



Assessment of Agricultural Production Services Delivered to Yam Farmers in Rivers and Imo States, Nigeria

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ABSTRACT

This study assessed agricultural production services delivered to yam farmers in Rivers and Imo States, Nigeria. The specific objectives were to: i) identify the agricultural production services delivered to yam farmers in Rivers and Imo States, ii) examine extension teaching approaches used to deliver the services to yam farmers in these areas. Descriptive survey research was employed to examine a cross-section of registered yam farmers of the chosen extension agencies providing the agricultural services in the two States. A total of 587 respondents used in this study were selected from 18 LGAs in Rivers and Imo States, through proportionate random sampling technique. A structured questionnaire and interview schedules designed in a three point Likert type rating scale and a four point Ordinal rating scale were used to elicit information from the respondents. Weighted mean scores derived from both Likert type rating and Ordinal rating scales were used. Z – test conducted at 0.05 significant levels was the inferential statistics used to probe the hypothesis. The findings showed that yam miniset production technology (M = 2.36), introduction of high yielding yam varieties (M = 2.31), seed yam treatment against insect pests (GM = 2.36) and introduction of high yielding yam varieties (GM = 2.33) have been adequately delivered as production services in the area. While labour control in yam production (M = 1.78), organic yam farming (GM = 1.77), cooperative farming (GM = 1.70), processing of yam tubers to yam floor (GM = 1.63), subsidies/incentives to aid yam production (GM = 1.62) and how to source agro-credits for farming (M = 1.56) have not been delivered to the farmers. As for the extension teaching approaches used to deliver production services to yam farmers in the areas, the result showed that: regular family discussion (M = 1.13), field trip/excursion (M = 0.52), small plot adoption technique (M = 1.34) and Indigenous Innovation Diffusion Approach (M = 0.73) were less used in the areas. The study therefore recommended that: 1) Relevant production services such as: labour control in yam production, fertilizer application, organic farming, cooperative farming, practice of zero staking of yam, how to source agricultural credits for farming, marketing arrangements for yam and risk aversion techniques/insurance should be meaningfully delivered to the farmers in these state. 2) Authentic extension teaching approaches such as: Regular family discussion, home visit, Small Plot Adoption Technique (SPAT), Indigenous Innovation Diffusion Approach (IIDA), Village Level Participatory Approach (VLPA) and E-wallet should be fully utilized to reach yam farmers in these States. 3) A joint extension package linking the State Ministries of Agriculture, non-governmental agricultural agencies, extension professionals and the yam farmers should be developed for these states, to promote uniformity in extension method and service delivery in yam production.

Keywords: Assessment, Agricultural, Production Services, Deliver, Yam Farmers.

INTRODUCTION

Agricultural production services define the contributions or helps rendered by the extension service providers through the extension agents in various aspects of agricultural production to farmers in order to enable them improve on their production processes for increased output and income. These services include activities that provide relevant knowledge, information and technologies, interactions with other rural dwellers and expose the farmers to develop their own technical, organizational and management skills and practices, so as to improve their productive activities and well-being (Christopolos, 2010).

Farmers need advice and support on the varieties of yams and their value chains – beginning from which varieties of yams to grow, how to increase yam productivity (quality inputs, services, credit), how to maximize income from yam production (organize themselves, aggregate produce), how to consume right (reduce food losses, improve food safety, increase nutrition value) and facilitate behavior change for improved consumption (quantities and quality, as well as individual need-based food allocation within households). These steps are significant in the agricultural corridor to increase productivity which hinge on quality/practical services rendered to farmers and control over agriculture activities by the extension agents.

Planned extension services engage farmers in regular family discussions, demonstration of new ideas for farmers to see, putting farmers to do the practice, follow up the farmers at home and in the farm, forming farmers into production and marketing cooperatives, linking farmers to credit facilities and encouraging them to participate in community development projects, which are the sure ways and most pliable channels to secure and sustain food production and the farmers producing them. But good and quality extension services are the functions of quality extension delivery by the extension agents and extension providers. Quality extension delivery in turn depends on the qualities of the extension personnel; the readiness of the extension agents and extension providers to give adequate amount of appropriate information and technology and sound teaching approaches to bring about the desired change. It also involves the availability of necessary working materials (teaching tools and fund); methods employed in discharging extension services; motivation of extension personnel (regular training and satisfactory working conditions) and the readiness of the farmers to accept such intended innovations in a safe environment.

