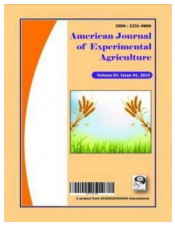

American Journal of Experimental Agriculture
10(4): 1-7, 2016, Article no.AJEA.13718
ISSN: 2231-0606

SCIENCEDOMAIN *international*
www.sciencedomain.org

Impact Assessment of Fadama Project on Agricultural Development in Kwara State, Nigeria

O. M. Apata[1*] and O. J. Saliu[2]

[1]Department of Agricultural Economics and Extension Services, Ekiti State University, Nigeria.
[2]Department of Agricultural Economics and Extension, Kogi State University, Nigeria.

Authors' contributions

The research was designed by the two authors. Literature review was done by author OMA. Interview schedule was developed by both authors. Author OJS administered the interview schedule to collect data, analysed the data and the report was written by both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJEA/2016/13718
Editor(s):
(1) Masayuki Fujita, Department of Plant Sciences, Faculty of Agriculture, Kagawa University, Japan.
(2) Anonymous.
Reviewers:
(1) R. O. Akinbamowo, Ondo State Ministry of Agriculture, Akure, Nigeria.
(2) Pius Chinwuba Ike, Delta State University, Nigeria.
(3) Anonymous, Council for Scientific and Industrial Research-Food Research Institute, Accra, Ghana.
(4) M. O. Raufu, University of Swaziland, Swaziland.
(5) Anonymous, Veterinary Research Institute, Greece.
Complete Peer review History: http://sciencedomain.org/review-history/12107

Original Research Article

Received 30th August 2014
Accepted 4th April 2015
Published 6th November 2015

ABSTRACT

Small scale agriculture is the dominant occupation of rural Nigerians. Federal government of Nigeria over the years introduced and implemented several policies and programmes aimed at improving agricultural production. In light of available agricultural potentials the First National Fadama Development project was designed in the early 1990 s to promote simple and low-cost improved irrigation technology under World Bank Finance. The wide spread adoption of the technologies enabled farmers to increase production by more than 300% in some crops. This was followed by Fadama II.

The study was designed to assess impact of fadama II project on agricultural production of the farmers in Kwara State, Nigeria. A total of 120 respondents were purposively selected for the study. Interview schedule was used to elicit information from the respondents and this was subjected to correlation and student t-test analyses. Among the socio-economic characteristics included in the study, only sex (r = 0.285, p = 0.002) and type of agricultural activities (r = 0.224, p = 0.031) have

**Corresponding author: E-mail: simboapata@yahoo.com;*

significant relationships with agricultural productivity. There is a significant difference (t = 6.442, p = 0.000) between the productivity of fadama participants and non-fadama participants.
It is therefore recommended that fadama project should continue in Nigeria and that all farmers should be included in the project as this will enhance sustainable food security and improved agricultural production in Nigeria.

Keywords: Fadama farming; food security; agricultural production; poverty alleviation.

1. INTRODUCTION

Small scale agriculture is the dominant occupation of rural Nigerians which is mainly characterized by low- land and labour productivity. Nigerian government over the years introduced and implemented several policies and programmes aimed at improving agricultural sector) [1]. Agwu and Chukwuone [2] reported that previous agricultural programmes suffered serious setbacks due to poor funding and instability. Nigeria has a comparative advantage in the production of a variety of fresh and processed high value crops especially vegetables during dry season. This also applies to livestock (meat and milk) and fisheries production throughout the year. This is because Nigeria is endowed with underground and surface water reserves, rich pastures and favourable agro-ecological conditions in the country's low-lying plains with alluvial deposit called Fadama. When fadama spread out over a large area, they are often called "Wetlands" [3].

World Bank, [4] stated that Fadama (a hausa derivative) refers to irrigable land ,flood plains and low-lying areas underlined by shallow aquifers found along Nigeria's water system. Fadama are typically waterlogged during rainy season but retain moisture during dry season. The areas are considered to have high potential for economic development through appropriate investments in infrastructure, household assets and technical assistance. Fadama, which is the Hausa name for irrigable land are flood plains and low-lying areas underlined by shallow aquifers and found along Nigeria's riverine areas.

