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RESEARCH ARTICLE

Factors influencing profit efficiency among smallholder soybean producers in Nigeria

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Abstract

This research work evaluated the factors influencing profit efficiency among smallholder soybean producers in Nigeria. A simple random sampling strategy was used to select 200 soybean growers. Primary data were utilized based on a well-organized questionnaire. The data were evaluated utilizing descriptive statistics, and stochastic profit efficiency frontier model. The outcome shows that the average farm size was 1.31 hectares. Averagely, the age of soybean growers was 42 years. They had 13 years' experience in soybean farming with a standard deviation (SD) of 4.78. The input cost elasticities were positive and estimated as seed (0.3264), fertilizer (0.1552), hired labour (0.3434), agrochemicals (0.3371), and land (0.3571), respectively. The price of seed, price of fertilizer, price of hired labour, price of agrochemicals, price of land cultivated were significantly different from zero in affecting the profit efficiency of soybean growers. Furthermore, the age, farming experience, household size, level of education were socio-economic stimulus significantly affecting the profit inefficiency of soybean growers. The number of extension contact and members of cooperatives groups were institutional stimulus significantly affecting profit inefficiency of soybean growers. The mean profit efficiency score was estimated at 77.9%, leaving an inefficiency gap of 22.1% which can be filled by using available technologies and resources to get to the profit frontier model. The study suggested that farm inputs such as fertilizers, improved seeds, agrochemicals, machines, and improved technologies should be given to soybean growers at affordable prices to increase output and profit efficiency.

Keywords: Factors; Soybean Producers; Smallholder; Stochastic Profit Efficiency Model; Nigeria.

1. Introduction

Soybean (Glycine max) is the 3rd main food crop in Nigeria because of its significance as a source of protein for populace, and raw materials for livestock feed industries (Farikin *et al.,* 2016). Soybean ranks 2nd in Africa and 12th position in the world with an estimated output of 1.06 million tons in 2022, South Africa ranks 1st in Africa and 11th position in the world with an estimated output of 1.14 million tons in 2022. The world output of soybean is recorded at 348.9 million tons (FAO, 2024). The cultivation of soybean is gaining gradually significance among small-scale growers in Africa due to its economic significance as an oil seed and as a cash crop (Amesimeku and Anang, 2021). Soybean farming serves as income generation and it enhances food security for smallholder growers, it is a main cash crop which can

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possibly reduce poverty due to its multipurpose use (Alabi *et al.,* 2020). Soybean is rich in protein and oil (Patil *et al.,* 2017). Soybean provides a high, and cheaper protein rich alternative substitute to animal protein. It's use as a multipurpose crop and its significance ranges from oil processing, milk production, medicinal, livestock feed, human, and industrial consumption, and now as a source of bio-energy (Omoigui *et al.,* 2020). The low soybean output is caused by many factors such as unavailability of land, low productivity, low income from soybean farming, profit inefficiency, high risk of soybean farming, slow adoption of production technology, price instability, lack of improved seeds, lack of fertilizers and other farm inputs (Samuel and Paul, 2021). According to Khojely *et al.* (2018) who documented that Nigeria's low soybean output can be attributed to the utilizing of low yielding varieties, lack of fertilizers, and conflicting government policies to subsidize the farming of this crop. Soybean is cultivated in almost nearly state in Nigeria with a higher collection in the Northern states, especially the North Central region (Oyenpemi *et al.,* 2023). In Nigeria, the potential of soybean has not been totally maximized in the production of various types of food products (Akinola et al., 2017). Soybean based foods are getting increasingly prominent in developing countries, Nigeria inclusive. Soybean has been narrated as a crop with the potential to increase developing countries household nutrition and food security (Kolapo, 2011). Profit Efficiency is an index of the economic performance of the farming operations as it helps to observe inputs that are responsible for the high efficiency of a farming operations. Efficiency is influenced by significant amount of input and labour costs. Olawuyi and Afolami (2023) expressed profit efficiency as the capacity of a farm to attain highest profit possible given the prices of the stimulus inputs and fixed stimulus of the farm. The profit inefficiency can be expressed as the loss of profit for not operating on the frontier, it is when a farm fails to attain the highest possible profit given the prices of stimulus inputs and level of fixed factors of the farms. The study of Amesimeku and Anang (2021) defined profit efficiency as an economic efficiency concept which evaluates how well actual profit liken to the optimum frontier. A production unit is expressed to be profit efficient if it attains maximum profit, taking into account the prices and level of fixed stimulus that it faces. The stochastic profit frontier model specifies that when farms produce inefficiently, profit and revenue is lowered. A profit function permits a simple derivation of the elasticity of cross-price and own price as well as features of demand for input and output. Profit efficiency is postulated to be affected by production, institutional and socio-economic factors, like seed, labour, fertilizers, agrochemicals, capital, and land are used in soybean farming. The cost of these stimulus have implications for profit efficiency, to obtain optimum profit levels, growers must allocate these resources judiciously. The farmers' socio-economic characteristics have been hypothesized to affect profit efficiency for example highly educated producers are expected to be able to use resources more effectively to attain higher profit efficiency. The institutional factors such as extension service delivery can enhance farmers' capacity to adopt innovations and technologies. Also, members of cooperative association link smallholder growers to input dealers, source of agricultural information and services, thus enhancing efficiency and performance.

