

Assessment of the Effects of Growth Enhancement Support Scheme (GESS) on the Output of Dry Season Rice Farmers before and after Scheme Participation in Sokoto State, Nigeria

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Abstract— The study assessed the effects of Growth Enhancement Support Scheme (GESS) on the output of dry season rice farmers before and after participation. A multistage sampling technique was used to select farmers for the study. Data for the study were collected from 250 farmers using structured questionnaire. The data obtained was analyzed using descriptive and inferential statistics. The results of the showed that the age of the majority of the farmers fall between the ages of 30-39 years, married and had one form of education or the other. Based on the findings, the main source of information (46.8%) regarding the awareness of GESS programme was the district heads and majority (94.4%) of the farmers were registered with the scheme. About 40% of the farmers registered with the scheme because inputs provided by the scheme are supplied to only register farmers at a subsidized rate. The result of t-test analysis showed a significant difference ($P < 0.001$) between farmers' output before and after GESS participation. The major challenges facing registered GESS farmers was that of untimely and inadequate supply of production inputs and manipulation of GESS register by agro dealers. It is therefore, recommended that effort should be geared towards ameliorating the aforementioned shortcomings.

Keyword— Assessment; Effects; GESS; Output; Dry season farmers; before and after; Participation.

I. INTRODUCTION

The Nigerian agricultural sector over the years has witnessed efforts of its transformation. Many agricultural extension programmes were launched by various governments with the aim of improving the sector and make Nigeria self-sufficient in food production. The last administration headed by President GoodluckEbele Jonathan launched agricultural Transformation Agenda

(ATA) and which was done through a set of complementary programme interventions aimed at solving, in a holistic and integrated manner, the constraints and weaknesses that held down agricultural development of Nigeria for a long time. The ATA seek to grow and develop agriculture as a business and thereby create jobs, assure food security, promote private sector investments for wealth creation and maximize the sector's contribution to the country's economic growth (APNET,2013). The specific objectives of the agricultural sector as envisioned in ATA blueprint document are to:

- i. Secure food and feed for the needs of the nation;
- ii. Enhance generation of national and social wealth through greater exports and import substitution;
- iii. Enhance capacity for value addition; efficiently exploit and utilize available agricultural resources,
- iv. Enhance the development and dissemination of appropriate and efficient technologies.

These objectives are to be achieved by focusing attention on five priority areas:

- a. Commercial agriculture development aimed at developing major crops, livestock, and fisheries along their entire value chains;
- b. Construction, completion, and rehabilitation of silos and warehousing for agricultural commodities;
- c. Research and development, including equipping existing institutes for research in agricultural biotechnology;
- d. Completion and rehabilitation of existing irrigation schemes and dams.
- e. Restructuring of agricultural commodity marketing companies as enunciated in the first implementation plan (Olomola, 2015).

Based on Okafor and Malizu, (2013) the major implementation strands for the ATA includes:

- i. Growth Enhancement Support Scheme (GESS) – designed to enhance agricultural productivity through timely, efficient and effective delivery of yield-increasing farm inputs;
- ii. Staple Crops Processing Zones (SCPZs) – to promote private sector investments for agribusiness development and establish public-private partnership framework for the sustained development of commodity value chains;
- iii. Nigeria Incentive-based Risk Sharing for Agricultural Lending (NIRSAL) – designed to derisk agricultural financing by banks and enhance the flow of credit to agricultural sector value chain actors;
- iv. Commodity Marketing Corporations (CMCs) – aimed at improving the marketing environment for agricultural commodities and assuring sustainable pricing and market development.

Among the above four ATA components, the GESS provides a unique connecting link as it targets the farmers directly with critically needed modern farm inputs on real-time basis. Understandably, the implementation of GESS seems to be ahead of other components because of the primacy and urgency of boosting farm-level outputs and productivity.

In July, 2012, the Federal Government of Nigeria introduced the Growth Enhancement Support Scheme (GESS) which was designed to deliver government subsidized farm inputs directly to farmers via Global System for Mobile Communication (GSM). The GESS scheme was powered by e-wallet, an electronic distribution channel which provides an efficient and transparent system for the purchase and distribution of agricultural inputs based on a voucher with which the farmers can redeem assorted fertilizers, seeds and other agricultural inputs from agro dealers at less than 50% of the total cost of the inputs, the other half of the cost being shouldered by the Federal and State Governments in equal proportion (Okafor and Malizu, 2013).