In the light of these potentials the First National Fadama Development project was designed in the early 1990 s to promote simple and low-cost improved irrigation technology under World Bank Finance. The widespread adoption of the technologies enabled farmers to increase production by more than 300% in some crops [5]. Evaluation of the benefits of the project was hampered by some specific shortcomings which include lack of involvement of project client. Alimi and Ayanwale [6] noted that incremental production necessary to sustain food production and guarantee national food security cannot be attained without resource to supplement irrigation for major food production areas of the country. Some of the traditional irrigation techniques adopted by the project in many farm sites especially in northern parts of Nigeria include: shadoof, pump, gravity or national flow and calabash/bucket methods. These are generally referred to as small-scale irrigation enterprises covering small land and are under traditional system. Water sources for this system are mainly residual soil moisture, locally dug shallow wells, ponds and other depressions [7]. Fadama 1 focused mainly on crop production and largely neglected support of post production activities such as commodity processing, storage and marketing. The emphasis was on providing boreholes and pumps to crop farmers through simple credit arrangements aimed at boosting aggregate crop output [8].

Irrigation has been defined as the application of water to soil for the purpose of supplying moisture essential for plant growth. It is undertaken to provide insurance against drought and for cooling the atmosphere. It equally provides a more favourable environment for plant growth. Irrigation washes out and dilutes salts in soil and reduces the hazards of piping and softening tillage plans. Irrigation is used to supplement rainfall distribution for agricultural purpose in an area. Baba [9] reported that Irrigation will not be necessary if the distribution of rainfall were ideal for the growing of crops. Fadama project objectives are to develop small-scale irrigation through extraction of shallow ground water with low-cost petrol driven pumps. To bring about enhanced agricultural production, productivity and value addition for small holders and rural entrepreneurs in Fadama area on a sustainable basis [10]. The goal of the sector is to reduce poverty by improving the living condition of rural poor, contribute to food security and increased access to rural infrastructure.

Since Fadama 1 was completed, government adopted a strategy in 2001 that aims at

contributing to food security and increase access to rural infrastructural facilities. This strategy stresses the principle of non-intervention, consistency, sustainability and greater equity in access to and benefit of resources. Consequently, World Bank found it good to agree to government request for financing of Fadama Development Project Fadama II as a follow up to Fadama 1. This was done Under the Fadama Development Project for the provision of production, marketing, processing, financial and advisory services to Fadama farmers. Government also put in place regulatory system to ensure that the farmers obtain regular supplies of right quality of inputs, technical advice and up-to-date market information, to ensure sustainable and equable exploitation of Fadama resources by all resource users. Federal government of Nigeria was impressed by the achievements of Fadama1 in scope and size.

Food is a very important issue in the growth and development of any nation. Any nation striving towards national security will contribute to the issue of food security through sustainable agriculture. The challenge thus posed by the sector is to sustain the increase in food production and agricultural growth rate. But the main issue in Nigerian agriculture is that of low productivity in recent years, despite all the human and material resources put into the sector, the rate of its productivity increase is said to be declining [11]. The problem identified therefore centers on unsettled agriculture due to poor rainfall distribution that does not coincide with the water requirement of crops in most parts of the country [11]. Fadama project was established to provide irrigation to supplement rainfall distribution to enhance agricultural production in the country. It is therefore necessary to examine impact of Fadama II on agricultural productivity.

Hence the study was designed to provide solution to the following research questions; what are the socio-economic characteristics of Fadama farmers? What is the level of productivity of farmers? What are the benefits derived by participating in Fadama programme? What are the problems faced by the participants in Fadama programme? And what is the attitude of respondents towards Fadama programme?

2. METHODOLOGY

Kwara State is situated entirely within the tropics. It is located between longitude 2'45 and 6 east of Greenwich Meridian and latitude 11'2 and 11'45 North of the equator. It lies to the South of Ekiti, Osun and Oyo. It is bounded in the East by Kogi, north by Niger and West by Benin Republic. Kwara State of Nigeria was created on May 27, 1967. The State population was 2371,089 [12]. Agriculture is the mainstay of the economy and the principal cash crops are cotton, coffee, kolanut and cocoa.

