

IMPACT OF WEST AFRICAN SOY LIMITED (WASIL) ON MAIZE FARMERS PRODUCTIVITY IN KATSINA STATE, NIGERIA

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Abstract

Small scale farmers in Nigeria greatly depend on handouts both in cash and/or in kind to boost their agricultural production and also improve their livelihoods. Such assistance is usually made possible to them by public and/ or private organizations. In this article, the impact of the West African Soy Limited Maize Farmers Intervention Scheme on maize farmers' productivity was investigated. The study employed a farm budgeting technique Gross Margin Analysis and Net Farm Income to net out the impact of the programme on the maize productivity of the beneficiaries. Two hundred and twenty-three household heads who benefitted from the programme were purposively and proportionately selected while another 223 non-beneficiaries' households were randomly selected and used as the control group. The return per naira invested is N9.83K/ha which means that for every N1.00 invested in maize production by the beneficiaries of WMIP, they get a profit of N9.8k/ha increase while the return on every N1.00 invested is N7.609K/ha which means that for every N1.00 increase the non-beneficiaries make a profit of N7.60K/ha. it can thus be concluded that the beneficiaries make more profit from maize production in the study area than the non-beneficiaries. The programme, though a private sector initiative is such that has the potential of ensuring increased income for the poor resource smallholder farmers in the rural areas of Katsina State, Nigeria. The study therefore recommends that female household heads need to be encouraged to key into the programme to improve their income base. And there is the need for increased and rigorous capacity building for the farmers by extension agents of the programme to sustain the gains.

Keywords: Farm budgetary technique, Gross Margin Analysis, Net Farm Income, Farming households, WASIL

Introduction

Agriculture has been the mainstay of the Nigerian economy even amidst the discovery of crude oil (Food and Agricultural Organization (FAO), 2019). Well over 70% of the 150 million citizens who live in the rural areas have agriculture as their means of livelihood (Iheanacho and Ozegbe 2020). Despite, the foregoing Nigerian agricultural sector remains at a subsistence level hence the need for concerted and deliberate effort towards research and innovative agricultural practices. Nigerian government since independent have made a series of efforts aimed at re-energizing and revamping the sector but a few of these programmes made a positive impact on the economy while others could not. In a bid to better the livelihood of its citizens, the Nigerian government have initiated and implemented a series of programmes which include but not limited to the following; Foreign Direct Investment (FDI), 2020; National Accelerated Industrial Crops

programme (NAICP) in 1981, Special Rice Programme (SRP) 1997, Sasakawa Global (SG) 2000, Agricultural Research Council of Nigeria 2007, Agricultural Transformation Agenda 2011, the Fadama I, II, III and the Fadama Additional Finance, Anchor Borrowers scheme, Agricultural Transformation Agenda and Commercial Agricultural Development Project. Government and non-governmental organizations have taken several steps over the years to use agriculture as a vehicle to alleviate poverty and attain food security. Yet there is low and declining production of Nigeria agricultural sector due to poorly developed irrigation facilities, non-access to funds, inadequate infrastructure, ineffective agricultural research and extension systems, non-availability and poor distribution of key inputs (Fertilizers, chemicals, machinery and improved seeds (Nwaobiala, 2019). Arguing in favour of the forgoing FDI (2020) argued that the various attempts by the Nigerian government in initiating agricultural development projects aimed at achieving food security have failed to achieve their stated objectives. Interventions are very pertinent for agricultural development in Nigeria. Egbunike and Emadamowo (2018) posited that government powered interventions are perceived as not just the crux of all national economic discussions that borders around critical element for fostering innovation and competitiveness but a key component of the process. Over the years the private sector has delved into the arena in order to compliment the government efforts along the lines of economic transformation. An example of such NGO is the West African Cotton Limited (WACOT) through its subsidiary, the West Africa Soy Limited (WASIL).

WASIL, a subsidiary of WACOT has the mandate of promoting maize farming and enhancing maize farmers, livelihood in North West Nigeria. The programme has its presence in four (4) of the North Western states of Kaduna, Katsina, Kano and Jigawa and it has granted extension support, credit facilitation, market outsourcing, provision of inputs and promotion of maize farming in those states as some of its deliverables. The programme has as its core mandate, livelihood enhancement through increased production, income and food security. WASIL intends to increase production of its maize farmers in the study area through the deliverables they provide such as fertilizer, chemicals, planting materials, credit supply and facilitation, and extension services which are all aimed at increasing their farm productivity which they hope will later translate into increased output in terms of bags per hectare (WASIL, 2018). While WASIL has been in operation and has been carrying out its poverty alleviation, food security and livelihood enhancement activities through the provision of inputs such as chemicals, seeds, fertilizer and advisory services, credit facilitation, and market linkages in the North-West region of Nigeria for the past 9 years. There are anecdotal evidences that some challenges are responsible for its inability to spread its influence to other parts of the region and as well make its impact felt in the region since its inception. The foregoing justifies the need for an empirical study such as this to assess the impact of WASIL on the beneficiaries' maize production in Katsina State with the following specific objectives, i. describes the socio-economic characteristics of programme beneficiaries and non-beneficiaries in the study area and determine the estimated maize productivity of beneficiaries and non-beneficiaries in the study area?