This research study differs from the current and previous work of Olawuyi and Afolami (2023) on determinants of profit inefficiency of soybean growers in Niger State, Nigeria. A stochastic frontier profit function was utilized for data analysis. The result show that seed, labour, herbicide and farm land were significant predictors affecting profit efficiency of soybean producers in Nigeria. The work of Amesimeku and Anang (2021) investigated profit efficiency

of smallholder soybean growers in Ghana. The outcome shows that labour, seed, and capital were significant factors affecting profit efficiency of soybean farmers in Ghana. None of the recent literatures investigated factors influencing profit efficiency among peasant soybean growers in North West and North Central, Nigeria.

Research Questions

This study proffer answers to the under-listed research questions:

(i)What is the farm-specific and farmers' characteristics among smallholder soybean growers?

(ii)What are the factors affecting profit efficiency among smallholder soybean growers?

(iii)What are the socio-economic and institutional factors influencing profit inefficiency among smallholder soybean growers?

(iv) What are the profit efficiency scores among smallholder soybean growers?

Objectives of the Study

The major goal of the focused on factors influencing profit efficiency among smallholder soybean producers in North West, Nigeria. Specifically, the objectives were:

(i) identify the farm specific and farmers' characteristics,

(ii)estimate the factors affecting profit efficiency,

(iii) evaluate the socio-economic and institutional factors affecting profit inefficiency, and

(iv) determine the profit efficiency scores among soybean growers.

Hypotheses of the Study

The research study was directed by the under-listed null-hypotheses:

(i) The coefficients of input costs elasticities are not positive.

(ii)There is no significant relationship between socio-economic and institutional predictors and profit inefficiency.

(iii)The profit efficiency scores are not significantly different from zero.

2. Materials and methods

This work was investigated in Federal Capital Territory (FCT) and Kaduna State, Nigeria. The Federal Capital Territory is in North Central Region, while Kaduna State is in North West Region of Nigeria. The soybeans are mostly grown in FCT and Kaduna State, Nigeria. A simple random sampling approach was utilized to select 400 soybean growers within the two regions. Approximately 445 questionnaires were administered, about 90% response rate was encountered. The technique was used because it avoids element of bias in selecting the respondent. Secondly, the sampling design afford the opportunity for every respondent to have equal chance of being selected. The limitations of the simple random sampling approach were under-representation of certain sub-groups, difficulty accessing lists of the full population, time consuming, the process may cost individual a substantial amount of capital, sample selection bias can occur, cumbersome, and challenging when the population is heterogeneous and widely spread. The sample frame of soybean growers was over 10,000 respondents. The total sample number consists of 200 soybean selected each from the two regions, respectively. Primary data of cross-sectional sources were used based on a well-organized questionnaire that was subjected to reliability and validity test.

The data obtained were evaluate utilizing descriptive statistics, and stochastic profit efficiency frontier model.