Purposive sampling technique was used to select five (5) Local Government Areas (LGA). One community was purposively selected from each Local Government Area while 13 farmers of Fadama and 13 farmers of Non-Fadama respondents were purposively selected from each community making a sample of one hundred and thirty respondents for the study. The study was carried out in the following LGA, Oyun, Isin, Ekiti, Irepodun and Oke – Ero respectively. Data was collected using interview schedule and was analyzed using frequency count, percentages, mean and standard deviation. Inferential statistics was done through the use correlation analysis and student t-test.

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Respondents

Socioeconomic characteristics of the respondents showed that the mean age of the respondents was 45.35 years and only 12.3% of them were above 60 years of age. This implies that most of the respondents are still in their productive years and therefore are relevant to the study. Most of the respondents (92.3%) and (93.1%) Were male and married respectively. Religion of the respondents showed that 71.5% practice Christianity religion while 20.0% practice Islamic religion. This shows that fadama farming is not in conflict with any of the religions in Nigeria. Most of the respondents (60.0%) have no formal educational certificate and only 9.2% of them have post primary educational certificate. The implication of this is that most of respondents can not have access to agricultural information through print media and in official language. Most of the respondents have their household size between 5 and 8 persons. This also indicates that most of their farm produce will be consumed by family members as food and family members can also serve as farm labourers. Most of the respondents practise farming on full-time basis. Majority of the

respondents (83.2%) take trading as other income generating activity. This reveals that since respondents have other sources of income they may not invest all their resources such as time and money in agricultural activities. They may have to share these among activities. Most of the respondents have experience above 10 years. This means that farming is not new to them and they must have gotten some indigenous knowledge about farming activities. Only 22.3% and 7.7% of the respondents got agricultural information through mass media and extension agents respectively. This implies that both mass media and extension agents are performing below their expectations in the area of agricultural information dissemination and this can hamper agricultural and rural development in the country.

3.2 Annual Income of the Respondents

From Table 2, annual income of the respondents showed that 3.8% of fadama respondents and 36.2% non-fadama respondents have less than 200,000.00 naira from their farming activities annually. On the other hand, 15.4% fadama respondents and 2.3% non-fadama respondents make between 401,000.00 and 600.000.00 naira annually. It is also observed that 1.5% fadama respondents make above 1,000,000.00 naira annually while no non-fadama respondents make such. It therefore shows that fadama respondents have higher annual income than their non-fadama respondents counterpart.

3.3 Benefits and Constraints of Fadama Projects to Farmers

Result from Table 3 revealed that access to loan and agricultural information were identified as additional benefits of participation in fadama project by 50.0% and 33.1% of the respondents respectively. This may be the reason why participants have higher productivity than non-participants. Agricultural information and agricultural loan are the most important prerequisites for higher agricultural productivity. On the other hand, low awareness (43.1%) and inadequate funding (43.8%) are identified as major constraints to participation in fadama project. This implies that more awareness of the project should be created among farmers especially where fadama project has not been taken place and all stake holders should be faithful to their financial contribution towards the project.

3.4 Respodents' Perception towards Fadama Farming

The perception of the respondents was also measured and Table 4 revealed that 28.5% and 36.9% agreed and strongly agreed that fadama farming is profitable. Also 40.8% and 25.4% agreed and strongly agreed that fadama farming is a means of rural development. About 36.0 and 22.3% agreed and strongly agreed that fadama farming improves standard of living of the participants. On the other hand, 46.9% of the respondents strongly disagreed that fadama farming is not good for the youths. Also 38.5% of respondents strongly disagreed that fadama farming is difficult for farmers to do. About 45.0% disagreed that fadama farming does not increase agricultural productivity. From the result above it is clear that the respondents have favourable perception towards fadama farming.

