



ASSESSMENT OF SUBSIDY EFFECT ON MAIZE PRODUCTION AMONG SMALL SCALE FARMERS IN EKITI STATE, NIGERIA

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ABSTRACT

The study assessed the effect of subsidy on maize production among small scale maize farmers in Ekiti State. A multi-stage sampling procedure was used to select 160 maize farmers. Data were collected during 2025 planting season. Descriptive statistics (D/S), Multivariate Multiple Regression (MMR) Model and Likert Scale Rating (LSR) were used for Data analysis. The socioeconomic result suggests that subsidy beneficiary and non-beneficiary farmers were 34years and 36years by age, 75% and 72.5% by sex, 65% and 67.5% by married category, and 7years and 6years and 6years respectively. Based on the available result, farmers enjoyed subsidy in the area of improved seed (52kg), fertilizer (125kg) and herbicide (16 litres). Total Factor Productivity (TFP) was positively influenced by experience (0.083; $p < 0.05$), farm size (0.183; $p < 0.01$), seedlings (0.320; $p < 0.05$), herbicide (0.270; $p < 0.03$) and fertilizer (0.550; $p < 0.01$) while farm income is positively determined by farm size (0.165; $p < 0.05$), seedling s (0.210; $p < 0.01$), herbicide (0.185; $p < 0.01$) and credit (0.104; $p < 0.05$) among others. Delayed or irregular subsidy distribution was identified as the major constraints challenging maize production in the study area. It was concluded that beneficiaries of subsidies demonstrated higher efficiency, better resource utilization, and improved earnings compared to their non-beneficiary counterparts. It is recommended among others that subsidy distribution should be strengthened and streamlined, and extension services should be provided all year round.

Keywords: Farmers, Factor, Production, Subsidy and Total

INTRODUCTION

Agriculture remains the cornerstone of economic activity in Nigeria, contributing significantly to employment, food production, and export earnings. Despite its importance, small-scale farmers in Nigeria face numerous challenges, including low productivity, limited access to modern inputs, and inadequate infrastructure. Government subsidies, as a form of agricultural support, have been introduced to alleviate some of these constraints, aiming to enhance productivity and improve farmers' incomes. Subsidies provide farmers with access to essential inputs such as fertilizers, improved seeds, and mechanization services at reduced costs, thus promoting farm efficiency and agricultural output (Ayinde *et al.*, 2015). In Ekiti State, Nigeria, small-scale maize farmers are key stakeholders in the agricultural sector, contributing to food security and rural livelihoods. However, their productivity is constrained by high input costs, poor market access, and low adoption of modern farming techniques (Olomola, 2017). The introduction of government subsidies aims to address these issues by lowering the cost of inputs and encouraging the use of improved technologies. By doing so, subsidies are expected to boost total factor productivity, leading to increased farm output and enhanced income for small-scale farmers (Dethier and Effenberger, 2012).

Agricultural subsidies have been widely debated in terms of their effectiveness. Proponents argue that subsidies encourage increased input use and enhance farm profitability, while critics highlight issues such as inefficiency, misallocation of resources, and dependency on government support (Nkonya *et al.*, 2016). In light of these contrasting views, it becomes necessary to examine the specific impact of subsidies on farm productivity and income in localized contexts, such as among small-scale maize farmers in Ekiti State. Agriculture plays a critical role in Nigeria's economy, providing livelihoods for over 70% of the rural population and contributing significantly to food security and national development (FAO, 2021). The



sector, however, is dominated by small-scale farmers who operate on less than five hectares of land and rely heavily on traditional farming methods. These farmers face numerous challenges, including limited access to modern agricultural inputs, inadequate extension services, poor infrastructure, and volatile market conditions, which negatively affect productivity and income (Olomola, 2017; World Bank, 2020). In response to these challenges, the Nigerian government has implemented various agricultural subsidy programs aimed at improving farmers' access to essential inputs such as fertilizers, seeds, and pesticides at reduced costs (Ayinde *et al.*, 2015). Input and output subsidies were found to influence farmer behavior, crop yield, price stability, and the broader supply chain. The findings indicate both positive and negative outcomes, emphasizing the need for targeted, transparent, and sustainable subsidy policies.

