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Empirical Analysis of Factors Affecting Productivity among Fadama Farmers in Edo South Zone of Edo State, Nigeria

Friday Omoregbee* and Eddy Onemolease**

*Department of Agricultural Economics and Extension, University of Benin, City, Nigeria.

**Department of Agricultural Economics and Extension, Ambrose Alli University, Ekpoma, Edo State, Nigeria.

E-mail addresses: fridayomoregbee@yahoo.com; onemolease@yahoo.com.

ABSTRACT: The study focus was on socio-economic factors affecting fadama farmers' productivity in Edo State. Data relating participant farmer characteristics as well as yield were obtained by means of structured interview schedule from 80 respondents. Data analysis reveals the average yield of respondents was 202.38kg. Adoption of fadama-related technologies was low i.e. 3. While participation in fadama projects was low (65%). Respondents were about 37 years old, with low literacy level and fairly large household size (8). Respondents' productivity was significantly related to participation in fadama projects. (b = 0.335), education (b = 0.540) and family size (b = 0.601). The study therefore recommends active farmers involvement in fadama projects as well as upgrading their educational status through adult literacy classes and/or extension (ADP) training sessions.

Key words: Factors; Productivity; Fadama farmers; Edo south zone.

Introduction

Crop production in the fadama land area has traditionally depended on rainfall in the wet season and on residual moisture flood recession in the dry season. In area with easily accessible shallow groundwater or surface water, traditional water lifting devices such as shadouf and calabash are used to lift water out land. These devices according to Edo State Agricultural Development Programme (2002), are low cost and

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depend mostly on farmer labour for construction and operation. Their irrigation potential however is limited to small plots. Out of the 4.5million hectares of land considered as suitable for irrigated agriculture (Musa, 1997) only about 10 percent is fully developed for irrigation today. Although there is no gross yield data to assess the impact of the schemes on agricultural productivity since its inception, we can rest assured that the potential is there. Udofia and Inyang (1987) have stressed the importance of wetland (fadama) farming and its greater potential in meeting the food needs of Nigeria, relative to upland farming, if it can be properly harnessed all year round. Productivity is generally defined as the level of output in relation to levels of resources employed in a given period of time. It is the rates of flow of output when compared with rates of flow of resources such as land inputs used in production (Oyaide, 1998). Studies on fadama have focused on efficiency (Okoruwa, Akinyele & Mafimisebi, 2001) and determination of optimal farm plan (Umoh and Adegeye, 2000). There is need to focus research on productivity and factors that determines productivity. Hence this study focuses on socio-economic factors affecting fadama farmers' productivity in Edo State.

Objectives of the study

(1) To find out the nature of those engage in fadama farming in the state.

(2) To assess their productivity levels.

(3) To determine significant factors affecting their productivity.

Materials and methods

The study area is Edo South Zone of Edo State with focus on fadama farmers. The ADP Fadama Programme or Scheme is implemented in communities in these areas namely Orogbo with 6 registered Fadama Users Association (FUAs), Ogba with 2 FUAs, Idundolor and Ugbokulu/Emma with one FUA each. Orogbo and Ogba were purposely sampled because of the higher number of FUAs. Fifty percent of the FUAs were randomly sampled. Thus, 3 were selected from Orogbo while one was selected from Ogba. The 3 FUAs in Orogbo have a membership strength of 21, 16 and 38 of which 80% or 17, 13 and 30

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respondents respectively were randomly sampled. Data collection through structured interview schedule was done at farmers field/farm with assistance of extension workers of the zone.

Model specification

To capture the combined influence of socio-economic variable on farmers' productivity multiple regression analysis was employed. The explicit form is specified as follows:

$$Y = a + b_1 + X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$$

Where:

Y = Yield (output/Land area)

X_1 = Gender (dummy: male = 1; female = 0)

X_2 = Marital Status (Dummy: Married = 1: Single = 0)

X_3 = Age (years)

X_4 = Innovations Adopted (frequency of innovations used)

X_5 = Education (years)

X_6 = Participation in fadama project (Dummy: low = 0; high = 1). The mean participation score (i.e.2) was used to dichotomize respondents into low and high.

e = error team

a = Intercept

To select the model that best fit the data four functional forms were evaluated on the basis of size of the adjusted R^2, the logical signs and significance of the independent variables (Olayemi, 1998). On this basis the linear function was chosen as the lead equation.