With changes and developments in communication technologies, education and socio-economic standards in the last few decades, agricultural extension education has undertaken a change in strategies (Uwe, 2002). In order to keep pace with these rapid developments, the delivery of quality extension education programs is dependent upon two elements: (a) an adequate amount of appropriate information and technology; and, (b) sound teaching approaches to bring about the desired change (Uwe, 2002). The major role of agricultural extension professionals is to diffuse information using appropriate teaching strategies, procedures and apparatus.

Previous studies have identified various competencies considered to be needed by extension professionals in the areas of understanding human behavior, program planning, understanding the teaching/learning process, teaching strategies and teaching tools/aids, and program evaluation. It was found that these skills should be possessed by extension professionals in order to effectively perform their role as change agents (Martin, 1988). If there is any time in history that extension professionals are mostly required to live up to their expectation, so as to ensure the food security of Nigerians as a whole and Niger Delta region in particular, it is now that the economy is transforming agriculture for better.

In Rivers and Imo states, various agencies have engaged in agricultural extension in both tuber/root crops and livestock productions like Shell Petroleum in Agricultural Extension, Nigeria Agip Oil Company (NAOC) Limited as Green River Project (GRP), Total E&P as Seed Multiplication Centre (SMC), Ministries of Agriculture as Agricultural Development Programme (ADP) and FADAMA Project as Fadama I, II and III Community Driven Development (CDD) programmes, as a reaction to the Nigerian Federal Government's order in 1986 to all foreign oil companies and large corporations to engage in agricultural development programmes and projects within their areas of operation, which are achievable through agricultural extension practices (Odinwa, Emah & Odinwa, 2016). But how well and how much have the extension programmes of these corporations and agencies cover yam productions and its value

chains as well as the yam farmers in Rivers and Imo states, considering the importance and the roles yam plays as a king among crops in the areas of study? It is in this premise that this study is undertaken to

- i. identify the agricultural production services delivered to yam farmers in Rivers and Imo States; and
- ii. examine extension teaching approaches used to deliver the services to yam farmers in these areas;

A hypothesis expressed in a null format was formulated to address the two objectives as:

H₀: Agricultural production services delivered to yam farmers and the extension teaching approaches used to deliver the services to yam farmers in the two States on course do not differ significantly.

METHODOLOGY

Farming and trading of farm products of crops, fish, livestock, fibre and timber were the primary occupations of the people of Rivers and Imo States before the discovery of oil in commercial quantity in 1951. Even in the face of crude oil and gas, farming and trading of farm products are still the highest employers of labour in these States. The ritual, ceremony and superstition often surrounding yam farming and utilisation of the products (IITA, 1982) are visible in Rivers and Imo States. Most communities in these States organize new yam festival annually and award titles like 'Eze Ji' (King of Yam) to some distinguished male yam farmers especially, since yam is considered as "man's property" in the two States.

Descriptive survey research was employed to examine a cross-section of the population of the registered yam farmers of the chosen extension agencies providing the agricultural services in the two states. Thirty-one (31) out of Fifty (50) LGAs were purposively selected from Rivers (13 LGAs) and Imo State (18 LGAs) based on the presumed fact that these LGAs could provide the needed information in yam production (Ladele & Chah, 2014). From the 31 LGAs, Eighteen (18) LGAs, Nine (9) each from the two states were randomly selected to give the selected LGAs equal chances of participation as noted by Agbola, Egunjobo, Olatubara, Yusuf and Alabi (2003). Also, One (1) extension agency each was randomly selected from each of the LGAs. A proportionate random sampling was finally used to select five hundred and eighty-seven (587 respondents - comprising 316 and 271 from Rivers and Imo States respectively) for this study. A structured questionnaire and interview schedules designed in a three point Likert type rating scale and a four point Ordinal rating scale were used to elicit information from the respondents. Both descriptive and inferential statistics were engaged to analyze the data. Descriptive statistics such weighted mean scores derived from Likert type rating and ordinal rating scales were used. The inferential statistic used was the Z – test to probe the hypothesis and was carried out at 0.05 significant levels.