2.1. Stochastic Profit Efficiency Frontier Model

Stochastic Frontier Profit efficiency model following Idiaye *et al.* (2022) was utilized. It is explicitly specified as follows:

$$Ln\ Z_i = \beta_0 + \sum_{j=1}^{5} \beta_i\ LnP_i + \beta_k LnP_k + v_i - u_i \quad (1)$$

$$LnZ_i = Ln\beta_0 + \beta_1 LnP_1 + \beta_2 LnP_2 + \beta_3 LnP_3 + \beta_4 LnP_4 + \beta_5 LnP_5 + Vi - Ui \quad (2)$$

Where,
Z_i = Net Profit
β_0 = Constant Term
P_1 = Price of Seed (N)
P_2 = Price of Fertilizer (N)
P_3 = Price of Hired Labour (N)
P_4 = Price of Agrochemicals (N)
P_5 = Price of Land Cultivated (N)
β_1-β_6 = Regression Coefficients
V_i = Random Errors
U_i= Error Term as a result of TIE (Technical Inefficiency)

2.2. The Profit Inefficiency Model is specified as follows:

$$U_i = \propto_0 + \propto_1 Z_1 + \propto_2 Z_2 + \propto_3 Z_3 + \propto_4 Z_4 + \propto_5 Z_5 + \propto_6 Z_6 \quad 3$$

Where,
U_i = Profit Inefficiency
$\propto_0$ = Constant Term
$\propto_1 - \propto_6$ = Parameters to be Estimated
Z_1 = Age of Soybean Growers (Years)
Z_2 = Soybean Farming Experience (Years)
Z_3 = Household Size (Number)
Z_4= Level of Education (Years)
Z_5 = Contact with Extension Officers
Z_6 = Member of Group Cooperative Association (1, Member; 0, Otherwise).

3. Results and discussion

3.1. The Descriptive Data of Continuous Variables of Farm-Specific and Farmers Characteristics among Smallholder Soybean Growers

Table 1 displayed the descriptive data of continuous variables of farm-specific and farmers' characteristics among soybean growers. The mean farm size cultivated by soybean growers was 1.31 hectares (SD = 0.51). The outcome shows that the smallholder soybean growers were predominantly small-scale farmers based on the category of farm size in Nigeria by Olayide (1980) who reported that small, medium, and large scale growers hold between 0.1 – 5.99, 6.0 – 6.99, and above 10 ha, respectively. According to Ahmed and Oyewole (2012) who documented that the small farm size is an obstacle to mechanization of agricultural farms because it will be hard to use farm machines on fragmented and small individual farms. The mean age of smallholder soybean growers was 42 years, having standard deviation (SD) of 5.04. The age of the producers was expected to influence his or her profit efficiency and output. The outcome implies that the growers in the area are relatively young, a condition that may contribute to their overall efficiency in soybean farming. This work agrees with Saliu *et al.* (2017) who obtained an average age of 42 years among soybean farmers in Kaduna State, Nigeria. This age group as defined by Saliu (2013) as economically active age group, they are regarded to be very productive and may therefore accept and adopt innovations faster. According to Younas et al. (2024) the age of a grower plays an important role in the decision-making process, affecting their willingness to resist or embrace new technologies. Age of growers also imparted to an individual's learning attitudes and personal growth, ultimately helping their overall performance as growers.

The smallholder soybean growers were literate with an average of 11 years of attending school education. The study of Saliu *et al.* (2017) observed that education assists in learning process and also assists in adoption of new technologies, education is necessary to manage information on improved technologies that are significant for increasing the profit efficiency of soybean farming. According to Girei *et al.* (2018), educations is a key socio-economic

factor that affect producers' decision because of its effect on the perception, reception, awareness, and quick processing and adoption of innovation that led to efficient farm management and improved productivity. The previous studies of Younas *et al.* (2024) raised the continuous issue of ignoring education leading to adverse effect on agricultural output. Engaging educated producers in the agricultural sector and implementing suited policies for them holds the potentials for achieving higher output and can be a valuable strategy for policy makers.

Averagely, the smallholder soybean growers had 13 years (SD = 4.78) experience in soybean farming. This study is supported with the outcomes of Pierre (2005) who documented that the extent of experience in soybean farming is probably an index of a grower commitment to agriculture. This work is also supported with result of Saliu *et al.* (2017) who reported that the number of years' experience in farm activities determines the growers' ability to make farm management decision effectively not only to adhere to agronomic practices but also with respect to resource allocation or stimulus combinations. The average household size was 12 persons (SD = 3.78). This outcome is supported with works of Olorunsanya *et al.* (2009) who documented that large households occurred to save more extra cost for engaging labour than small families. The mean output of soybean was recorded at 0.98 tons per hectare.