Results and discussion

TABLE 1: Socio-Economic characteristics of respondents (A summary)

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Characteristics	Mean	Dominant class
Sex	-	Female (62.5%)
Marriage Status	-	Married (77.5%)
Age (years)	36.65	-
Formal Education Experience (year)	6.68	-
Participation in fadama project	2	Low (65%)
Innovation adoption Frequency	3	-
Yield levels (kg)	202.38	-
Size of household	7.5	-

The results of Table1 suggest that vegetable farming (the crop grown under the fadama scheme in the study area) is large done by females (62.5%) lending support to the assertion that women are active farmers in Africa (Adekunle & Nabinta, 2000). Majority (77.5%) of the respondents were married with about 7 years of formal school education experience implying a low literacy level. Illiteracy is known to impose a limitation on farmers use of modern farming technologies (world Bank,1994) and this may partly explain the low innovation adoption score (i.e.3) recorded by respondents. Use of improved technologies enhances farm productivity and income (Ongaro, 1990). The respondents can be regarded as active farmers given their mean age of about 37years. At such age farmers are still active and can enhance their productivity. The average family size of about 7 has two implications on the household: where the household members are economically active they contribute to its welfare but where they are not they can reduce its welfare. Respondents were expected to be involved in fadama project/activities namely use of water pump,

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attendance at extension agent meetings, construction of tube wells, wash bores and culvert. Their average participation score was 2 with most (65%) considered as low participants.

Table 2: Socio-Economic determinants of respondents productivity (Multiple regression analysis)

Variable	Standard coefficient	t-statistic
Sex	0.003	0.025
Age	0.028	0.201
Participation	0.335	2.315**
Frequency of adoption	0.088	0.600
Education	0.540	3.510*
Size of household	0.601	3.244*
Intercept	0.010	0.288

*significant at 1% (t = 3.143): **significant at5% (t = 1.943)

From Table 2 the most significant socio-economic determinant of yield was size of household (b = 0.601) followed by education (b = 0.540) and participation in fadama project (b = 0.335). The coefficient for household size means the effect on yield by an additional economically active member that can contribute to the production process in form of labour is up to 60.1%. The return to schooling is about 45% while participation in fadama project improves out by 33.5%.

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Table 3: Effect of significant parameters on productivity.

Statistics	Values
Adjusted R^2	0.473
Standard error of estimate	0.871
Computed F value	5.65
Critical F statistic (1%)	2.96

The adjusted R^2 value (0.473) indicate that 47.3% variability in productivity is explained by the significant explanatory variables while the computed F value (5.65) shows the influence of these variables on productivity is significant at the 1% level (critical F is 2.96). Education enhances farmers' ability to properly manage farms. Adoption of innovations is positively related but non-significant probably because respondents adoption was very low (Table 1). Age and Sex were positively related to productivity but non-significant also. Adoption of farm innovations also showed a positive but non-significant relationship with productivity. This probably is an indication of respondents' low response to innovation adoption which Table 1 reveals to be 3.

Conclusion and recommendations

The study revealed productivity of fadama farmers is related to certain socio-economic characteristics of the farmers, which shows the importance of understanding the nature of the relationship. Significant variables found to play important roles in productivity of farmers include household size, education and participation in fadama project/activities. The study therefore recommends encouraging farmers to be more involved in fadama project/activities such as construction of wash bores, tube wells, storage shed and culvert; and improving farmers educational status by organizing adult literacy classes or extension education to facilitate their adoption of improved of technologies.

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REFERENCES

Adekunle, O.A. & Nabinta, R.T. (2001): Indigenous storage structure for cereals by women farmers in kaltungo Area of Gombe State, Nigeria *Journal of Economics and Rural Development,* 14, 1, 47-55.

Edo State Agricultural Development Programme (2002): A Survey of fadama infrastructural facilities in Edo State. Edo State ADP, Benin-City: 1-34

Musa, I.K.(1997): Food Production in Nigeria: The critical role of irrigated agriculture in A.T.Shaih (ed) *Integrated agricultural production in Nigeria*. Monograph No 5 National Agricultural Research Project (NARP): 171-188

Okoruwa, V.O.; Akinyele, R & Mafimisebi, T.O. (2001): Relative efficiency of fadama farmers in Southwest Nigeria: An application of profit function techniques. *Journal of Agricultural Extension,* 5, 45-49.

Olayemi, J.K. (1998): *Elements of Applied Econometrics* Elshadddia Global Ventures Ltd, Ibadan: 45-187.

Ongaro, W (1990): Modern maize technology, yield variations and efficiency differentials: A case of small farms in Western Kenya. *Eastern Africa Economic Review*, 6, 1, 11-29.

Oyaide, W.J. (1994): Productivity for self-relaince and excellence: The case of agriculture. Paper presented at the 9th Annual National Confernce of Farm Management Association of Nigeria. International Institute of Tropical Agriculture (11TA), Ibadan, 1st -4th Dec 1998.

World Bank, (1994): Agricultural extension: lesson from completed projects. *Operations Evaluation Department.* Washington, D.C.

Udofia, W. E. & Inyang, I.B (1987): Law and people of Cross Rivers, in: M.B. Abasiatta, (ed) *Akwa Ibom and Cross Rivers States: The land, the people and other culture*. Wusen Press Ltd. Calabar: 1-25.

ISSN 2278-7763

Umoh, G.S. and Adegeye, A.J. (2000). Optimal farm plan and risk in wetlands (Fadama) agriculture: The case study of inland valleys. *Nigerian Agricultural Development Studies.* 1, 1, 7-15.