MATERIALS AND METHODS

The Study Area

The study was conducted in Ekiti State, Nigeria. The state was created on the 1st of October 1996 with a total land area of 6,353Km². The State is blessed with 2,210,957 people, hence ranked 31st in Nigeria population (NPC 2006). The State has annual rainfall range between 2000 - 2400mm and consist of sixteen (16) Local Government Areas. It is located within south western part of Nigeria.

Sampling Procedure

A multi-stage sampling technique was employed in selection of respondents for the study. The first stage involved selection of two (2) local government area which are Ado- Ekiti and Moba local government. The second stage involved the random selection of two (2) communities from each of the two (2) local government forming four (4) communities which are Irasa and Ifesowapo in Ado-Ekiti and Otun- Ekiti and Ikun-Ekiti in Moba Local government. The third stage involved the use of snowballing selection of twenty (20) farmers from the four (4) communities who are subsidy beneficiaries making eighty (80) farmers. However, twenty (20) farmers from the four (4) communities who are non- beneficiaries making eighty (80) farmers. In total, we have one hundred and sixty (160) respondents were selected for the study.

Analytical Tools

Descriptive Statistics

Socioeconomic characteristics of the respondents were described by employing Descriptive Statistics (DS) that comprise frequency counts, mean and percentages.

Multivariate Multiple Regression (MMR)

The MMR is an econometric model for estimating an equation which contains at least two (2) dependent variables, thus incorporating the interdependence among them. This system of equations recognizes the correlation in the error terms of the dependent variables and it estimates the set of models simultaneously. The Model was used to determine the effect of input subsidy on agricultural productivity and income of small-scale maize farmers in study area. The model can be expressed as:

$$Y_{ik} = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \dots + \beta_{16}X_{16} + e_i \quad \dots (1)$$

Where: Y_i = Dependent Variable,

K = Number of dependent variables, 1 = Productivity (TFP index) and 2 = Annual Income (in Naria),

X_1 = Age (in Years),

X_2 = Sex (Male = 1, Female = 0),

X_3 = Farming experience (in Years),

X_4 = Farm size (in Hectares),

X_5 = Subsidy on seedlings (in Naria),

X_6 = Subsidy on agrochemicals (in Naria),

X_7 = Subsidy on fertilizers(in Naria),

X_8 = Household size (in Number),

X_9 = Educational level (in Years),

X_{10} = Credit access (Yes =1, No =0),

X₁₁ = Extension contact (Yes =1, No =0), X₁₂ = Distance to market (in km),
X₁₃ = Cooperative membership (Yes =1, No =0), X₁₄ = Mobile phone ownership (Yes =1,
No =0), X₁₅ = Land tenure status (secure/insecure), X₁₆ = Beneficiary (Dummy),
 β_0 = Constant, $\beta_1 - \beta_{11}$ = regression coefficients, and e_i = error term.

Likert Rating Scale

The five-point Likert type scale was used to examine the challenge facing production of maize in the study area. These are defined as: 5 = Strongly Agreed, 4 = Agreed, 3 = Undecided, 2 = Disagreed, 1 = Strongly Disagreed.