Under the Scheme, an accredited farmer will receive agro-chemicals and other inputs allocation through an e-wallet that hosts unique voucher numbers sent to his/her phone, and the farmer will then go to an accredited agro dealer to redeem his/her inputs. It is expected that this effort by the Federal Government should lead to improvements in agro - inputs distribution and marketing by private sector; as well as consequent improvement in crop and agricultural productivity; and profitability for both the input supplier/dealer and farmer. Adedapo(2013) reported that the programme had so far registered about 14 million farmers

throughout the federation for direct redemption of farm inputs through the e - wallet system. Federal Ministry of Agriculture and Rural Development (FMA&RD)(2013) disclosed that 4 million were registered in 2012, while over 10 million were registered by the year 2013.

A recent stock-taking by the FMA&RD shows that the process of targeting farmers to benefit from the input subsidy programme under the GESS scheme started with the registration of 3.9 million farmers in 2012. The number increased to 9.5 million in 2013 and 10.5 million in 2014. The number of farmers targeted to benefit from the subsidy also continued to increase from 1.1 million in 2012 to 7.2 million in 2013 and 8.3 million in 2014. Redemption of inputs by the farmers was also on the increase yearly (Adesina, 2013).

In the past, fertilizer procurement and distribution in particular has been fraught with fraud, discrepancies and inefficiencies. Governments at the Federal and State levels spent a lot of money on procurement and distribution of farm inputs which unfortunately does not reach the real farmers (small holder farmers) and thus, does not significantly having impact on the national food output. The involvement of Federal Government in the direct procurement and distribution of agro-chemicals has succeeded in weakening the ability of private companies to actively participate in the development of the agricultural sector and their ability to compete efficiently for market share among their business partners. In order to address this problem of direct involvement of the Federal Government in procurement and disbursement of agro-chemicals and other agricultural inputs, the government decided from the year 2012 farming season to opt out of direct procurement and distribution of inputs by instituting the Growth Enhancement Support Scheme (GESS) which aimed at delivering subsidized farm inputs to farmers through an electronic wallet. It is against this background that this study addressed the following objectives:

- i. Describe the socio-economic characteristics of participating farmers in the study area
- ii. Describe the participating farmers sources of information regarding GESS
- iii. Identify the participating farmers reasons for registration with GESS
- iv. Examine the difference between the output of farmers before and after participation in the GESS.

II. RESEARCH METHODOLOGY

The study was conducted in Sokoto State, Nigeria. The state located in the extreme end of the north western Nigerian,

close to the confluence of the Sokoto Rima River. The study area is located between latitude $11^{\circ} 00'$ and $14^{\circ} 00'N$ and longitude $3^{\circ} 50'$ to $8^{\circ} 00'E$. Rainfall in the area is highly seasonal. In terms of vegetation, the State falls within the Savannah zone. Daily maximum temperature is about $36^{\circ}C$. During the Harmatan season, daily minimum temperature of the area falls below $17^{\circ}C$, and sometimes it reaches up to $44^{\circ}C$. Rainfall starts late and ends early, the dry seasons start from October and lasts up to April in some parts and may extend to May or June in other parts. The wet season on the other hand begins in most parts of the State in May and lasts up to September or October. The average rainfall

is about 550mm per annum. Relative humidity of the study area is between 15-20% during the dry season and up to 70-75% during the rainy season (Audu and Zubairu, 2013).

The State has a projected population of 4,850,374 in ten years at 3% population growth rate (NPC, 2015). The State shares common boundary with Kebbi State to the south-east, Zamfara State to the east and Niger Republic to the north. The study area is basically an agrarian society with over 90% of the population involved in one form of agricultural activity or the other.

