ADOPTION RATES OF IMPROVED FARM PRACTICES AMONG CONTACT AND NON-CONTACT FARMERS IN EDO STATE, NIGERIA

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ABSTRACT

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This study analyzed the trend in the adoption of improved farm practices by Edo State's Agricultural Development Programme (ADP) contact and non-contact farmers, spanning a farming season period of five years (2004 to 2009). Multi-stage random sampling procedure was used to select nine (9) blocks, twenty-four (24) cells and two hundred and forty-seven (247) respondents. Findings showed that the mean number of innovations adopted by contact farmers were: (mean=2.19) 2004/2005, (mean=2.69)2005/2006, (mean=3.11)2006/2007, (mean=2.93) 2007/2008 and (mean=2.61) 2008/2009 while the mean number of innovations adopted by non-contact farmers were: 2004/2005(mean=0.99), 2005/2006 (mean=0.93), 2006/2007 (mean=0.96), 2007/2008 (mean=0.84) and 2008/2009 (mean=0.98). The maximum adoption (mean=3.11) year for the contact farmers was 2006/2007 farming season while the maximum adoption year was same across the five farming seasons (mean=0.94) for the non-contact farmers. This implies that the contact farmers were three times better than the non-contact farmers as adopters of farm innovations. Generally, there was an increase in the rate of adoption among the contact farmers across the five farming seasons, compared with the performance of the non-contact farmers, who recorded little or no change in the rate of adoption of recommended farm innovations across the five farming seasons. Recommendations made was to the effect that effort be intensified to improve on the current access of non-contact farmers in Edo State to available extension information so as to improve on their low level of adoption of farm innovations.

***Key words**: Adoption Rates, Extension Agency, Farm innovations.*

INTRODUCTION

It is possible that the institutionalization of the Agricultural Development Programme (ADP) system in 1974 with funding assistance from World Bank, Federal and State Governments with the main objective of increasing food production, farm income and the standard of living of the farming rural population (APMEU, 1993), may not have achieved the desired objective. The reason for such skepticism is hinged on the fact that over the years, the productivity level of these resource-poor smallholder farmers (Emokaro and Erhabor, 2006) has remained low, a phenomenon that has entangled the farmers in a vicious circle of poverty (Emokaro & Izekor, 2010). Among factors accounting for the low productivity of these farmers are, the use of obsolete cultural practices, scanty plant stands, poor weed control, non-usage of fertilizer, organic manures and other improved agricultural inputs including the management of the crop under degraded soil condition (FAO, 2003). Several technologies have been developed for the enhancement of food production in the country and in Edo State in particular. Some of these improved farm practices include: proper storage of crops, optimum plant population, improved varieties, seed dressing, fertilizer use, and pest/disease control in crops, feeding of livestock, disease control in livestock and erosion control on farm.

There are clear indications that a gap still exist between the development and the adoption of these technologies (Omoregbee & Onemolease, 2007) despite all the effort of ADPs over the years. Various reports indicated that yield levels achievable in small farmers' farms have continued to be far below the yield levels achievable at agricultural research stations in Nigeria (Ekumakama & Nwankwo, 2002). What could be responsible for these yield disparities? The following research questions are derivable from this established premise: What is the adoption history of Edo State ADP contact and non-contact farmers? What are the improved farm practices recommended by the Edo State ADP Extension Agents to farmers? What is the rate of adoption of improved farm practices among contact farmers with Edo State ADP and non-contact in Edo State ADP? Is there any difference in the rate of adoption of innovations by contact farmers with Edo State ADP and non-contact farmers? To address these questions, the following specific objectives were outlined for the study. These were to: compares the adoption trend among contact farmers with Edo State ADP and non-contact farmers and compares the adoption rates of improved farm practices by contact farmers with Edo State ADP and non-contact farmers Such analysis would provide empirical evidence on the effectiveness or otherwise of Edo State ADP, so as to identify ways of ensuring the achievement of the aforementioned objectives of increasing food production, farm income and the standard of living of the farming rural population.