The scores will then be calculated as follows;

Weighted Score (WS) = $5n+4n+3n+2n+1n$ = Total Score for each constraint

Where,

n=frequency of each constraint for each rating

$$\text{Mean Score (MS)} = \frac{\text{Total Score of Each Constraint}}{\text{Total Number of Respondents}} \quad \dots(2)$$

Rank=value of the MS will then be used to rank the severity of the limitations faced by the respondents.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Respondents

The results as shown in Table 1 showed that the highest number of beneficiaries (37.5%) and non-beneficiaries (35.0%) fell within the age bracket of 31–40 years while the least of 16.2% and 15% were recorded for the beneficiaries and non-beneficiaries respectively. The mean age for the two categories of the beneficiaries and non-beneficiaries was of 34.0% and 36.0% respectively. The result indicates that maize farming is dominated by young and middle-aged farmers who are still in their active and productive years. The result agrees with Adepoju and Obayelu (2019), who reported that farmers in their thirties and forties are in their most active age in Nigerian agriculture. Majority of the male beneficiaries and non-beneficiaries of agricultural input subsidy were 75% and 72.5% respectively while their female counterparts who were beneficiaries and non-beneficiaries were in the respective proportions of 25.0% and 27.5%. The result suggests that maize production in the study area is male-dominated. This finding agrees with Olaoye (2014), who reported that men are more involved in staple crop farming in southwest Nigeria.

The beneficiaries and non-beneficiaries married maize farmers formed the majority with 65.0% and 67.5%, respectively. The divorced, single and widowed in the two categories had close to or slightly higher than 20% maize farmers. It could be inferred from this result that the maize farmers in the study area are well cultured and traditionally inclined in terms of placing a high premium on marriage, probably for procreation which produces a larger household member for family labour or a show of being responsible. This outcome agrees with Adeoye (2020) who submitted that the basis for marriage among the farming households is the production of family labour in order to address the rural farm labour shortage that is occasioned by rural-urban drift.

The result showed that both categories had a relatively high farming experience, which implies that they possess practical knowledge of maize production. The result agrees with Akinola and Akintoye (2020) who noted that farming experience enhances farmers' decision-making and productivity. the highest household size among beneficiaries was 6–10 members (52.5%) with a mean of 6 persons, while the least was 10–15 members (12.5%). For non-beneficiaries, the highest was also 6–10 members (56.3%) with a mean of 7 persons, while the least was 10–15 members (12.5%). The highest proportion of beneficiaries earned between ₦501,000 and ₦750,000 (35.0%) with an average income of ₦520,000, while the least earned

above ₦1,000,000 (6.3%). For non-beneficiaries, the highest proportion earned between ₦251,000 and ₦500,000 (37.5%) with an average income of ₦410,000, while the least earned above ₦1,000,000 (2.5%). The result suggest that beneficiaries generally had higher seasonal income compared to non-beneficiaries, suggesting that subsidies may have positively influenced their productivity. The findings agree with Afolabi (2022) who stated that subsidy interventions improve farmers' income through reduced cost of production.

Table 1: Distribution of Respondents by Socioeconomic Characteristics

Variable	Beneficiary		Non- beneficiary	
	Frequency	Percent	Frequency	Percent
Age(years)	Mean= 34 years		Mean= 36 years	
≤30	15	18.8	20	25.0
31- 40	30	37.5	28	35.0
41 – 50	22	27.5	20	25.0
> 50	13	16.2	12	15.0
Sex				
Male	60	75.0	58	72.5
Female	20	25.0	22	27.5
Marital Status				
Single	18	22.5	15	18.8
Married	52	65.0	54	67.5
Widowed	5	6.2	6	7.5
Divorced	5	6.2	5	6.2
Farm Experience	Mean= 7 years		Mean= 6 years	
≤4	12	15.0	10	12.5
5 – 7	20	25.0	18	22.5
8 – 12	28	35.0	30	37.5
> 12	20	25.0	22	27.5
Household Size	Mean= 6 persons		Mean= 6 persons	
≤5	28	35.0	25	31.2
6 –10	42	52.5	45	56.3
10 – 15	10	12.5	10	12.5
Primary Occupation				
Farming	55	68.8	50	62.5
Trading	10	12.5	12	15.0
Civil Service	8	10.0	10	12.5
Artisan	7	8.7	8	10.0
Seasonal Income(₦)	Mean= ₦520,000		Mean= ₦410,000	
≤ 250,000	12	15.0	22	27.5
251,000 - 500,000	25	31.2	30	37.5
501,000 - 750,000	28	35.0	20	25.0
751,000 - 1,000,000	10	12.5	6	7.5
>1,000,000	5	6.3	2	2.5