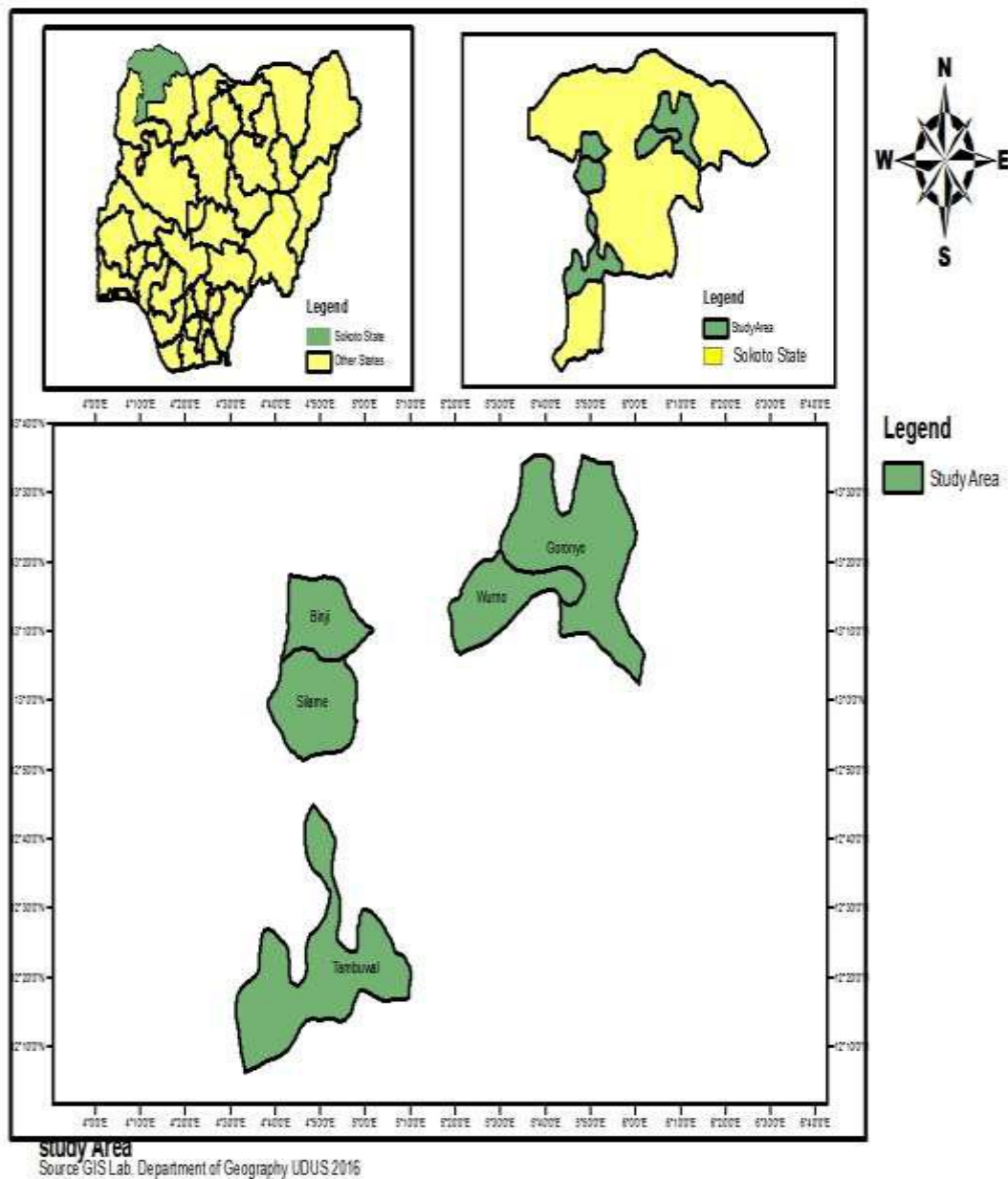


Fig.1: Map of the study area

Sampling Procedure and Sample Size

The population of the study includes all the dry season rice farmers participating in the GESS intervention programme in the 23 Local Government Area of Sokoto State. The study adopted a multi-stage sampling technique. In the first stage Five Local Government areas were purposively due to high number of GESS farmers. The second stage involved the random selection of five (5) villages from each of the selected Local Government areas. The third stage included the selection of ten (10) GESS farmers from each of the

villages. Giving a total of fifty (50) farmers from each of the selected Local Government Areas, making the sample size of the study to 250 farmers

Structured questionnaire was used to collect the primary data for the study while the secondary information was sourced from text books, journals, GESS office record and internet sources. The data collected were analyzed using descriptive (frequency counts and percentages) and inferential statistics (paired t-test analysis).

Table.1: Sampling procedure and sample size

Number of LGAs in Sokoto state	Selected LGAS	Number of GES registered farmers	Sampled villages	Number of respondents	Sample size
23 LGAs	Goronyo	12621	Goronyo	10	250
			Taloka	10	
			Birjingo	10	
			Gorau	10	
			Keta	10	
	Silame	22250	Jekanadu	10	
			Silame	10	
			Maje	10	
			Gittarana	10	
			Kubodu	10	
	Wurno	14000	Lugu	10	
			Wurno	10	
			GidanBango	10	
			Dimbiso	10	
			Kwargaba	10	
	Tambawal	11100	Tambawal	10	
			Kaya	10	
			RomonSarki	10	
			RomonLiman	10	
			Jabo	10	
	Binji	8500	Gawazzai	10	
			Inname	10	
			Binji	10	
			SoroYamma	10	
			SoroGabbas	10	

