase their agricultural production.

- ii. Community leaders should create avenue to encourage farmers not to only involve in subsistence farming alone but to also involve in commercial farming as they stand a chance of generating income to themselves and raise the standard of their family.
- iii. Proper awareness on the use of modern technology should be organized in most villages in the study area so as to help them understand the great impact to which modern technology will have on their agricultural production.
- iv. Price stabilization is necessary if farmers would make returns from their investments. Farmers are usually discouraged, when low returns are gotten after sales of their products. The government should provide a ready market, buying from small scale farmers and selling to the bigger markets. This helps to erase the role of middleman in the selling of agricultural products and thus helps keep prices stable.
- v. The government at all level must take the development of agriculture as national priority. This is very important because oil and gas are exhaustible natural resources whereas agricultural resources if well-developed can sustain the economy for as long as possible given the nation's endowment in that sector. The government should dedicate a larger percentage of its annual budget to the development of the agricultural sector.
- vi. Further research work should be conducted on animal farming in the study area.

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