Source: Field Survey, 2025; Number of Observation = 160

Forms of Subsidy Available to the Respondents

Table 2 shows the forms of subsidy available to the respondents in the study area. The result revealed that the highest proportion received 51–75 kg of improved seed (40.0%) with an average of 52 kg, while the least received more than 100 kg (10.0%). The average of 52kg revealed that majority of the respondents accessed a moderate quantity of improved seeds which could significantly improve yield compared to local varieties. The result agrees with Musa *et al.* (2020) who highlighted the role of improved seeds in enhancing maize productivity among smallholder farmers. The result revealed that the highest proportion received between 101 kg and 150 kg of fertilizer (40.0%) with an average of 125 kg, while the least received above 200 kg (6.3%). The result showed that most farmers accessed a substantial amount of

fertilizer, which could enhance soil fertility and yield. The finding agrees with Adedeji and Alabi (2021) who reported that fertilizer subsidy remains a key driver of improved productivity among smallholder maize farmers. The result revealed that the highest proportion received between 16 litres and 20 litres (37.5%) with an average of 16 litres, while the least received less than or equal to 5 litres (10.0%). The result showed that most farmers received adequate agrochemicals to manage pests and weeds which improves maize productivity. The result agrees with Okonkwo *et al.* (2020) who reported that access to subsidized agrochemicals improves crop protection and reduces losses.

Table 2: Distribution of Respondents Based on Forms of Subsidy Available

Forms of Subsidy	Frequency	Percent
Improved Seed (kg)	Mean = 52kg	
≤25	10	12.5
26-50	18	22.5
51-75	32	40.0
76-100	12	15.0
>100	8	10.0
Fertilizer (Kg)	Mean = 125kg	
≤50	12	15.0
51-100	18	22.5
101-150	32	40.0
151-200	13	16.2
>200	5	6.3
Agrochemical (liters)	Mean = 16 liters	
≤5	8	10.0
6-10	12	15.0
11-15	13	16.3
16-20	30	37.5
>20	17	21.2

Source: Field Survey, 2025;

Number of Observations = 160

Effect of Input Subsidy on Agricultural Productivity and Income of the Respondents

The results of the Multivariate Multiple Regression (MMR) model, presented in Table 3 reveal the effects of agricultural input subsidies on both productivity, measured by the Total Factor Productivity (TFP) index, and the annual income of small-scale maize farmers, expressed in natural logarithm form. Model fit is good and desirable, with $R^2 = 0.56$ for productivity and $R^2 = 0.63$ for income, indicating that more than half of the variation (56% and 63%, respectively) in both outcomes is explained by the included variables. The F-statistics (8.84 and 20.01) are significant, and multicollinearity is not problematic, as indicated by VIF mean values (2.29 and 3.55) below critical thresholds of 10.

The beneficiary variable is positive and statistically significant for both productivity (Coefficient = 0.420; $p < 0.05$) and income (Coefficient = 0.355; $p < 0.01$). The results showed that beneficiary farmers had 0.42 points higher on the TFP index compared to non-beneficiaries. Similarly, being a beneficiary increases household income by approximately 35.5%. This indicates that benefiting from subsidy programmes significantly increases both farm efficiency and household income. In essence, farms benefiting from subsidies are more productive and generate higher returns than their non-beneficiary counterparts.