III. RESULTS AND DISCUSSION**Socio-economic Characteristic of the Farmers.**

Table 2 presents the socio-economic characteristics of the sampled farmers. Majority of GESS farmers (30.8%) were within the ages of 30-39. Only 6.8 percent were above 60 years old. The mean age was established as 40.7 years. This is fairly youthful age which can spur inquisitiveness to participate in agricultural extension programmes. Low number of farmers for age group above 60 is likely caused

by retirement from agricultural activities or delegation of production activities to young family members. The result is in agreement with Nwaru, 2004 who reported the most productive age to be in the range of 20-50 years. Main farming activities were known to be practiced by the male farmers, while female farmers in most cases participate in processing and other value addition activities. The result indicated that majorities (98.4%) of the farmers were males and only few (1.6%) were females. This imbalance

according to Angoet *et al.* (2013) could be attributed to either the stress involved with farming activities, gender division of labour or access of women to land due to their cultural background as well as prevailing norms and values of the people of the study area. Similarly, majority of the farmers (93.6%) were married. This offers the challenge to strive to improve agricultural productivity to adequately feed family members. On the educational attainment, the result evidently indicated that larger percentage (54.8%) of the farmers had formal education. By implication, it would be easier for farmers in the study area to accept and adopt new innovations and technologies that are vital to enhancing

farm production. With regards to monthly income of the farmers, it is shown that majority of the farmers (43.6%) had monthly income of N20, 000 and below, 30.4 percent had monthly income of between N21, 000 to 40,000 while only 0.8 percent had N100, 000 and above. The implication of this is that the farmers in the study area may not be opportune to take credit facility. This is because; credit use is associated with higher income than average economic performance. They may not also be able to invest in capital projects like modern technology as this normally attract huge financial obligation considering their low financial status.

Table.2: Distribution of farmers according to socio-economic characteristics

Variable	Frequency	Percentage	Mean	SD
Age (Years)				
20-29	41	16.4		
30-39	77	30.8		
40-49	65	26		
50-59	50	20		
60 and above	17	6.8	40.7	11.2
Total	250	100		
Level of education				
Primary education	36	14.4		
Secondary education	54	21.6		
Tertiary education	35	14		
Adult literacy	12	4.8		
Qur'anic education	113	45.2	8.85	4.53
Total	250	100		
Marital Status				
Single	12	4.8		
Married	234	93.6		
Widow/ divorcee	4	1.6		
Total	250	100		
Income				
<20,000	109	43.6		
21,000-40,000	76	30.4		
41,000-60,000	43	17.2		
61,000-80,000	12	4.8		
81,000-100,000	8	3.2		
N100,000 and above	2	0.8	32132.4	21858.2
Total	250	100		

Source: Field study, 2016

Sources of GESS Information to Farmers

The highest percentage of farmers 46.8 percent sourced information regarding GESS programme from their district heads, 38.8 percent sourced information regarding GESS from Media sources while Only 28 percent sourced

information on GESS programme from Rice Farmers Association.

The result of the study indicated that District Heads were the most popular source of information regarding GESS programme, followed by neighbors and friends. This is in

agreement with the finding of Ajeigbe and Dashiell (2010) who reported that the first step for an extension agent or researcher to build trust among community members is to arrange a meeting with community leaders to explain, discuss, and gain their support for the process of

participatory research and extension approach. This could be the approach used by the Federal Ministry of Agriculture and Rural Development to enlighten public on the significance of the GESS programme.

Table.3: Distribution of Farmers According to their Sources of GES Information

Sources of Information	Frequency	Percentage
ATA office	51	20.4
Neighbors and friends	85	34
District head	117	46.8
Media	97	38.8
Rice Farmers Association	70	28
Total	420*	

*Multiple responses.

Registration with GES Programme.

Agriculture progresses technologically as farmers adopt new innovations. The extent to which farmers adopt available innovations and the speed by which they do so determines the impact of innovations in terms of productivity. It is a common phenomenon that farmers like any other kind of entrepreneurs; do not adopt innovations simultaneously as they appear in the market. Apparently some farmers choose to be innovators (first users) while others prefer to be early adopters, late adopters or non-adopters (Paulet *et al.*, 2003). The process of targeting farmers to benefit from the input subsidy programme under GESS scheme started with registering 3.9 million farmers in 2012. The number increased to 9.5 million in 2013 and 10.5 million in 2014 (Olomola, 2015). The result of the study

indicated that majority of the farmers 94.4% registered with GES programme immediately they heard about the programme. Only 5.6 % registered later.