3.5 Relationship between Socio-economic Characteristics and Agricultural Productivity

Socio-economic characteristics considered in the study revealed from Table 5 that among. Only sex ($r = 0.285$, $p = 0.002$) and type of agricultural activities (0.224, $p = 0.031$) have positive relationships with agricultural productivity. This finding may be due to the fact that male respondents are more than female respondents from Table 1 and because male farmers usually have access to more agricultural information and production resources, such as credit facility, land, labour etc than female farmers. This may result to higher productivity than their female counterpart. Also type of agricultural activities may have significant relationship with productivity due to the fact that some agricultural activities attract more income than the others. This may be the reason why it has positive and significant relationship with the productivity.

There is also significant difference ($t = 6.442$, $p = 0.000$) between the productivity of fadama respondents and non-fadama respondents. This further shows that fadama farming has positive Impact on the productivity of the participants. This may be due to the fact that fadama participants have more access to agricultural resources and information compared to non-participants.

Table 1. Distribution of respondents by socio-economic characteristics

Socio-economic variables	Frequency	Percentage (%)
Age		
< 30	20	15.4
31-40	33	25.4
fish41-50	36	27.7
51-60	25	19.2
Above 60	16	12.3
Sex		
Male	120	92.3
Female	10	7.7
Marital status		
Single	2	1.3
Married	121	93.1
Widowed	7	5.4
Religion		
Christianity	93	71.5
Islam	26	20.0
Traditional	11	8.5
Educational status		
No formal education	78	60.0
Primary education	38	29.2
Secondary education	12	9.2
Tertiary education	2	1.5
Household size		
< 5	50	38.5
5-8	63	48.5
9-12	17	13.1
Nature of farming activities		
Full time	77	59.3
Part time	53	40.8
Other sources of income		
Trading	107	82.3
Civil service	8	6.2
Crafting	8	6.2
Others	7	5.4
Farming experience		
<10	11	8.5
11-20	36	27.7
21-30	35	26.9
31-40	29	22.3
41-50	15	11.5
Above 50	4	3.1
Sources of agric information		
Mass media	29	22.3
Friends	68	52.3
Loan agent	28	22.3
Extension agent	21	16.2
Others	12	9.2

Source: Field survey, 2013

Table 2. Distribution of respondent's productivity

Annual Income (N)	Fadama respondents (%)	Non-fadama respondents (%)
<200,000	5 (3.8)	47 (36.2)
201,000 – 400,000	25 (19.25)	13 (10.0)
401,000 – 600,000	20 (15.4)	3 (2.3)
601,000 – 800,000	10 (7.7)	1 (0.8)
801,000 1,000,000	3 (2.3)	1(0.8)
➢ 1,000,000	2 (1.5)	----------

Source: Field survey, 2013

Table 3. Distribution of benefits and constraints to fadama project by farmers

Variables	Frequency	Percentage (%)
Benefits		
Access to loan	65	50.0
Dividends	11	8.5
Information	43	33.1
Others	11	8.5
Constraints		
Low awareness	56	43.1
Counterpart funds	17	13.1
Inadequate fund	57	43.8

Source: Field survey, 2013

Table 4. Distribution of respondents perception towards fadama

P.S	S.D (%)	D (%)	U (%)	A (%)	S.A (%)
F is a profitable venture	1(0.8)	2(1.5)	42(32.3)	37(28.5)	48(36.9)
F is a means for rural/urban devpt		2(1.5)	42(32.3)	53(40.8)	33(25.4)
F is good for youths		1(0.8)	41(31.5)	65(50.0)	23(17.1)
F improves the standard of living of participants			54(41.5)	47(36.2)	29(22.3)
F is a strenuous organization	34(26.1)	43(33.1)	14(10.7)	23(17.6)	16(12.3)
F is not a profitable venture	45(34.6)	2(1.5)	37(28.5)	1(0.8)	
F does not increase agricultural productivity	36(27.7)	58(44.6)	36(27.7)		
F is not for local farmers	38(29.2)	35(26.9)	57(43.8)		
F is not good for youths	61(46.9)	34(26.2)	35(26.9)		
Farmers find it difficult to participate in Fadama	50(38.5)	28(21.5)	47(36.2)	3(2.3)	2(1.5)
F has no impact on rural/urban devpt	23(17.7)	59(45.4)	39(30.0)	9(6.9)	
Standard of living of Fadama respondents is low	13(10.0)	57(43.8)	59(45.4)	1(0.8)	
Fadama project faces some constrains	1(0.8)	8(6.2)	48(36.9)	58(44.6)	15(11.5)