Table 1. The Descriptive Data of Continuous Variables of Farm-Specific and Farmers Characteristics among Soybean Growers

Variables	Unit of Measurement	$\bar{X}_i$	SD
Farm Size	Hectare	1.31	0.51
Age	Years	42	5.04
Level of Education	Years	11	2.79
Soybean Farming Experience	Years	13	4.78
Household Size	Number	12	3.78
Output of Soybean per Ha	Kg	980	71.41

Source: Field Survey (2024)

3.2. Factors Affecting Profit Efficiency among Soybean Growers

Table 2 presented the outcome of the analysis of the stochastic profit frontier among soybean growers using maximum likelihood estimates. Approximately five variables were included in the stochastic profit frontier model. The results show that five (5) stimulus included in the model of were statistically significant. In the diagnostic statistics parts, the estimated gamma parameter values of 0.1838 was significant at ($P<0.01$), this shows that 28.38% of the variation in the net profit among soybean growers were due to the disparity in their profit efficiencies. The value of the sigma square was 2.01528 indicating the correctness of fit of the model as assumed for the composite error term. The LLF (Log-Likelihood function) is -69.92003.

The prices of seed and fertilizer influence the net profit among soybean growers positively and it was significantly different from zero at ($P<0.05$), respectively. The magnitudes of the estimate of the prices of seed and fertilizer among soybean growers were (0.3264), and (0.1552), respectively. This implies that one unit change in the prices of seeds and fertilizer, while keeping all other stimulus constant will give rise to an increase in the net profit among soybean growers by 0.3264, and 0.1552, respectively. This work is in line with the finding of Amesimeku and Anang (2021) who asserted that a unit increase in expenditure on seed, while keeping all other stimulus fixed will significantly increase by 37.82 the net profit earned from soybean farming in Ghana. This study also agrees with outcomes of Olawuyi and Afolami (2023) who documented that a 1%

increase in the cost incurred through fertilizer procurement, will give rise to increase in profit by 0.819% among soybean growers in Niger State, Nigeria.

The price of hired labour had a positive effect on the net profit of soybean growers and it was significantly different from zero at (P<0.01). The size of the estimate of labour was estimated at 0.3434. This implies that a unit change in the price of labour, while keeping all other stimulus constant will result in the increase in the net profit among soybean growers by 0.3434. The soybean farming was labor-intensive with minimum use of machinery. This study is contrary to the works of Amesimeku and Anang (2021) who documented that an increase in the price of labour will reduce net profit among soybean farmers in Ghana.

The prices of agrochemicals and land affect net profit positively among soybean growers and they were significantly different from zero at (P<0.05), respectively. The estimate of the prices of agrochemicals and land were estimated at (0.3371) and (0.3571), respectively. This indicates that a unit increase in the prices of agrochemicals and land, while keeping all other stimulus fixed will give rise to an increase in the net profit among soybean growers by 0.3371 and 0.3571, respectively. The study of Olawuyi and Afolami (2023) revealed that the continuous increase in the cost used for herbicide will lead to the reduction of farm level profit among soybean producers in Niger state, Nigeria.

This study also agrees with the findings of Amesimeku & Anang (2021) who posited that price of land influenced net profit positively, land is considered as a proxy in production as the size of the land expands will give rise to increase in the net profit of soybean farmers as a result of economics of size.

3.3. The Socio-Economic and Institutional Factors Influencing Profit Inefficiency among Soybean Growers

The socio-economic and institutional stimulus affecting profit inefficiency among soybean growers was presented in Table 2. In the profit inefficiency parts, the socio-economic stimulus under considerations were age, farming experience, household size, level of education, while the institutional factors under considerations were contact with extension officers, and members of cooperative associations.

Age and farming experiences of the soybean growers' affect profit efficiency positively and was significant at (P<0.05), respectively. The estimates of the age and farming experiences of the soybean growers were (-0.10813) and (-0.1247), respectively. This signifies that a one-unit change or increase in the age and farming experiences of the respondents, while keeping all other stimulus constant will result in decrease in the profit inefficiency by 0.10813 and 0.1247, respectively. This shows that older farmers were more profit efficient than the younger ones, that is if farmers age increases, then profit inefficiency will decrease, this may be due to management practices of growers (Ali and Jan, 2017). This study is in line with the works of Olawuyi and Afolami (2023) who documented that soybean farmers age has a negative coefficient, which means that as farmers age rises, profit inefficiencies reduces. Age plays a significant role in making quality decisions and contributes towards learning and sense of correct judgement. Farming experience enhances human capital of producers by equipping them with the requisite skills and knowledge which usually results to increased efficiency of production. This work is also consistent with the findings of Oga & Oga (2022) who reported that processing experience has a tremendous effect on profit efficiency of oil palm processing and noted that processors that has higher level of oil palm fruits processing experiences are more likely to have acquired entrepreneurial experience, skills and the ability to diversify processing enterprise and generate more income.

