

Effect of Food Security Project on Women Farmers' Income and Employment in Fika Local Government Area of Yobe State, Nigeria: A Study of NEFSLESP

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Abstract: This study examines the effect of North East Food Security and Livelihood Emergency Support Project (NEFSLESP) on Women Farmers' Income and Employment in Fika LGA of Yobe State, Nigeria. Specifically, the study examines the effect of the project (NEFSLESP) on women farmers' income and employment status and effect of farm inputs on women farmers' output in Fika LGA of Yobe State. The structured questionnaire was administered to 121 women farmers, all were duly filled and returned. The reason behind 100% return rate of the questionnaire was that the number of women beneficiaries of NEFSLESP is not large enough. This allows researchers with the help of research assistants to consult everyone of them. The study considered all population (121) of women beneficiaries in the project due to the fact that the population is not large enough to adopt any sampling technique. Data collected were analyzed using descriptive statistics and inferential statistics. The paired samples t-tests shows that the project had significant effects on income and employment of women farmers in the study area. The multiple regression result also revealed that cost of labour (CLAB) was the only explanatory variable that has significant effect on farm output. The study recommends that NFDP should extend its project to areas where it does not exist in order to boost income level and reduce unemployment problem among women and should redesign its project in a manner that will provide large effect on participants' income and employment status.

Keywords: Food Security, Income, Employment

1. Introduction

A short-term definition of food security for any country or the entire globe is the ability of food-deficit countries or households within countries to meet target consumption levels on a yearly basis [26]. But insurgency or conflict the world over has taken a heavy toll on the quality and quantity of food that people require for nourishment [24]. The African continent is riddled with conflicts of various kinds. These conflicts include election disputes, resource and environmental challenges, civil wars, armed insurgency, religious intolerance, ethnic friction, community and boundary conflicts between countries. Some of these conflicts have sadly led to a massive loss of lives and

property and to environmental destruction with dire consequences for agricultural production and food shortages. The severe food crisis or insecurity in several parts of the continent is partly due to these very costly wars [14].

Also, USAID [30] reported that due to the Boko Haram insurgency more than 5.2 million people in north-eastern Nigeria suffered from severe food insecurity and some 54,000 faced famine. The food insecurity crisis is massive in this conflict prone region of Nigeria. Assessments in late 2014 alone, following interviews with key informants in Borno, Yobe and Adamawa states, revealed that vast areas of southern Yobe, Borno and northern Adamawa states were under-cultivated and/or not harvested during the May to December main farming season as a result of attacks and

conflict-related fears orchestrated by the Boko Haram insurgency in the area. As a result, many households in the affected areas in Borno, Yobe and Adamawa were left with significantly below-average food stocks in 2015. As a result, the National Fadama Development Project Federal Ministry of Agriculture and Rural Development under its Fadama III Second Additional Financing introduced and executed North East Food Security and Livelihood Emergency Support Project (NEFSLESP) in 2016 in North East, Nigeria.

However, Fika Local Government is one of the Local Government Areas located in southern part of Yobe State affected by Boko Haram insurgency in the North Eastern part of Nigeria. The commonest livelihood activities in the area are crop and livestock production. These economic activities of the area were affected by insurgency. By the time the activities of the insurgents were curtailed in the area, the people needed help to revitalize their livelihood sources (agriculture) in order to contribute to their food needs rather than depending all together on food assistance alone from donor agencies. The communities requested support to rehabilitate some basic infrastructures such as water supply and access roads to farms as well as supply of basic agricultural inputs to enable the households go back to farming business especially in the area of crop and livestock production. It was based on this demand that Federal Government of Nigeria introduced food security project in the area known as North East Food Security and Livelihood Emergency Support Project (NEFSLESP).

Moreover, the project introduced as part of the post insurgency rehabilitation projects. It was introduced purposely to increase the incomes for users of rural lands and water resources in a sustainable manner and to contribute to the restoration of the livelihoods of conflict affected households in the selected area. The target beneficiaries of the project were those households (men and women) affected by Boko Haram insurgency. Some women in the study area were involved in farming as well as in the project due to the loss of their husband as a result of the insurgency. In this regard, the effect of the project on their income and employment need to be studied.