Source: Field survey, 2013

Table 5. Statistical analysis of Socio economic Characteristics in Relation to Agricultural Production

Name of Variable	Coefficient	Sig.	Decision
Sex	.285	.002**	S
Age	-.019	.868	N.S
Marital Status	.083	.361	N.S
Religion	-.026	.778	N.S
Years of Farming Experience	-.015	.871	N.S
Type of Family	.046	.634	N.S
Household size	.071	.412	N.S
Type of agricultural activity	-.224	.031**	S
Other income generating activity	.165	.134	N.S
Years of Formal Education	-.009	.936	N.S

Source: Field survey, 2013

4. CONCLUSION

Fadama participants have higher annual income from their farming activities than their counterparts that are non-fadama participants. Most of the respondents perceive that fadama farming is profitable, means for rural development, good for the youths and can improve living standard of the participants. On the other hand, many of the respondents disagree that fadama farming is too strenuous, not profitable and that many farmers find it difficult to participate. Other benefits apart from productivity are access to agricultural loan and information while inadequate fund and low awareness were identified as constraints to participation in fadama project.

From the study, sex of the respondents and type of agricultural activity of a farmer involved can be use to predict agricultural productivity. Fadama farming has led to tremendous increase in the annual income of the participants compare to non-participants.

5. RECOMMENDATION

From the study, it is therefore recommended that; Fadama farming should be extended to all farmers to boost their agricultural productivity. Fund and other resources meant for fadama activities should be adequately monitored so that they are not diverted to other ventures. Fadama project should not be terminated according to the policy but it should continue to impact on the farmers. More awareness should be created among farmers especially where fadama project has not been taking place and stake holders should be faithful to their financial contribution.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Ajibefun IA, Aderinola A. Determinants of techniques efficiency and policy implication in traditional agricultural production: Empirical study of nigeria food crop farmer. Final report presentation at Bi- Annual Research Workshop African Economic Research Consortium, Nairobi, Kenya; 2004.
2. Agwu AE, Chukwuone NA. Cost sharing as an alternative to financing agricultural technology transfer in Nigeria. A Research Proposal submitted to the African Technology Policy Studies (ATPS) Network, Nairobi, Kenya; 2002.
3. Blench RM, Ingawa SA. A political guide for National fadama development project 2 on conflict and management. The World Bank PCF/government of Nigeria PCU Fadama 2. 2004;1-9.
4. World Bank. Fadama 2, Project Implementation Manual. 2003;1&2.
5. FAO Statistics. Irrigation Sub – Sector Reviews. Investment Centre Report. 1992; 89-91.
6. Alimi T, Ayanwale AB. Impact of National fadama facility in alleviating rural poverty and enhancing agricultural development in South- Western Nigeria. Journal of Social Science. 2004;9(3):157-167.
7. Yahaya MK. Nigeria: The National fadama development. Development and Challenges of bakolor irrigation project in Sokoto State, Nigeria. Nordic Journals of African Studies. 2002;11(3):411-430.
8. Nkonya E, Phillip D, Mogues T, Pander J, Yahaya MK, Adebowale G, Arokoyo T, Kato E. Poor community driven development project in Nigeria IFPRI Discussion Paper 00756, IFPRI Washington; 2008.
9. Baba MK. Irrigation development strategies in the Sub- Saharan Africa: A comparative study of traditional and modern irrigation system in Bauchi State. Agriculture, Ecosystem and Environment. 1993;47-58.
10. World Bank, Nigeria: The National fadama development project. African Region. 2002;83.
11. Falusi AO. An overview of Nigeria's rural economy: Problem, prospects and potentials. Paper presented at NCEMA, Ibadan; 1995.
12. NPC, National Population Census; 2006.

© 2016 Apata and Saliu.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/12107