METHODOLOGY OF THE STUDY

This study was carried out in Edo State, Nigeria. Edo State is made up of 18 Local Government Areas (LGAs) or blocks. The study was conducted in Edo State ADP (ESADP) and ESADP has the major responsibility of extension services in Edo State. For effective extension coverage, ESADP was divided into three agro-ecological zones namely: Edo Central, Edo South and Edo North zones. A multistage process, comprising simple random and stratified sampling technique was used in selecting a total of 300 farmers made up of 150 contact and 150 non-contact farmers as follows: The three zones were stratified into 18 blocks. Proportional random sampling was employed to select the blocks as follows: from Edo South, four were randomly selected, in Edo Central, two blocks were randomly selected, and three blocks were randomly selected from Edo North giving a total of nine blocks. Three cells were randomly selected per block (i.e. the nine selected blocks have a total of 108 cells, out of which a total of 27 cells were selected). One sub-cell or farmers' group area was selected per cell. A cell is usually made up of eight sub-cells. Thus a total of 27 sub-cells were selected from which a total of 300 farmers, made up of 150 contact and 150 non-contact farmers were finally selected for the study. Data were collected from the respondents through the use of properly designed interview schedule. Secondary data were sourced from review of related literature as published by the State ADP, the World Bank, Central Bank of Nigeria and Federal Bureau of Statistics. Although, 300 schedules were administered, only 247 copies (82.67%) were used in the final analysis, as 53 copies could not be retrieved.

RESULTS AND DISCUSSION

Adoption history of improved farm practices among contact and non-contact farmers in Edo State. The adoption history of contact and non-contact farmers spanning five years of farming seasons (2004 to 2009) is presented in Table 1. *2004/2005 Farming Season:* Majority of the contact farmers adopted optimum plant population (35.5%), improved varieties (33.9%) and pest/disease control in crops (29%) and the least adopted farm innovations by the contact farmers were disease control in livestock (10.5%) and erosion control on farm (5.6%). In the same season, some non-contact farmers adopted improved varieties (18.7%), seed dressing (17.1%), improved housing for livestock (13%) and pesticide disease control in crops (12.2%) and very few of the non-contact farmers adopted proper storage of crops (8.9%), optimum plant population (7.3%), feeding of livestock (7.3%), disease control in livestock (2.4%) and erosion control on the farm (4.1%). *2005/2006 Farming Season:* The most widely adopted farm innovations by contact farmers in the 2005/2006 farming season were optimum plant population (43.5%), improved varieties (49.2%), feeding of livestock (29.8%) and improved housing for livestock while less than half of the non-contact farmers adopted the use of improved varieties in the 2005/2006 farming season. For both groups of farmers, there was increase in the rate of adoption of various farm innovations compared with the 2004/2005 farming season. *2006/2007 Farming Season*: The percentage proportion of the contact farmers who adopted individual farm innovations in the 2006/2007 farming season ranged from a minimum of 15.3% in disease control in livestock to a maximum of 50% in improved housing for livestock. The percentage proportion of the non-contact farmers in the same season ranged from a minimum of 1.6% in disease control in livestock and erosion control on farm to a maximum of 19.5% in the use of improved varieties. Generally the contact farmers markedly maintained higher adoption levels than non-contact farmers.

2007/2008 Farming Season: About one-third of the contact farmers adopted optimum plant population (37.1 %), use of improved varieties (33.9%) fertilizer use (32.3%), pest/disease control in crops (35.5%), and feeding of livestock (33.1%) in the 2007/2008 farming season, while about one-tenth of the non-contact farmers adopted improved varieties (13.8%) and pest/disease control in crops (12.2%). None of the non-contact farmers adopted erosion control on farm. *2008/2009 Farming Season*: Some of the contact farmers adopted optimum plant population (31.5%), pest/disease control in crops (31.5%), use of improved varieties (29%) and improved housing for livestock (28.2%). The least adopted farm innovation by the contact farmers in the 2008/2009 farming season was disease control in livestock (16.1 %). In the same season, few of the non-contact farmers adopted the use of improved varieties (13.8%), improved housing for livestock (12.2%) and seed dressing and disease control in crops (10.6%). Majority of them adopted erosion control on farm (22%), while the least adopted improved farm practice was disease control in livestock (1.6%). The patterns of adoption of improved farm practices among contact and non-contact farmers are similar. In general, the levels at which both farmers adopt improved farm practices, except for simple practices such as improved varieties of crops, are very low. Less than a quarter of the contact and non-contact farmers have ever tried any of the recommendations for the complex practices.