The Study Area

Katsina State has a total land area of 24,192 Km² (9341 sq mi) located between latitude 11° N and 13°20'N and longitude 7°00'E and 8°55'E. It shares a border with the Niger Republic to the North, Kaduna State to the South, Jigawa and Kano States to the East, and Zamfara State to the West. The projected population of the state was put at 9,300,382 in 2023 at a growth rate of 3.7 percent per annum (Dogonyaro *et al.*, 2022). The Climate of the area is tropical continental which can be subdivided into tropical wet, dry and semi-arid. The central part, with Sudan savanna vegetation,

has an average annual rainfall of about 800 mm. The extreme northern part, with Sahel savanna vegetation has average annual rainfall of less than 600 mm and rainfall is between May and September with very high intensity between July and August. The major crops grown are maize, groundnut, millet, sorghum, cowpea, rice, and vegetables among others (Dogonyaro, Abaje, and Bello, 2022). The State is made up of 34 Local Government Areas with 3 ADP Zones. Katsina State Agricultural and Rural Development Authority (KTARDA), the state apparatus responsible for agricultural extension and rural development, stratified the state into three agricultural zones, namely: Zone I (Ajiwa), Zone II (Funtua) and Zone III (Dutsin-ma). Zone two Funtua as the study area is made up of nine local government area which include Funtua, Bakori Kafur, Danja, Dandume, Faskari, Sabuwa, Malumfashi and Kankara.

Methods of Data Collection

The study was carried out in the Agricultural zone (III) Dutsin-Ma which comprises Malumfashi and Kafur Local Government Area of Katsina State, the two Local Government Areas were purposively selected because of the high volume of WASIL activity and the specificity of WASIL on maize production in the areas. A Multi-stage sampling technique was used to select the sample for the study which involves the following stages: Stage I: involves a purposive selection of Katsina State because WASIL programmes in the selected state is specific to maize production; Stage II: involves a purposive selection of two (2) LGAs from the State. In this regard, Malumfashi and Kafur in Katsina State. The reason for the selection of the LGAs in this state was based on the concentration of maize farmers in them more than in other LGAs in the states. Stage III: From a list of WASIL registers made available, there were 831 maize farmers in the selected LGAs out of which 223 maize farmers were proportionately selected with RAOSOFT sample size calculator using 5% of the population at 5% level of significance. Stage IV: A list of 1150 registered maize farmers for Malumfashi and Kafur who were not on the WASIL list of farmers was obtained from KTARDA out of which 223 were randomly and proportionately selected as control group (Table 1). A well-structured questionnaire set was used to elicit responses from the respondents in the study area.

Table : 1 Sample Size Selection

PARTICIPANTS				NON- PARTICIPANTS			
STATE	Local Government Area	Sample Frame	Sample Size	STATE	Local Government Area	Sample Frame	Sample Size
Katsina	Malumfashi	660	177	Katsina	Malumfashi	250	26
	Kafur	171	46		Kafur	200	21
	TOTAL	831	223		TOTAL	1150	223

Methods of Data Analysis

Descriptive statistics such as means percentages were used to obtain the socioeconomic characteristics of both beneficiaries and non-beneficiaries while the impact of WASIL farming intervention on maize producers' income was determined using a farm budgetary technique which is the Net-farm Income and Gross Margin Analysis.

$$GM = TR - TVC \dots\dots\dots(1)$$

$$NFI = GM - TFC \dots\dots\dots (2)$$

Where GM= Gross Margin/Ha

TR= Total Revenue/Ha

TVC= Total Variable Cost/ Ha

TFC = total fixed cost

Total revenue is the monetary value of the output.

$$TR = P_y \cdot Y \dots\dots\dots(3)$$

Where

P_y = Price per unit of output

Y = maize output (kg).