Among the socioeconomic variables, age (-0.140; $p < 0.05$) shows a negative and significant effect on productivity in the study. It implies that each additional year decreases the TFP index by 0.14 units, suggesting declining efficiency among older farmers. Farming experience, however, contributes positively to productivity (0.083; $p < 0.05$), which aligns with expectations that accumulated knowledge improves efficiency. It could be interpreted that an extra year of experience raises the TFP index by 0.083 units. Farm size is important for both

outcomes, productivity (0.183; $p < 0.01$) and income (0.165; $p < 0.05$). It means that each additional hectare increases the TFP index by 0.18 units and annual income by 16.5%, confirming scale advantages in maize production. With respect to input subsidies, the results are highly consistent with theoretical expectations. An increase in subsidy allocation for seedlings raises the TFP index by 0.32 units ($p < 0.05$) and income by 21% ($p < 0.01$). Similarly, agrochemical subsidies increase productivity by 0.27 units ($p < 0.05$) and income by 18.5% ($p < 0.01$). The strongest effect is observed for fertilizers, where a unit increase in subsidy improves the TFP index by 0.55 units ($p < 0.01$) and raises income by 24.5% ($p < 0.01$). This confirms that fertilizers remain the most critical input for boosting maize productivity and profitability.

Table 3: Effect of Input Subsidy on Productivity and Income

Variable	Productivity (TFP Index)			Annual Income (₦)		
	Coeff.	SE	P-value	Coeff.	SE	P-val
Constant	0.420**	0.165	0.012	0.355***	0.118	0.003
Age	-0.140**	0.061	0.024	-0.006	0.016	0.714
Experience	0.083**	0.038	0.029	-0.007	0.0223	0.763
Farm size	0.183***	0.031	0.000	0.165**	0.080	0.042
Seedlings	0.320**	0.145	0.028	0.210***	0.065	0.002
Herbicide	0.270**	0.130	0.041	0.185***	0.058	0.001
Fertilizers	0.550***	0.180	0.004	0.245***	0.072	0.001
Household size	0.058	0.142	0.684	-0.083**	0.036	0.025
Education	0.450	0.866	0.605	0.093	0.223	0.679
Credit	0.185	0.171	0.281	0.104**	0.044	0.021
Extension	-0.460	1.240	0.712	0.482	0.320	0.137
Distance to market	0.089	0.169	0.602	0.044	0.044	0.314
Cooperative	-0.598	0.983	0.545	0.509**	0.253	0.049
Mobile phone ownership	1.627	0.991	0.105	0.515**	0.255	0.048
Sex	0.621	1.352	0.648	0.643*	0.348	0.069
Land tenure status	-0.014	0.161	0.932	0.275*	0.164	0.099
Constant	3.089	1.659	0.067	13.377	0.428	0.000
R-squared	0.560			0.6312		
F-value	8.84**			20.01***		
VIF (mean)	2.29			3.55		
Breusch-Pagan $\chi^2(1)$	1.820			0.177		
Wilks' Lambda		0.734, prob. > F = 0.0001				
Pillai's Trace		0.2659, prob. > F = 0.0000				
Hotelling's Trace		0.3326, prob. > F = 0.0000				
Roy's Largest Root		0.2107, prob. > F = 0.0012				

Source: Field Survey (2025) *Note:* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; SE: Standard Error

Challenges Facing Production of Maize in the Study Area (Beneficiaries)

In Tables 4 the first rank was delayed or irregular subsidy distribution (Mean = 4.45). The most pressing challenge for beneficiaries is the delay and irregularity in subsidy distribution. Farmers often receive inputs late, sometimes after the optimal planting season, reducing the effectiveness of the subsidy program. This issue undermines productivity despite government support. Studies confirm that delayed input delivery is a recurring problem in Nigeria's agricultural subsidy schemes, reducing efficiency and discouraging farmers (Ayanwuyi *et al.*, 2022).

The second rank was poor market access / low selling prices (Mean = 4.28). Beneficiaries face difficulty accessing profitable markets, often selling produce at low prices due to middlemen exploitation and lack of storage facilities. Even with subsidies, low farm-gate prices discourage production. Poor market structures remain a critical challenge across sub-Saharan Africa (Liverpool-Tasie *et al.*, 2020; Oladele and Oni, 2022).