However, studies have been done on women empowerment in agricultural production in Yobe State by [9, 17, 22] among others. But none of these studies examined the effect of the project on output of women farmers. Hence, this study has contributed by examining the effect of the project on income and employment of the participating farmers in Fika Local Government Area of Yobe, Nigeria. The research objectives were to examine effect of NEFSLESP on women farmers' income and employment and the effect of farm input on beneficiaries' output in Fika LGA.

2. Literature Review

2.1. Concepts of Income and Employment

Income and employment are livelihood variables which

are interrelated. The nature of employment determines the income level of an employee. Income as one of the livelihood sources is defined as the amount of money received for service rendered or for good sold. According to [12] income is a money or some equivalent value that an individual or business receives in exchange of good or service. In a similar vein, the [6] defined income as money that earned from doing work or received from investments. [1] explained that the sales of agricultural products after reserving the ones for consumption, fetches a lot of money for individuals and government.

Employment is also another source of livelihood and opposite of unemployment. It is the state of job. That is a situation whereby a person who is qualified and able to work engaged in an activity that provides income. [6] Defined employment as the fact of someone being paid to work for company or organization. Anyaele [3] Explained that agriculture provides employment opportunities for more than 60 percent of the population of West Africa. Women are the category of people perform most (70%) of agricultural work in Nigeria [18]. This implies that women generate more income from agriculture.

2.2. Effect of Agricultural Support Programmes on Income

In a study conducted by [29] on Factors influencing women participation in Women In Agriculture (WIA) Programme of Kaduna State Agricultural Development Project, Nigeria aimed at determining the effects of WIA programme on the income and output of respondents in the study area with the application of descriptive and inferential statistics. The findings revealed that the calculated Z-statistic value for income was 274.04 but at 0.05 level of significance, the critical or table value of Z is ± 1.96 . Since the calculated Z-value (274.04) is greater than Z-tabulated, it implied that there is significant difference in the mean income of participants and non participants. Also the estimated mean income of participants (₦134,389.04) was discovered to be much higher than the estimated mean income of non participants (₦5,605.35). Hence WIA participants had higher mean income from their agricultural enterprises than non-participants. Therefore findings confirmed that the impressive difference (₦118,783.69) in the mean income of participants from non participants might largely be attributable to their participation in WIA programmes.

A study by Benjamin et al. [5] evaluated the effect of agricultural programmes on the livelihood of the vulnerable group: a case study of the Fadama III programme in Kwara State, Nigeria. The study employed descriptive statistics about 87.6% opined that their income increased through participation in the programme. The majority (84.3%) of the respondents strongly agreed that they were able to enroll their children in school. This, they claimed, was due to their increased income and improvement in socio-economic status. The annual income of most of the respondents ranged from ₦51,000 to ₦100,000 for maize and cassava and from ₦101,000 to ₦150,000 for yam before the Fadama III intervention and an annual income ranging from ₦201,000 to

₦300,000 (by 76.8% of the respondents) for cassava production. Also, [16] investigated an Impact of Agricultural Services and Training Centre Project on Tomato Farmers' Livelihood in Plateau State, Nigeria. Result revealed that significant relationship exists between Agricultural Services and Training Centre project and the income of participating farmers at (Cov F calculated=3.952 at 5% level of significance). This implies that higher income has been realized from the sales of higher output thus translating to better condition of eking out a living by the participating farmers.

Sikwela and Mushunje [28] conducted a study on the impact of farmer support programmes on household income and sustainability in smallholder production: A case study of the Eastern Cape and Kwa Zulu Natal farmers, South Africa employed propensity score matching technique and Tobit regression. The study revealed that participation or access to Farmer Support Programmes significantly contributes to better incomes; the income effect is larger for farmers who are under these Farmer Support Programmes than those who are not. Being a member (that is, participation of) or having support from Farmer Support Programmes is relatively larger for bigger farms and is biased towards smallholder farmers. In this regard we can say the welfare of smallholder farmers is greatly improved.