Household size influence profit efficiency of the soybean growers positively and it was significantly different from zero at (P<0.05). The size of the estimate of the household size was (0.1619). This indicates that a one-unit change in the number of persons per household, while keeping all other variables fixed will give rise to increase in the level of profit inefficiency by 0.1619 among soybean growers. This work agrees with the outcomes of Alkali (2017) who reported that the coefficient of household size had positive and significant relationship with profit inefficiency among soybean producers in Borno State, Nigeria.

Years of formal education influence profit inefficiency negatively for and was significantly different from zero at (P<0.01). This shows that a one-unit increase in the years spend in school to acquire formal education by the soybean growers, while keeping all other predictors constant will results in the increase in the profit efficiency by 0.1508. Years of experience level of the growers can enhance their ability to accumulate knowledge over time which could enable them to maximize profit. This work is also consistent with the outcomes of Idiaye *et al.* (2022) who observed that as the level of education of the processors increases their ability to maximize profit also increases because they can source for information regarding oil palm fruits processing and market situation that could earn them higher profit.

Extension contact and members of cooperatives were negatively associated with profit inefficiency and was significant at (P < 0.05), respectively. This study aligns with a priori expectations; this means that access to extension services increases profit efficiency among soybean growers. A one-unit in extension contact and members of cooperatives, while keeping all other predictors fixed will give rise to 0.180 and 0.1338 increase in profit efficiency among soybean growers, respectively. Extension officer offer training and advice to producers on efficient ways of farming this enhances the efficiency of production. This study is in line with outcome of Konja *et al.* (2019) who analyzed profit efficiency of small-scale groundnut producers in Ghana.The soybean growers who are members of producers group benefit from services provided by the groups such as inputs, services, and provision of easy access to information. Producers group also assist growers to reduce the unit cost of production by giving a channels to procure inputs and information thereby reducing transaction costs.

Table 2. Maximum Likelihood Estimates of the Stochastic Profit Efficiency Frontier Model

Variable	Coefficient	Standard Error	Z-Score
Price of Seed	0.3264**	0.1530	2.13
Price of Fertilizer	0.1552**	0.0750	2.04
Price of Hired Labour	0.3434***	0.0987	3.44
Price of Agrochemicals	0.3371**	0.1410	2.39
Price of Land Cultivated	0.3571**	0.1256	2.84
Constant	4.0086***	1.1186	3.58
Profit Inefficiency Component			
Age	-0.1081**	0.0465	-2.32
Farming Experience	-0.1247**	0.0472	-2.58
Household Size	0.1619**	0.0605	2.67
Level of Education	-0.1508***	0.0434	-3.46
Contact with Extension Agent	-0.1801**	0.0700	-2.57
Members of Cooperative Assoc.	-0.1338**	0.0531	-2.51
Diagnostic Statistics			
Log Likelihood	-69.920		
Sigma Square	2.01528		
Gamma	0.2838***		

*Source: Field Survey (2024);*Significant at* ($P < 0.10$)., ***Significant at* ($P < 0.05$), ****Significant at* ($P < 0.01$).

3.4. Distribution of Profit Efficiency Score Among Soybean Growers

Table 3 presented the summary statistics of the spread of profit efficiency score among the soybean growers. The work shows that about 40% of the soybean growers obtained the profit efficiency level between the ranges of 61% to 80%. Approximately (49 %) of the sampled soybean growers obtained a profit efficiency score between 81% and 100%. The mean profit efficiency obtained by the soybean growers was 77.9% with minimum and maximum values of about (0.2752) and (0.999), respectively. This implies that the soybean growers are operating lower than the profit efficiency frontier. There exists a gap of 22.1% for soybean growers that needs to be filled to obtain maximum profit efficiency using the existing available technologies. This work is similar with the outcomes of Idiaye *et al.* (2022) who documented mean profit efficiency 0.62, indicating that palm oil processors in Osun State, Nigeria are still operating below the efficiency frontier.