RESULTS

Agricultural Production Services Delivered to Yam Farmers in Rivers and Imo States

Findings on the agricultural production services delivered to yam farmers in the study areas indicated that time of planting of yam (GM = 2.49) and yam minisett production technology (GM = 2.38) among other production services, have been fully delivered to yam farmers in these states. Although, these production services have not created the expected impact in yam production, following the insufficiency of yam produce and consequent high price of the available yam products in these areas. Implying that yam farmers may have relaxed the adoption of these production techniques delivered to them. This claim agreed with IITA (2014) which reported that the minisett technique using 25-50g setts to produce seed yams had been introduced to farmers but the rate of adoption was generally low.

However, the result showed many production services that have not been fully delivered to the yam farmers to include: possible intercrops with yam (GM = 1.84), labour control in yam production (GM = 1.79), organic yam farming (GM = 1.77), cooperative farming (GM = 1.65), practice of zero staking of yam (M = 1.27), how to source money/credit for farming (GM = 1.56) marketing arrangements for yam (GM = 1.33) and risk aversion techniques/insurance (GM = 1.23). These production services that have not been fully delivered to yam farmers in these states are vital to yam production and yet constitute the major constraints to yam production in the areas, which Coursey (1996) considered as: labour cost for land (heap) preparation, and barn making and lack of staking materials, deficiency in yam mechanization, use of traditional technology for production of seed yams, scarcity of planting materials. No wonder the few production services fully delivered to yam farmers in these two states as highlighted above, have not made a tangible impact in yam production and productivity in the study areas.

Table 1: Mean Distribution of the Respondents on the Agricultural Production Services Delivered to Yam Farmers in Rivers and Imo States

Production services delivered	Rivers Weighted Score n = 316	State Mean	Imo Weighted Score n = 316	State Mean	Total Score N = 587	Grand Mean	Remark
Introduction of high yielding yam varieties	672	2.13	686	2.53	1358	2.33	Fully Delivered
Yam Minisett production technology	683	2.16	703	2.59	1386	2.38	Fully Delivered
Ware yam production practice	639	2.02	685	2.53	1324	2.28	Fully Delivered
Seedbed preparations for yams	606	1.92	615	2.27	1221	2.10	Fully Delivered
Soil requirement for yams	616	1.95	609	2.25	1225	2.10	Fully Delivered
Possible intercrops with yam	532	1.68	540	1.99	1072	1.84	Fairly Delivered
Labour control in yam production	532	1.68	514	1.90	1046	1.79	Fairly Delivered
Seed yam treatment against insect pests	669	2.12	703	2.59	1372	2.36	Fully Delivered
Fertilizer application	544	1.72	287	1.06	831	1.39	Fairly Delivered
Organic yam farming	514	1.63	518	1.91	1032	1.77	Fairly Delivered
Cooperative farming	326	1.03	641	2.37	967	1.70	Fairly Delivered
Practice of Zero staking of yam	433	1.37	315	1.16	748	1.27	Fairly Delivered
Subsides/ incentives to aid yam production	498	1.58	447	1.65	945	1.62	Fairly Delivered
How to source money/credit for farming	490	1.55	426	1.57	916	1.56	Fairly Delivered
Storage systems of yam products	559	1.77	520	1.92	1079	1.85	Fairly Delivered
Processing of yamtubers to yam floor	492	1.56	457	1.69	949	1.63	Fairly Delivered
Marketing arrangements for yam	426	1.34	359	1.32	785	1.33	Fairly Delivered
Risk aversion techniques insurance	379	1.20	340	1.25	719	1.23	Fairly Delivered
Time of planting yam	742	2.35	711	2.62	1453	2.49	Fully Delivered

Source: Field Survey, 2018

Decision Mean = 2.00

The z – test result on the agricultural production services delivered to yam farmers in the areas of study showed ($z - cal = 7.31$) as against ($z - tab = 1.96$) at a probability level less than 0.05%. This led to the rejection of the hypothesis which stated that ‘the agricultural production services delivered to yam farmers do not differ significantly’ between Rivers and Imo States, implying that the agricultural production services delivered to yam farmers between Rivers and Imo states were significantly different. For instance, cooperative farming has been fully delivered to yam farmers in Imo State ($M = 2.37$) but has not been delivered fully to yam farmers in Rivers State ($M = 1.03$).