RESULTS AND DISCUSSION

The distribution of respondents age shows that of both beneficiaries and non-beneficiary household head. The result revealed a mean age of 44 years for the non beneficiaries and 40 years for the beneficiaries, this is seen to be having a marginal difference and it also indicates that the respondents are in their prime and active age group which can be a productive age as far as agricultural operation is concern (Table 2). This result is consistent with the findings of Afolami *et al*, (2012) who obtained 46 and 48 years as the mean age of rice farmers in Ekiti and Ogun States respectively. Matere and Mbatia (2020) found that the estimated average age of rice farmers under traditional technology was 42 years while 45 years as from obtained among rice farmers under the improved technology. They asserted that farmers within the productive age of 20-45 years are likely to have the necessary physical stamina required to carry out farm operations. The Table also indicates that there are more male maize farmers among the beneficiaries of the WMIP when compared with their female counterparts (95.7%) and (4.3%) respectively. The results that men were the head and breadwinner in most homes and due to the socio economic demands of running the home/family, they will have to take any form of risk not limited to participating in any intervention programme such as WMIP so as to increase their productive capacity as well as more income which can further translate into an improved standard of living.

The findings are in agreement with Iruegbu, Okidim and Ekine (2021) who noted that yam production in Rivers State, Nigeria was dominated by males and it could be attributed to the energy demanding activities involved in yam production which requires men who are naturally endowed with abundant strength necessary for the job.

The results also indicated that (82.5%) of the respondents were married among beneficiaries as compared to (80.9%) among non-beneficiaries. Respondents who were single by marital status constituted (17.0%) and (10.3%) among beneficiaries and non-beneficiaries of WMIP respectively. Farmers who are married are likely to have a family labour force that can contribute to farm

labour especially when the agricultural intervention programme is labour intensive as its always the case with agricultural driven programmes. Mani et al. (2022) reported that large percentage of married respondents among maize farmers is an indication that more members will likely be available for crop production.

The result also revealed that beneficiaries have a mean house hold size of 8 persons while the non-beneficiaries have a mean house hold size of 9 persons. The house hold size may be related to the number of house hold members that will be available for farm work. There is a probability that the larger the house hold size the greater the volume of farm work that will be absorbed by house hold labour. This socio economic variable is expected to influence the participation in programmes that are beneficial and has considerable labour requirements. Olanrewaju *et al.* (2020) assert that house hold size is an important index in rural development intervention which can affect the outcome of such intervention.

Results also show that the mean years of experience in maize farming among beneficiaries of WMIP was 12 years while that of the non-beneficiaries was 11 years (Table 2). Farming experience can have both negative and positive effects/influences on programme participation. With more experience, maize farmers can be cautious and unwilling to take risks with less experience they might be eager and anxious to embrace any intervention programme that promises to improve their living standard.

Table 2: Socio-Economic Characteristics of Beneficiaries and Non-beneficiaries of WASIL

Maize Intervention Programme in Katsina State

Variables	Katsina	
Age	N.B	B
10-19	0	0
20-29	12(5.4)	8(17.0)
30-39	64(28.1)	15(31.9)
40-49	65(29.2)	9(19.1)
50-59	56(25.1)	8(17.0)
60-69	26(11.6)	4(8.5)
70-79	0	3(6.4)
X	44	42
Sex		
Male	155(69.5)	45(95.7)
Female	68(30.5)	2(4.3)
Marital Status		
Married	38(80.9)	184(82.5)
Single	23(10.3)	8(17.0)
Divorce	8(3.6)	0(0)
Widow	5(2.2)	1(2.1)
Widower	3(1.3)	0(0)
House Hold Size		
0-9	134(60.1)	35(74.5)
10-19	88(39.5)	10(21.3)
20-29	1(0.4)	2(4.2)
30-39	0	0
X	9	8

Farming Experience		
0-9	82(36.8)	0
10-19	123(55.2)	0
20-29	15(6.7)	8(17.0)
30-39	2(0.9)	15(31.9)
40-49	1(0.4)	9(19.1)
50-59	0	8(17.0)
60-69	0	4(8.5)
70-79	0	3(6.4)
X	11	12
Total	223(100)	47(100)

Source: Authors' Analysis, 2022

KEY:

1. **N.B = Non- beneficiary**
2. **B = Beneficiary**
3. **X = Mean**

Cost and Return on Maize Production in Naira/HA (Beneficiary) Katsina State

The cost and return of maize production for beneficiaries of WMIP in Katsina State (Table 3), reveal that the Total Variable Cost is N50,595,531.4k, and the Total Fixed Cost (TFC) is N49,913.58k. Total Cost of production is N50,645,444.98k, Gross Margin (GM) is N498172468.6k, the Total Revenue (TR) is N548,768,000.00k and the Net Farm Income (NFI) is N498,122,555.0K. The return per naira invested is N9.83K which means that for every N1.00 invested in maize production by the beneficiaries of WMIP they get a profit of N9.8k increase.