Table 3. Stochastic Profit Efficiency Scores among Soybean Growers

Profit Efficiency Score	Frequency	Percentage
0.0 – 0.20	-	-
0.21 – 0.40	2	1.00
0.41 – 0.60	20	10.00
0.61 – 0.80	80	40.00
0.81 – 1.00	98	49.00
Minimum	0.2752	
Maximum	0.999	
Mean Profit Efficiency	0.779	
Standard Deviation	0.1407	

Source: Field Survey (2024)

4. Conclusion

This study investigated the factors affecting profit efficiency among smallholder soybean producers in Nigeria. A simple random sampling strategy was used to select 200 soybean growers in the area. Primary data were used based on a well-organized questionnaire. Data were evaluated using descriptive statistics and stochastic profit efficiency frontier. The following conclusion were based on the research hypotheses:

$H0_1$: *The coefficients of input costs elasticities are not positive.*

The input cost elasticities were positive, significantly different from zero and were evaluated as follows; seed (0.3264), fertilizer (0.1552), hired labour (0.3434), agrochemicals (0.3371) and land (0.3571). This signifies the null-hypothesis which state that the coefficient of input cost elasticities are not positive was rejected, while the alternative hypothesis(Ha_1) was accepted. This work is in line with Amesimeku and Anang (2021) who reported that the first order estimates of the stochastic profit efficiency frontier models are elasticities at the mean input levels, the report stated the following input cost elasticities of seed and capital as (37.829) and (12.488), among soybean growers in Ghana, respectively.

$H0_2$ *: There is no significant relationship between socio-economic and institutional stimulus and profit inefficiency.*

The work revealed that the significant socio-economic stimulus influencing profit inefficiency (profit efficiency) include age, farming experience, household size, and level of education. The significant institutional factors influencing profit inefficiency (profit efficiency) include: contact with extension agents, and

members of cooperative organizations. Therefore, the null hypothesis which state that there is no significant relationship between socio-economic and institutional factors and profit inefficiency was rejected, while the alternative hypothesis (Ha_2) was accepted. This work is in line with studies of Olawuyi and Afolami (2023) who obtained a significant relationship between age, level of education, marital status, household size, farm experience, extension contact, cooperative membership and profit inefficiency among soybean growers in Niger State, Nigeria.

$H0_3$ *: The profit efficiency scores are not significantly different from zero.*

This study revealed the estimated mean profit efficiency value of 77.9%. The signifies that the inefficiency gap was estimated at 22.1%, that needs to be filled using the available technologies and resources to get to the frontier level. The null hypothesis which state that the profit efficiency scores are not significantly different from zero is rejected, while the alternative hypothesis(Ha_3) was accepted. This study is in line with works of Konja et al. (2019) who evaluated the mean profit efficiencies of 0.53 and 0.58, respectively for conventional and certified groundnut seed growers in Ghana. Based on the outcomes of this work, the under-listed suggestions were made:

(i)Farm inputs such as fertilizers, agrochemicals, and improved seeds should be made available to soybean growers to increase output and enhance profit efficiency.

(ii)The soybean growers should form themselves into cooperative groups, this will enable them to access inputs, information, and share ideas about soybean farming. The soybean growers should form a viable cooperative organization, to pull resources together for easy access to formal credit and other farm inputs. This will also enable them to share information on best farming practices, monitor themselves, realize more income and improve their repayment capacities.

(iii) Credit should be provided by public and private organization at single interest rate to increase output and increase profit efficiency.

(iv)The soybean growers should be properly educated, trained through workshops, seminars and capacity buildings, this will enhance the use of improved technologies.

(v) Extension services should be improved to disseminate research findings to soybean growers.

The extension agent and farmers' linkage should be well developed by government and private institutions. The extension agents should be employed to disseminate research findings, innovations, to soybean growers. The extension agents will organize capacity buildings, training and seminars on new technologies and access to formal credit by soybean producers

(vi) Farm mechanization should be developed by providing machines, farm technologies, and labour saving technologies, this will increase output and efficiency

(viii) Government should through land policy made easy access to land for soybean farming.

Limitations of the Research

The limitations encountered during the research and in the implementing of the recommendations were funding constraints, institutional barriers, poor access road to meet the respondents, low level of education of some respondents.

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Data presented in this study are available on fair request from the respective author.
Ethics Approval and Consent to Participate
Not applicable
Consent for Publication
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Conflicts of Interest

The authors disclosed no conflict of interest.

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