The differences in the agricultural production services delivered to yam farmers in these two states may be due to differences in extension personnel employed by different extension agencies handling extension services in various local government areas in the States; agrarian interest of the extension agencies; the technical knowhow of the extension personnel rendering the services and the requisite motivation to carry out legitimate assignments by the extension agents, which is against a joint extension package linking the State Ministries of Agriculture, non-governmental agricultural agencies, extension professionals and the yam farmers as recommended by Odinwa, Isife and Nlerum (2019). It was because of the technical knowhow of the extension personnel that Mezirow (2000), stressed that extension agents should know both the general and precise literacy levels of their targeted audience/farmers in designing and delivering inventive package, while Ejiogu-Okereke and Onu (2007) as it concerns motivation to carry out legitimate assignments by the extension agents recommended that Agricultural Development Programme should show more concern for staff welfare to enhance adequate commitment to organizational goals and Extension Services generally.

Table 2: z-test Result on the Agricultural Production Services Delivered to Yam Farmers in Rivers and Imo States

Source	N	Mean	df	Variance/Sd	z-cal	z- tab	Remark
Rivers	316	73.41	585	546.62/23.58			
Imo	271	86.56		449.32/21.20			
Total	587				7.31	1.96	S

Source: Field Survey, 2018

S - Significant at $P < 0.05\%$

Extension Teaching Approaches Used to Deliver the Production Services to Yam Farmers in Rivers and Imo States

The findings on the extension teaching approaches used to deliver the production services to yam farmers in Rivers and Imo States indicated in their order of use that: exhibitions/farmers day ($GM = 2.07$), reaching famers through cooperatives ($GM = 1.89$), method demonstration ($GM = 1.83$), result demonstration ($GM = 1.77$), field/farm visit with equal mean ($GM = 1.76$), and group meetings ($GM = 1.52$) were highly used in these states to sensitize the yam farmers. These findings to certain extent agreed with Nlerum and Akanji (2015) who reported that the major extension teaching methods used by Rivers ADP in particular were field trip, farm and home visit and telephone call.

However, the findings also exposed some extension teaching approaches that were less or not used in the area to include: regular family discussion ($GM = 1.14$), home visit ($GM = 1.49$), reaching famers through the radio ($GM = 0.39$), reaching famers through television ($GM = 0.28$), field trip/excursion to well established agricultural farms ($GM = 0.52$), Small Plot Adoption Technique (SPAT) ($GM = 1.37$), Indigenous Innovation Diffusion Approach (IIDA) ($GM = 0.73$), Village Level Participatory Approach (VLPA) ($GM = 0.77$), workshop exercises to emphasize a practice ($GM = 1.22$), phone calls ($GM = 1.46$); agricultural magazines/bulletins ($GM = 0.88$) and computer/ipad/ e-wallet ($GM = 0.75$). These extension teaching approaches that were less or not yet invoked in the area of study from the findings, were veritable extension teaching approaches that do encourage mass participation of farmers in any aspect of farming where they are used. Beside the routine extension approaches that were less/not used, for instance, Village Level Participatory Approach” (VLPA) helps communities participating in rural development project, to identify their own development priorities and plans, and makes them eager to bring them to implementation (Moumouni, 2005); and the Market Day Approach of Extension is a

community extension approach that gives farmers opportunity to share their adaptations and improvements on the fertile traditional system of farming and to promote its spread (Akinola, Issa, and Sanni, 2011). Perhaps, it was because of the de-emphasis on the routine extension approaches by the extension agents that must have caused a dramatic decline in yam production and productivity in these States.