Results obtained from the non-beneficiaries on the other hand show N8,368,124.3K as the Total Variable Cost (TVC), N52,604.25K as the Total Fixed Cost with a total cost of production (TC) put at N8,420,728.55k and a total revenue of N72,497,000.00K, Gross Margin is N64,128,875.7K and Net Farm Income is N64,076,271.445k (Table 3). Return on every N1.00 invested is N7.609K which means that for every N1.00 increase, the non-beneficiaries make a profit of N7.60K which when compared with the profit margin of the beneficiaries which stood at N9.8k, it can be concluded that the beneficiaries make more profit from maize production in the study area than the non-beneficiaries.

Table 3: Cost and Return on Maize Production in Naira/HA (Beneficiary Katsina)

NET FARM INCOME			
VARIABLES COST			(VC %)
Seed	=	N297,000	0.5
Chemical	=	N 3,408,900	6.7
NPK	=	N 32,152,000	6.3
Urea	=	N 13,790,000	27
Hired Labour	=	N 28,469.4	0.05
Family Labour	=	N 1,162	0.002
Cost of renting tractor	=	N 316,000	0.6
Cost of renting traction	=	N602,000	1.1
Total Variable Cost (TVC)	=	N50,595,531.4	

FIXED COST

Land Renting	=	N 47,557.3991
Sprayer	=	N 1,316.6816
Cuttlass	=	N 270.8520
Hoe	=	N 228.7443
Wheel barrow	=	N 539.9103

Total Fixed Cost (TFC) = N 49,913.5873

Total Cost (TC) = (TVC + TFC) = 50,595,531.4 + 49,913.5873 = N50,645,444.987

Gross Margin (GM) = (TR-TVC) = 548768000 – 50595531.4 = N 498,172,468.6

Net Farm Income (NFI) = (TR-TC) = 548768000 – 50645444.987 = 498,122,555.01

Return Per Naira Invested (ROI) = (NFI/TC) = 498,122,555.01 / 50,645,444.987 = N9.835K

TR = 548,768,000

Source: Authors' Analysis 2021

1 % increase in the WASIL intervention package will lead to N9.835 k increase.

Table: 4 Cost and Return on Maize Production in Naira/Ha (Non-Beneficiary) Katsina State

NET FARM INCOME			
VARIABLES COST		(VC %)	
Seed	=	N38,205	0.4
Chemical	=	N 724,400	8.6
NPK	=	N 4,760,000	56.8
Urea	=	N 2,673,000	31.9
Hired Labour	=	N 7,860.2	0.09
Family Labour	=	N 45,659.1	0.5
Cost of renting tractor	=	N -	-
Cost of renting traction	=	N119,000	1.4
Total Variable Cost (TVC)	=	N8368124.3	
FIXED COST			
Land Renting	=	N 48,297.8723	
Sprayer	=	N 1,640.4255	
Cuttlass	=	N 389.3617	
Hoe	=	N 340.4255	
Wheel barrow	=	N 1,936.1702	
Total Fixed Cost (TFC)	=	N 52604.2552	
Total Cost (TC) = (TVC + TFC)	=	8,368,124.3 + 52,604.2552 = N84,207,28.552	
Gross Margin (GM) = (TR-TVC)	=	72,497,000 – 8,368,124.3 = N 64,128,875.7	
Net Farm Income (NFI) = (TR-TC)	=	72497000 – 8420728.552 = 64,076,271.445	
Return Per Naira Invested (ROI) = (NFI/TC)	=	64,076,271.445 / 8,420,728.552 = N7.609K	
TR = 72,497,000			

Source: Authors' Analysis 2021

A 1 % increase in the WASIL intervention package will lead to an N7.609k increase.

Conclusion

The WASIL maize intervention Programme (WMIP) has positively impacted the income of its beneficiaries in Katsina state, Nigeria in terms of achieving its set out objectives of income

improvement among small scale maize farmers. The programme has great potential, which if properly managed and sustained could serve as the springboard for future private agricultural development initiatives.

Recommendations

Based on the findings, it is recommended that:

- i. Female household heads need to be encouraged to key into the programe in order to improve their income base.
- ii. It is therefore recommended that the programme be sustained owing to its remarkable impact on the beneficiaries as revealed by the profitability analysis which shows that the return on every N1.00 invested is N7.609K/ha which means that for every N1.00 increase the non-beneficiaries make a profit of N7.60K per hectare which when compared with the profit margin of the beneficiaries which stood at N9.8k/ha.

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