Table 4: Perceived Challenges Facing Production of Maize by Beneficiaries

Challenge Statement	SA	A	N	D	SD	MS	Rank
High cost of inputs	23 (27.8%)	43 (54.2%)	9 (11.1%)	3 (4.2%)	2 (2.8%)	4.10	3
Limited access to credit/loans	17 (21.7%)	45 (56.3%)	11 (13.9%)	5 (6.25%)	2 (2.8%)	3.95	4
Delayed or irregular subsidy distribution	9 (11.1%)	29 (36.1%)	31 (38.9%)	9 (11.1%)	2 (2.8%)	4.45	1
Poor market access / low selling prices	0 (0%)	38 (47.2%)	30 (37.5%)	6 (6.9%)	7 (8.3%)	4.28	2
Transportation and road challenges	21 (25.5%)	51 (63.8%)	7 (8.5%)	0 (0%)	1 (2.1%)	3.65	5

NB: SA: Strongly Agreed; SD: Strongly Disagreed; N: Neutral; A: Agreed; D: Disagreed; MS: Mean Score

Source: Field Survey, 2025

Challenges Facing Production of Maize in the Study Area (Non-beneficiaries)

In Tables 5, High cost of inputs (Rank 1; Mean = 4.60). Non-beneficiaries are most constrained by skyrocketing input prices (fertilizers, seeds, herbicides). Without subsidy, these costs are prohibitive, leading to reduced input application and lower yields. Several studies show input cost is the most significant barrier for unsubsidized smallholder farmers (Liverpool-Tasie and Takeshima, 2013; FAO, 2021). Limited access to credit/loans (Rank 2; Mean = 4.42). Non-beneficiaries rely heavily on personal savings or high-interest informal loans to finance farming. This financial constraint significantly reduces productivity, as many cannot afford timely input purchases. Credit inaccessibility has been repeatedly highlighted as a key poverty trap for farmers (Olagunju *et al.*, 2020; Adebayo and Oladejo, 2021).

Table 5: Perceived Challenges Facing Production of Maize by Non-beneficiaries

Items	SA	A	N	D	SA	MS	Rank
High cost of inputs	15(19.1%)	45(55.3%)	19(23.4%)	1(2.1%)	0(0%)	4.60	1
Limited access to credit/loans	1(2.1%)	67(83%)	12(14.9%)	0(0%)	0(0%)	4.42	2
Inadequate extension services	12(14.9%)	41(51.1%)	17(21.3%)	10(12.8%)	0(0%)	4.20	4
Poor market access / low selling prices	25(31.9%)	23(29.2%)	22(27.8%)	5(5.6%)	5(5.6%)	4.30	3
Transportation and road challenges	9(10.6%)	41(51.1%)	19(23.4%)	10(12.8%)	1(2.1%)	4.05	5

Source: Field Survey, 2025

CONCLUSION AND POLICY RECOMMENDATIONS

The findings of this study provide clear evidence that input subsidies significantly enhance the productivity maize farmers in Ekiti State. Beneficiaries of subsidies demonstrated higher efficiency, better resource utilization, and improved earnings compared to non-beneficiaries. However, the benefits of these programmes are undermined by poor implementation practices, late delivery of inputs, and limited institutional support. The study established that input subsidies play a vital role in enhancing productivity maize farmers in Ekiti State. Nevertheless, inefficiencies in program implementation and persistent structural challenges hinder the full realization of benefits. Based on the findings, the study recommends:

- Strengthen and streamline subsidy distribution: Government should ensure that subsidy inputs (fertilizer, seeds, agrochemicals) are delivered on time to prevent delays that reduce their effectiveness.



- ii. Promote farmer cooperatives: Since cooperative membership strongly facilitated access to subsidies, policymakers should support the formation and strengthening of farmer cooperatives.
- iii. Improve access to rural credit: Policies should prioritize affordable and farmer-friendly credit schemes, possibly linked to cooperative societies and microfinance institutions.

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