Also, Magalane [15] conducted a study on Analysis of Socio-Economic Impact of Comprehensive Agricultural Support Programme (CASP) on Agrarian Reform Farmers of Sedibeng District Municipality in Gauteng Province, South Africa. The study employed Probit Regression model and Propensity Score Matching to estimate the impact of CASP on farmers' income. The key findings were that CASP promoted the livelihood of the rural economy by increasing farmers' incomes. CASP had a high impact income of agrarian reform farmers who benefited on it than non-beneficiaries. It is also revealed that the farmers derived their farm incomes from three main farm enterprises namely, livestock, vegetable and cereal. The results illustrated that the average income derived from livestock was R50 630.952 and R48 465.100 for participants and non participants. There was no significant difference between livestock incomes for participants and nonparticipants. In terms of vegetable production, participants obtained an average income of R181 899.698 which was relatively higher than that of non-participants with average income of R61 858.182. The mean difference was R120 041.50 and was statistically significant at 1% level. In addition, participants were associated with higher income (R255 000) from cereal production. The nonparticipants obtained an average income of R136 210.526 from cereal production. The mean difference (R146 257.8) was found to be significant at 1% level. Based on the total income, it can be seen that the participants had higher average income of R487 530.700 while nonparticipants had average total farm income of 246 533.800. The mean difference is R240 996.900 which is statistically significant at 1% level. It can be inferred that

farmers' participation in CASP has impacted positively on their farm incomes. Another study by [11] on climate adaptation and agribusiness support programme in Kebbi, Sokoto, Zamfara, Katsina, Jigawa, Borno and Yobe states with the use of primary and secondary data which was analyzed using descriptive statistics. The result revealed that incomes increased, food security enhanced and vulnerability for smallholder farmers, particularly women and youth reduced.

2.3. Effect of Agricultural Support Programmes on Employment

In a study by Omonijo *et al.* [23] in their study on impact of agricultural development programme on rural dwellers in Nigeria: a study of Isan-Ekiti using descriptive statistics and 2-way ANOVA. The result shows that all variables of the ADP boost employment in the area through increase food stuff production, construction of roads for easy movement of goods from and to markets. Similarly, [15] conducted a study on Analysis of Socio-Economic Impact of Comprehensive Agricultural Support Programme (CASP) on Agrarian Reform Farmers of Sedibeng District Municipality in Gauteng Province, South Africa. The study employed Probit Regression model and Propensity Score Matching to estimate the impact of CASP. The key findings revealed that CASP promoted the livelihood of the rural economy by creation of employment opportunities. CASP had a high impact on the employment of agrarian reform farmers who benefited on it than non-beneficiaries. Also, [16] reported that significant relationship exists between Agricultural Services and Training Centre project and the employment of tomato farmers' in Plateau State, Nigeria.

In a similar vein, Saranda *et al.* [27] investigated an Impact of Agricultural Intervention Programs on Income and Employment: Evidence from Vegetable Sector in Kosovo. The study employed combination of direct costing (DC) and activity based costing (ABC). The study reported that in terms of employment, the share of labour cost in total production cost of tomato sauce is relatively small (around 9%). However, the potential of export for this product noted encouraging trends, indicating that despite the low share of labour the potential for increase in volume of production can have an impact on employment generation. Data show that the share of women in total number of employees in this production is 53% (both full time and part time). From all three seasonal part time employees all of them were women. The production of *ajvar* involves sequence of different production operations such as cleaning and drying, baking, removing the skin, milling, cooking, filling the jars and *ajvar* storing. In terms of employment, women's share in total full time employment is around 54 percent, and 100 percent in total part time employment, respectively. This finding suggests important employment opportunities, especially for women. The study illustrated, if production of doubles, then, the expected increase of employment is 22 percent. Within the 22 percent, increase of labour female participation would be more than half. The *ajvar* production has potential for

market growth, including export, therefore is promising in generating employment. Traditional technology of production of *ajvar* involves more labour than production based on modern technology.

2.4. Effect of Farm Inputs on Output

Anyanwu [4] carried out a study on agricultural productivity determinants in Imo State, Nigeria using multiple regression model as follows: $Q = F(X_1, X_2, X_3, \dots, X_{12}, e)$ Where, Q is the aggregate agricultural productivity and $X_1, X_2, X_3, \dots, X_{12}$ are farm size, labour input, expenditure on planting material, non-farm income, capital input, expenditure of fertilizer, number of crops in the mixture, distance to the market, level of education of the farmer, age of the farmer, size of households, experience of the farmer and e is the error term. That study found farm size, labour input, expenditure on planting material, non-farm income, capital input, the number of crops in the mixture, distance to the market, the level of education of the farmer, experience of the farmer were statistically significant determinants of aggregate agricultural output. Labour despite having a negative coefficient was statistically significant.