Table 1: Adoption history of respondents

S/N	Improved farm practices	Contact farmers										Non-contact farmers							
		2004/2005		2005/2006		2006/2007		2007/2008		2008/2009		2004/2005		2005/2006		2006/2007		2007/2008		2008/2009	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	Proper Storages of Crops	25	20.2	29	23.4	31	25.0	28	22.6	33	26.6	11	8.9	7	5.7	5	4.1	6	4.9	11	8.9
2	Optimum Plant Population	44	35.5	54	43.5	47	37.9	46	37.1	39	31.5	9	7.3	13	10.6	13	10.6	11	8.9	10	8.1
3	Improved Varieties	42	33.9	61	49.2	50	40.3	42	33.9	36	29.0	23	18.7	35	28.5	24	19.5	17	13.8	17	13.8
4	Seed dressing	29	23.4	32	25.8	39	31.5	33	26.6	32	25.8	21	17.1	10	8.1	18	14.6	12	9.8	18	10.6
5	Fertilizer Use	25	20.2	33	26.6	40	32.3	40	32.2	34	27.4	10	8.1	11	8.01	10	8.1	12	9.8	9	7.3
6	Rest disease control in crops	36	29.0	26	21.0	41	33.1	44	35.5	39	31.4	15	12.2	15	2.2	16	13.0	15	12.2	13	10.6
7	Feeding of livestock	24	19.4	37	29.8	37	29.8	41	33.1	27	21.8	9	7.3	8	6.5	13	10.6	5	4.1	4	3.3
8	Disease housing control in livestock	13	10.5	13	10.5	19	15.3	33	26.6	20	16.1	3	2.4	11	0.8	2	1.6	10	8.1	2	1.6
9	Improved house for livestock	26	21.0	37	29.8	62	50.0	32	25.8	35	28.2	16	13.0	13	10.6	15	12.2	15	12.2	15	12.2
10	Erosion control on farm	7	5.6	12	9.7	20	16.1	24	19.4	29	23.4	5	4.1	2	1.6	2	1.6	-	-	27	22.0

Multiple Responses exceed10%

Table 2: Adoption rates of improved farm practices by the respondents

No of innovations adopted	Contact farmers (N = 124)										Non-content farmers (N = 123)									
	2004/2005		2005/2006		2006/2007		2007/2008		2008/2009		2004/2005		2005/2006		2006/2007		2007/2008		2008/2009	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
0	49	39.5	33	26.6	36	29.0	44	35.5	56	45.2	11	8.9	19	15.4	4	3.3	3	2.4	19	15.4
1	21	16.9	24	19.4	20	16.1	13	10.5	16	12.9	7	5.7	5	4.1	8	6.5	-	-	2	1.6
2	10	8.1	12	9.7	16	12.9	16	12.9	6	4.8	5	4.1	5	4.1	4	3.3	1	0.8	2	1.6
3	7	5.6	24	19.4	10	8.1	9	7.3	8	6.5	9	7.3	11	8.9	2	1.6	7	5.7	1	0.8
4	13	10.5	3	2.4	2	1.6	9	7.3	4	3.2	4	32.3	4	3.3	9	7.3	2	1.6	8	6.5
5	7	5.6	7	5.6	6	4.8	5	4.0	8	6.5	2	1.6	1	0.8	3	2.4		0.8	2	1.6
6	6	4.5	5	4.0	10	8.1	3	2.4	5	4.0	2	1.6	-	-	1	0.8	4	3.3	4	3.3
7	7	5.6	5		7	5.6	5	4.0	5	4.0		-	-	-	1	0.8	2	1.6	1	0.8
8	-	-	4	3.2	4	3.2	10	8.1	3	2.4	-	-	-	-	-	-	1	0.8	-	-
9		-	-	-	5	4.0	3	2.4	3	2.4	-	-	-	-	-	-	-	-	-	-
10	-	-	7	5.6	8	6.5	7	5.6	10	8.1										
Mean (X)		2.19		2.69		3.11		2.93		2.61		0.99		0.93		0.96		0.84	0.98	