Reasons for Registration with GESS scheme

The level of awareness about the scheme was the major reason why farmers register. Majority (62.3%) of the farmers registered with the scheme because the inputs provided were subsidized, 49.6 percent registered because the programme support both rainy and dry season farming while only 22.4 percent registered because the existing input supply was not reliable. Furthermore, the finding also indicated that majority of the farmers 62.8 percent participated in the programme for three years, 32.8 percent participated for two years and only 4.4 percent participated for only one year.

Table.4: Distribution of Farmers According to Reason for Registering to GESS

Scheme

Variables	Frequency	Percentage
Reasons for registration		
Because the programme is new	61	24.4
Because it is federal government programme	72	28.8
Because existing input supply is not reliable	56	22.4
Because the programme support both rainy and Dry season farming	124	49.6
Because inputs are subsidized	156	62.3
Total	469*	

*Multiple responses

Analysis of the Difference between Outputs Obtained Before and After GESS Programme

t- test was conducted to determine the difference between output of farmers before and after participation to GESS

programme. The result of the analysis is presented in table 3.

Table.5: Analysis of the Difference in the Output of farmers before and after GESS programme.

Variable	No. of Farmers	Mean output (kg)	Std dev.	t- value
Output Before	250	4402.1413	3928.99060	10.67
Output After	250	6756.3920	5571.96426	

Analysis in table 5 shows that the mean difference between the output of farmers before GESS programme was 4402.1413, while the mean output of farmers after GESS programme was 6756.3920 and the mean difference was 2354.25. The results showed that there was significant difference in the output of farmers before and after GESS participation, meaning that dry season rice farmers in the study area recorded significant improvement in the output obtained after the intervention of GESS programme. Thus, the null hypothesis is rejected that there is no significant difference in the output obtained by farmers before and after participation in the GESS programme. The GESS programme in the study area has been able to achieve its cardinal objective of increasing rice production among participants.

Constraint Facing Farmers Regarding GESS

There were appreciable numbers of GESS farmers in the study area. However, there were problems affecting them regarding GESS programme that could have effect on their output.

Sangoiet *al.* (2007) reported that farm input subsidy programme have once again become a popular policy tool that many African governments use to improve agricultural productivity and address rural poverty. Nigeria is one of the countries in Africa that has revived input subsidy programme through GESS. One of the stated goals of GESS is to ensure timely, effective and adequate supply of agricultural inputs to GESS target farmers in the form of fertilizer, chemicals and hybrid seed. However, timely delivery of GESS inputs has been a longstanding constraint, despite persistent calls by farmers to correct this problem. From the study, result shows that 35.6 percent of the farmers reported untimely supply of inputs as the major constraint regarding GESS. It is possible that late delivery of GESS inputs may significantly affect farmer's production.

In 2012, when GESS was introduced, the beneficiaries were entitled to 2 bags of 50kg fertilizer and 25kg bag of hybrid seed; quantity which most farmers considered inadequate, considering their farm size. This might be the reason why

32% of the farmers reported inadequate supply of inputs as a constraint.

Olukayode (2014) reported that, when GESS was introduced, a major criticism was that many beneficiaries were unable to redeem their inputs due to GSM network failure or an absence of it in many remote areas. To solve the problems of poor mobile phone network, multiple registration, corruption and easy inputs redemption process, the FMA&RD, in collaboration with International Fertilizer Development Centre (IFDC), introduced a new technology known as "GES TAP" for farmer's registration. The GES Touch and Pay (TAP) is an offline technology that captures the data of farmers along with their photographs, and at the end of the registration exercise, a green card is issued to the registered farmers which can be used in redeeming subsidized inputs (FEPSAN, 2014). But, findings from this study show that 21.2 percent of farmers' alleged manipulation of register by agro dealers by conniving with some farmers to collect their TAP card, redeem the inputs and give a token to farmers, and later sell the inputs at market price.

IV. CONCLUSION AND RECOMMENDATIONS

The study was carried out to assess the effect of GESS programme. The t-test analysis shows significance difference in the output after GESS participation. Null hypothesis was tested and rejected. From the study, it could be concluded that GESS programme is promising, and if sustain properly, the goal of the programme can be achieved and agricultural production can be enhanced in terms of the output of dry season rice farmers in the study area. As a result of the impressive improvement in the output of GESS farmers after participation, it is recommended that growth enhancement support scheme be retained and encouraged by the federal ministry of agriculture and rural development.

Based on the findings of the study, the following recommendations are hereby made.

- Inputs should be delivered to farmers before the planting season commences.
- Increase GESS input allocation to farmers.

- iii. Farmers should be enlightened not to sell their TAP cards for a token.

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