Jawad and Wasif [13] conducted a study on determinants of agricultural output in Pakistan. The study is aimed to analyze and identify the key determinants of agricultural output. Variables used in the study are agricultural output, fertilizer consumption, improved seeds, labor employed in the sector, number of tractors, number of tube-wells and water availability. Data for these variables is time series for 1972 to 2012 which have been obtained from Agriculture Statistics of Pakistan Yearly Book and Pakistan Economic Survey Various Issues. Johansen co-integration approach has been used to compute the results. Results showed that number of tractors in the sector is an important determinant of agricultural output. Study also revealed that improved seeds, water availability, number of tube-wells and labor employed in the agriculture sector are positively related to agricultural output.

Ekborn [8] employed Cobb-Douglas production function with agricultural productivity as the dependent variable. The independent variables used were labour input, materials, physical resource endowment, human capital and physical capital investment. The results from ordinary least square regression indicated that soil conservation quality, the cost of agricultural inputs and labour availability were positively correlated to agricultural productivity and statistically significant. Farm size and distance from key resources and major infrastructures such as water and roads were negatively correlated to agricultural productivity and were statistically significant. Soil capital investments, capital assets, access to credit, off-farm nonagricultural income also contributed positively to productivity.

Odhiambo et al. [21] studied sources and determinants of agricultural growth and productivity in Kenya between 1965 and 2001. The study used growth accounting procedure to determine the respective factors followed by econometric technique to analyze the factors. The study

concluded that 90% of agricultural sector growth is accredited to factor inputs; land, capital, and labour. Labour by itself contributed 48% of agricultural growth. The study further established that factors which affect agricultural productivity include; climate, trade policy in Kenya and government expenditure on agriculture. Hussain and Ishfaq (1997) analyzed the determinants of agricultural production in Pakistan. Variables included in the studied were farm crop output (Y), farm crop area (N), labor (L), irrigations (R), fertilizer (F), total tractor supply (T), and total credit distributed (C). Cobb Douglas production function was used to estimate the results. Results show that farm crop area, fertilizers and total tractor supply play a significant role in the determination of agricultural output.

Furthermore, Abugamea [1] in estimating the long-run relationship between agricultural production to variables like cultivated land, labour force and capital (purchased input cost) the study employed Johansen-Granger co-integration procedures. The study found a significant negative relationship between capital and agricultural production. Over a long period, the cost of inputs impacted agricultural production negatively. Additionally, the study found a positive correlation between labour force and agricultural production. Error Correction Model (ECM) was used to check for short-run dynamics, which indicated clearly that capital and labour were the main determinants of agricultural productivity in Palestine.

Ahmad [2] sought to find out what determines the growth of agricultural productivity in Pakistan. The study employed autoregressive distributed lag model. The period considered in the study was from 1965 to 2009. From the study, it was concluded that in the short run and the long run fertilizer input, human capital, and agricultural credit were significant. The area under crop was found to be insignificant in the short run as well as the long run. [10] Analyzed the determinants of agricultural production in Pakistan. Variables included in the studied were farm crop output (Y), farm crop area (N), labor (L), irrigations (R), fertilizer (F), total tractor supply (T), and total credit distributed (C). Cob Douglas production function was used to estimate the results. Results show that farm crop area, fertilizers and total tractor supply play a significant role in the determination of agricultural output.

3. Methodology

Fika Local Government is one of the 17 Local Government Areas of Yobe State. It has a total land area of 2208 km square and has the total of 136,895 people out of which 67,561 were female [20]. The headquarters of the Fika local government area is situated at Fika town 156 kilometres away from Damaturu, the state capital. The climate of the area provide the annual rainfall between 600 – 1000mm with average temperature ranging from 35 – 38°C and the vegetation is identified as Sudan Savanna. The area shares common boundaries with Nangere and Potiskum Local Governments Areas to the north, Fune and Gujba Local Government Areas to the east, Bauchi state to the west and

Gombe state to the south [25]. Farming is the major economic activity of the people in the area.