Data presented in Table 2 indicate the rates of adoption of the 10 listed improved farm practices among contact and non-contact farmers. In the 2004/2005 farming season, 39.5% contact and 67.5% non-contact farmers did not adopt any of the recommended farm practices. The mean number of innovations adopted by contact farmers was 2.19 while the mean for non-contact farmers was 0.99. About 35% of the contact farmers adopted between'3 and 8 innovations above the average of 2 innovations adopted in the 2004/2005 farming season while 23.6% of non-contact farmers adopted between two and seven farm innovations above the average innovation of about one in the same season. With an average of 2.19 innovations, the contact farmers adopted more innovations in the 2004/2005 farming season than non-contact farmers with an average of 0.99. In the 2005/2006 farming season, 26.6% contact and 63.4% non-contact farmers failed to adopt any of the farm innovations. The mean innovations adopted by contact and non-contact farmers were 2.69 and 0.93 respectively. About 25% contact and 21% non-contact farmers adopted between four and 10 as well as between two and six innovations above the average number of innovations adopted in the 2004/2005 farming season. About 29%, 36% and 45% contact farmers did not adopt any of the recommended improved farm practices in the 2005/2006 and 2006/2007 farming seasons respectively, while 74%, 82.9% and 68.3% non-contact farmers failed to adopt any innovations in the same farming seasons. The mean number of innovations adopted by contact farmers were: (mean=2.19) 2004/2005, (mean=2.69) 2005/2006, (mean=3.11) 2006/2007, (mean=2.93) 2007/2008 and (mean=2.61) 2008/2009 while the mean number of innovations adopted by non-contact farmers were: (mean=0.99) 2004/2005, (mean=0.93) 2005/2006, (mean=0.96) 2006/2007, (mean=0.84) 2007/2008 and (mean=0.98) 2008/2009. The maximum adoption (mean=3.11) year for the contact farmers was 2006/2007 farming season while the maximum adoption year was same across the five farming seasons (mean=0.94), for the non-contact farmers. This implies that the contact farmers were three times higher than the non-contact farmers as adopters of innovations.

Results presented in Table 2 also show that about 6% of the contact farmers adopted all the recommended farm innovations in the 2005/2006 season, 6.5% in the 2006/2007, .6% in the 2007/2008 and .1% in the 2008/2009 farming seasons respectively. For the non-contact farmers, none adopted all the farm innovations, with one or 0.8% of them adopting nine out of the 10 recommended farm innovations in 2007/2008 farming season. Generally, there was an increase in the rate of adoption among the contact farmers across the five farming seasons, compared with the performance of the non-contact farmers, who recorded little or no change in the rate of adoption of recommended farm innovations across the five farming seasons. The increase in the rate of adoption among contact farmers is explained by the fact that production recommendations come as a package of innovations from which farmers selectively adopt innovations they accord high importance before others of less importance. A similar finding was reported by (Ruiz de Londono & Janssen, 1990), who, in a survey in Peru that examined the adoption of a new bean variety, asked farmers how much of their farms they planted to the new variety in t he first year that they used it and in subsequent years. The result showed a gradual increase in the use of the variety as farmers gained confidence in the result obtained. It could be deduced from the data presented in Table 1 for example, that across the five farming seasons, majority of the farmers adopted the use of improved varieties (for various crops) and optimum plant population (spacing) more than the number of them that adopted erosion control on farm. This finding confirms the result of (Byerles & Hessede-Polanco, 1986), who asserted that farmers tended to adopt the variety first, before improved weed control and finally, fertilizer application in their adoption study of barley farmers in Mexico. This proves that farmers practice selective adoption and the selected innovations for adoption depends on the level of importance attached to the particular innovation. The difference observed in the rate of adoption of farm innovations between contact and non-contact farmers suggests the effectiveness of extension contact activities of Edo State ADP in promoting the adoption of innovation among farmers. It agrees with the findings of (Gautam 1999), in his study of Kenyan farmers' awareness of simple agronomic recommendations. He found a pattern of decreasing awareness of technologies with decreasing extension input.

CONCLUSION AND RECOMMENDATIONS

The difference observed in the rate of adoption of farm innovations between contact and non-contact farmers in this study, suggests the effectiveness of extension contact activities of Edo State ADP in promoting the adoption of innovation among farmers. However, most rural farmers are still entangled in the vicious circle of poverty. It is therefore recommended in this study that, in order to achieve the laudable objectives of the ADP, which is that of increasing food production, farm income and the standard of living of the farming rural population, effort must be made to improve on the access of non-contact farmers to available extension information so as to improve on the current low level of adoption of farm innovations by non-contact farmers in Edo State. One of the ways of doing this is by increasing the number of extension workers in the State either through direct government recruitment or by encouraging the establishment of private extension service providers.

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