Table 2: Mean Distribution of the Respondents on the Extension Teaching Approaches used to deliver the Production Services to Yam Farmers in Rivers and Imo States

Extension teaching approaches used	Rivers State		Imo State		Total Score N = 587	Grand Mean	Remark
	Weighted Score n = 316	Mean	Weighted Score n = 316	Mean			
Regular family discussion	289	0.91	375	1.38	664	1.14	Less used
Method Demonstration	476	1.51	584	2.15	1060	1.83	Highly used
Result Demonstration	458	1.45	567	2.09	1025	1.77	Highly used
Home visit	388	1.23	474	1.75	862	1.49	Less used
Field/farm visit	515	1.63	513	1.89	1028	1.76	Highly used
Reaching famers through cooperatives	587	1.86	518	1.91	1105	1.89	Highly used
Reaching famers through the radio	153	0.48	81	0.30	234	0.39	Less used
Reaching famers through television	102	0.32	62	0.23	164	0.28	Less used
Field trip/excursion to well established agric. Farms	199	0.63	108	0.40	307	0.52	Less used
Small plot adoption technique (SPAT)	337	1.07	452	1.67	789	1.37	Less used
Indigenous Innovation Diffusion Approach (IIDA)	236	0.75	193	0.71	429	0.73	Less used
Village level participatory approach (VLPA)	251	0.79	203	0.75	454	0.77	Less used
Workshop exercises to emphasize a practice	337	1.07	371	1.37	708	1.22	Less used
Exhibitions/Farmers day	561	1.78	636	2.35	1197	2.07	Highly used
Group meetings	412	1.30	472	1.74	884	1.52	Highly used
Posters/billboards	438	1.75	294	1.08	732	1.42	Less used
Phone calls	437	1.38	416	1.54	853	1.46	Less used
Agric. Magazines/Bulletins	258	0.82	256	0.94	514	0.88	Less used
Computer/IPAD/ E-wallet	234	0.74	206	0.76	440	0.75	Less used

Source: Field Survey, 2018

Decision Mean = 1.50

The comparison z – test result on the extension teaching approaches used to deliver the production services to yam farmers in Rivers and Imo States showed (z – cal = 5.06) as against z – tab = 1.96) at a probability level less than 0.05%. The hypothesis which stated that ‘the extension teaching approaches

used to deliver the production services to yam farmers do not differ significantly between the two states' was rejected, denoting that the extension teaching approaches used in the two states differed significantly. For example home visit and Small Plot Adoption Technique were highly used in Imo State, but were less used in Rivers State.

The differences in the extension teaching approaches used by the extension agencies operating in the two states may be as recorded earlier and the enthusiasm received by the extension agents from their agencies and from the farmers/clients or the community.

Table 4: z-test Result on the Extension Teaching Approaches Used to Deliver the Production Services to Yam Farmers in Rivers and Imo States

Source	N	Mean	df	Variance/Sd	z-cal	z- tab	Remark
Rivers	316	20.47	585	156.14/12.50			
Imo	271	25.02		85.38/9.24			
Total	587				5.06	1.96	S

Source: Field Survey, 2018

S - Significant at P < 0.05%

CONCLUSION

Production services delivered by extension agents to meet the needs of yam farmers in these states, such as: the time of planting, yam minisett production technology and introduction of high yielding yam varieties have not created the expected impact in yam production in the two States; While the production services that have not been fully delivered to yam farmers in these States, such as: labour control in yam production, organic yam farming, cooperative farming and practice of zero staking of yam, among others are crucial to yam production. Also, veritable extension teaching approaches such as: Regular family discussion, home visit, Small Plot Adoption Technique (SPAT), Indigenous Innovation Diffusion Approach (IIDA), Village Level Participatory Approach (VLPA) and E-wallet have not been actively used to disseminate information to farmers in the areas. Finally, both the agricultural production services delivered to yam farmers and the extension teaching approaches used to deliver the services to yam farmers in the two States differed significantly.

RECOMMENDATIONS

From the findings, this study recommended the following:

1. Relevant production services such as: labour control in yam production, fertilizer application, organic farming, cooperative farming, practice of zero staking of yam, how to source agricultural credits for farming, marketing arrangements for yam and risk aversion techniques/insurance should be meaningfully delivered to the farmers in these states,
2. Authentic extension teaching approaches such as: Regular family discussion, home visit, Small Plot Adoption Technique (SPAT), Indigenous Innovation Diffusion Approach (IIDA), Village Level Participatory Approach (VLPA) and E-wallet as practiced in northern Nigeria should be used to reach yam farmers in the areas, and
3. A joint extension package linking the State Ministries of Agriculture, non-governmental agricultural agencies, extension professionals and the yam farmers should be developed for these states, to promote uniformity in extension method and service delivery in yam production.

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