The North East Food Security and Livelihood Emergency Support Project covering seven communities affected by Boko Haram insurgency (Fika, Ngalda, Dumbulwa, Tadangara, Gantsa, Koromchi and Siminti). Beneficiaries in the insurgency affected communities were grouped into eleven (11) Community Action Plans (CAPs) including; Korori, Bogaru in Fika town, Ngalda A, Ngalda B in Ngalda, Tadangara A, Tadangara B, Tadangara C in Tadangara village, Dumbulwa village, Gantsa village, Koromchi and Simintivillage CAPs. In each CAP, 40 households were selected as direct beneficiaries of the programme given rise to 440 households, out of which 121 were female while others were male [19].

The study therefore, does not embark on any selection criteria (sampling technique). It considers the total population of one hundred and twenty one (121) women farmers benefiting from the project without necessarily putting any selection criteria in place due to the fact that the population of women participants in the project is not large enough to adopt any selection technique. The data were

generated from women farmers participating in the North East Food Security and Livelihood Emergency Support Project (NEFSLESP) through the administration of well-structured questionnaire by trained enumerators under the supervision of the researchers. Data were collected on income and employment from production process for all respondents before and after the project intervention. Data was also collected on the costs of inputs used in production process and on output from production process before and after the project intervention and were analyzed using descriptive statistics and inferential statistics (t- test and multiple regression).

Model Specification

Various functional forms of production function (linear, semi-log and double-log functions) were tried to examine the effect of farm inputs on output and the semi-log was selected based on the statistical attributes of the results. The model for this study adopted the work of [4] where multiple regression model was used to estimate agricultural productivity determinants in Imo State, Nigeria. The model was further modified and specified as follows:

i. Linear Function

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + U \tag{1}$$

ii. Semi- Log Function

$$Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + U \tag{2}$$

iii. Double- Log Function

$$\ln Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + U. \tag{3}$$

Where:

Y=Aggregate farm output for women farmers after the project intervention (number of goat and sheep).

X₁=Cost of vaccines (CVAC) in naira.

X₂=Cost of land (COL) in naira.

X₃=Cost of livestock (CLVS) in naira.

X₄=Cost of livestock feed (CLF) in naira.

X₅=Cost of labour (CLAB) in naira.

X₆=Cost of implements (CIMP) in naira.

U=Error term

4. Results and Discussions

4.1. Effect of NEFSLESP on Women Farmers' Income in Fika LGA

Women farmer's income is also another livelihood variable considers in this study. This sub-section therefore, presents and discusses the effect of the North East Food Security and Livelihood Emergency Support on income of the beneficiaries as follows:

Table 1. Descriptive Statistics on the Effect of NEFSLESP on Women Farmers' Income in Fika LGA (Paired Samples Statistics).

Pair	Mean	N	SD	Std. Error Mean
Income Before				
Intervention:	102206.86	115	60144.873	5608.538
Income After				
Intervention:	172976.26	115	30535.533	2847.453

Source: Field Survey, 2019.

Table 1 shows the average annual income of the participants of the North East Food Security and Livelihood Emergency Support Project before and after intervention in the project. The paired sample statistics revealed that the

mean annual income of the participants were ₦102,206.86 and ₦172,976.26 before and after project intervention respectively. This shows that women farmers' average annual farm income increases by ₦70769.391.

Table 2. Effect of the NEFSLESP on Income in Fika LGA (Paired Samples Test-Paired Difference).

Paired Difference					
Pairs	Mean	SD.	Std. Err. Mean	t-stat	df P-Value
Income Before-					
After Intervention	70769.391	58672.394	5471.229	-12.935	114 0.000

Source: Field Survey, 2019.

As indicated on Table 2 a paired sample t-test revealed a mean difference of participants' income before and after project intervention respectively. The results shows a mean income difference of ₦70,769.391. This indicates that farmers' average income increased by ₦70,769.391 after the project intervention. Therefore, the project had a significant effect on farmers' income. This is due to the fact that the probability value ($P=0.000$) is less than alpha ($\alpha=0.05$) level

of significance at t-value (-12.935) and at 114 degree of freedom. This agrees with the findings of [28] on the impact of farmer support programmes on household income and sustainability in smallholder production in South Africa, revealed that participation or access to Farmer Support Programmes significantly contributes to better incomes; the income effect is larger for farmers who are under these Farmer Support Programmes than those who are not.

Table 3. Degree of the Effect of the NEFSLESP on Income (Effect Size).

Pair	t ² df	t ² +df	p- value	eta ² (Cohen's Standard)
Income:	167.3142	114	281.3142	0.000

Source: Field Survey, 2019.

The eta squared of 0.594759 as indicated on table 3 shows moderate effect size on output. Based on the [7] standard, the study revealed that the project had moderate positive effect on annual farm income of farmers in the study area.

4.2. Effect of Livelihood Project on Women Farmers' Employment Status in Fika LGA

Women farmer's income is one of the three livelihood variables considered in this study. This sub-section therefore, presents and discusses the effect of the North East Food Security and Livelihood Emergency Support Project on employment status of the beneficiaries as follows:

Table 4. Descriptive Statistics on the Effect of NEFSLESP on Women Farmers' Employment Status in Fika LGA (Paired Samples Statistics).

Pair	Mean	N	SD	Std. Error Mean
Employ. Sta. Before Interv.	0.5372	121	0.50069	0.04552
Employ. Sta. After Interv.	1.0000	121	0.00000	0.00000

Source: Field Survey, 2019.

Table 4 shows the average employment status of the participants of the North East Food Security and Livelihood Emergency Support Project before and after intervention in the project. The mean employment status of the participants were 0.5372 (53%) and 1.0000 (100%) before and after

project intervention respectively. This implies that with the intervention of the project in the study area, women were gainfully employed in livestock farming. This in turns improves their livelihoods.

Table 5. Effect of the NEFSLESP on Employment in Fika LGA (Paired Samples Test-Paired Difference).

Paired Difference						
Pair	Mean	SD.	Std. Err. Mean	t-stat	df	P-Value
Employment Status						
Before - After Intervention:	0.46281	0.50069	0.04552	-10.168	120	0.000

Source: Field Survey, 2019.

As indicated on Table 5 a paired sample t-test revealed a mean difference of participants' employment status before and after project intervention. The results shows a mean employment status difference of 0.46281. This indicates that farmers' average employment status increased by 46% after

the project intervention. This therefore shows a significant effect of the project on participants' employment status. This is because the statistical tests revealed that the probability value ($P=0.000$) is less than alpha ($\alpha=0.05$) level of significance at t-value (-10.168) and at 120 degree of

freedom. This is in consonance with the findings of [15] on Analysis of Socio-Economic Impact of Comprehensive Agricultural Support Programme (CASP) on Agrarian Reform Farmers of Sedibeng District Municipality in Gauteng Province, South Africa that CASP promoted the

livelihood of the rural economy by creation of employment opportunities. Similarly, the results agrees with the findings of [16] that significant relationship exists between Agricultural Services and Training Centre project and the employment of tomato farmers' in Plateau State, Nigeria.

Table 6. Degree of the Effect of the NEFSLESP on Employment (Effect Size).

Pair	t ²	df	t ² +df	p- value	eta ² (Cohen's Standard)
Employment:	103.3883	120	0.3882	0.000	0.462818

Source: Field Survey, 2019.

The eta squared of 0.462818 as indicated on Table 6 shows medium or moderate effect size on participants' employment status. Based on the [7] standard, the study revealed that the project had a moderate positive effect on participants' employment status in the study area.

4.3. Effect of Farm Inputs on Women Farmers Output in Fika LGA

This sub-section presents and discusses the effect of the farm inputs used in livestock (sheep and goat) production on the output of livestock as follows:

Table 7. Effect of inputs on output of women farmers in Fika Local Government Area.

Explanatory Variable	Linear Form	Semi-log Form	Double-log Form
Constant	15.414 (0.317)	-128.8999 (0.1952)	-6.266651 (0.3585)
Cost of vaccines-CVAC (X ₁)	-0.005 (0.141)	3.262434 (0.4669)	0.239435 (0.4373)
Cost of land-COL (X ₂)	0.018 (0.505)	-3.387071 (0.0989)	-0.313787 (0.0269)**
Cost of livestock-CLVS (X ₃)	0.000 (0.615)	-0.395305 (0.9588)	-0.010384 (0.9843)
Cost of livestock feed-CLF (X ₄)	0.002 (0.260)	-1.671747 (0.6789)	-0.100446 (0.7174)
Cost of labour-CLAB (X ₅)	-0.021 (0.037)**	16.90685 (0.0000)*	1.057372 (0.0000)*
Cost of implements-CIMP (X ₆)	0.002 (0.000)*	2.196208 (0.5739)	0.163070 (0.5436)
Models Diagnostics			
N	115	115	115
R ²	0.402	0.739	0.705
F-Stat.	12.078	51.08792	43.01885
Prob. (F-Stat.)	0.000	0.000000	0.000000

Source: Field Survey, 2019.

**Significant at 5% level.

*Significant at 1% level.

Note: Figures in the parenthesis are p- values.

Production Function: Q=F (X₁, X₂, X₃, X₄, X₅, X₆, U).

Dependent variable: Farm Output.

Independent variables: CVAC, COL, CLVS, CLF, CLAB and CIMP.

Table 7 shows that three functional forms of the multiple regression analysis models were tried, out of which the semi-log functional form provided the best fit and hence chosen as the lead equation. This choice was based on the premise that it has the higher R² and F-value of 0.739 and 51.08792 respectively. The R² value implies that 74% of the variation in the farm output is explained by the variations in the independent variables included in the model, while the remaining 26% of variation in farm output is explained by other variables not captured in the model. The F-value of 51.08792 shows that the proportion of the explained variation on the dependent variable is statistically significant at 0.000000 level which implies that the model is adequate for analysis. The result shows that only one factor [cost of labour (X₂)] significantly influenced farm output in the study area.

Cost of vaccines (X₁): The parameter (beta) coefficient

(3.262434) shows a positive relationship with farm output and not significant (0.4669>0.05). This implies that as cost (support) of vaccines increases, livestock output increases. This is because the cost was in form of support to the farmers which cannot be incurred.

Cost of land (X₂): The parameter coefficient (-3.387071) shows an inverse relationship with farm output but not significant (0.0989>0.05). This implies that as cost of land increases, farm output decreases and vice-versa. The relationship supports the normal law of demand which states that the higher the price the lower the quantity demanded.

Cost of livestock (X₃): The parameter (beta) coefficient (-0.395305) shows a negative relationship with livestock output but not significant (0.9588>0.05). This relationship implies that as cost of livestock increases, farmers may not be able to buy more animals and hence, may not be able to raise more animals.

Cost of livestock feed (X4): The parameter coefficient (-1.671747) shows an inverse relationship with farm output and not significant ($0.6789 > 0.05$). This implies that as cost of livestock feed increases, a farmer may not be able to buy adequate feed for her livestock. In this case, the probability for decrease in output is possible. This is because livestock grows well and yield better output with adequate nutrition and vice-versa.

Cost of labour (X5): The parameter coefficient (16.90685) shows a positive relationship with farm output and significant at 1% (0.0000) level of probability. This implies that as cost of labour increases the farm output also increases because labourers may dedicated their time to work in order to earn more wages coupled with increase in farm output.

Cost of implements (X6): The parameter coefficient (2.196208) shows a positive relationship with farm output and not significant ($0.5739 > 0.05$). This implies that as cost of implements increases, livestock output increases. This is due to the fact that the cost was in form of support to the farmers which cannot be incurred.

5. Conclusion

The study concluded that the North East Food Security and Livelihood Emergency Support Project (NEFSLESP) had significant influence on income and employment of women farmers' in Fika Local Government Area of Yobe, Nigeria. It is further concluded that only one explanatory variable (cost of labour) had significant influence on women farmers' output in Fika Local Government Area.

6. Recommendations

Based on the findings of this study, the following recommendations were proffered.

- i. The findings revealed that the project had significance effects on income and employment of women farmers. Hence, the National Fadama Development Project (NFD) should extend its project to areas where it does not exist in order to boost income level and reduce unemployment problem among women.
- ii. The findings revealed that the project had medium effects on income and employment of women farmers, income and employment status. Hence, the National Fadama Development Project (NFD) should redesign its project in a manner that will provide large effect on participants' income and employment status.

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