The impact of Fadama III on the poverty status of food crop farmers in Yobe State, Nigeria

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This study examined the impact of National Fadama III Development Project on poverty status of participating food crop farmers in Yobe state, Nigeria. 200 respondents consisting of 100 Fadama III food crop farmers and 100 non-Fadama III were selected using Multi-stage random sampling technique. Data gathered were analyzed using descriptive statistics such as with mean, frequency distributions and inferentially with head count ratios on poverty indices and paired t-test. The result showed that poverty incidence was 0.517 for Fadama III farmers and 0.685 for non-Fadama III farmers. The poverty gap was 0.425 for Fadama III farmers and 0.516 for non-Fadama III farmers. The paired t-test indices showed that national Fadama III Programme impacted positively and significantly on farmer participant’s income and farm size at 5.0% level of significance. The study recommended making more land available to participating farmers and increased funding to venture into new areas of investments like product processing and packaging aimed at reduction of Fadama farming household poverty level.

Key words: Fadama, farmer, food, crop and poverty.

INTRODUCTION

Nigeria is considered to be the most populous country in Africa with a population of about 177.5 million inhabitants, which constitutes about half of West Africa's population (World Bank, 2014). Agriculture is the largest sector of the country's economy, accounting for about 42% of gross domestic product and providing employment to over 60% of the labor force and 90% in rural areas (First Securities Discount House, 2014). Notwithstanding, Nigeria still suffers from poverty and food insufficiency (Food and Agricultural Organization, 2014).

Rural poverty and under development have persisted, apparently because it has been difficult for Nigeria to dismantle all structures which have tended to prevent rural dwellers from complete realization of their full potentials. The greatest impediment to rural development and alleviation of rural poverty appears to be poor access to production resources, poor or absence of infrastructure and poor/lack of entrepreneurial and technical skills. Many government programmes and policies in Nigeria have focused on improving living standards of Nigerians but have found it difficult to stem growth of rural poverty especially among farmers (Okechukwu, 2015).

Fadama programme is one such programme that has today become a household name among farmers and state governments across the country. “Fadama” is a Hausa name for irrigable land-usually low-lying plains that overlay shallow aquifers that straddle Nigeria’s major river systems. Such lands are especially suitable for irrigated production and fishing, and traditionally provide feed and water for livestock. The enormous potential of this land is only partially developed (fadama.net. 2014).

The federal government of Nigeria through the pooled World Bank loan initiated the Fadama project, to finance the development of Fadama lands by introducing small scale irrigation in states with Fadama development potentials. Consequently, the Fadama III development project which is assisted by World Bank aimed at building the capacity and sustainably increase the income of all Fadama resources users was put in place. The project was intended to reduce rural poverty, increase food
security and contribute to the achievement of a key millennium development goal since the source of livelihood of majority of people in the rural areas primarily depends on farming. Therefore alleviating poverty in the rural areas entails boosting agricultural production in the State. The Improvement of the project development objective (PDO) of Fadama III was to increase the incomes of users of rural land and water resources on sustainable bases among others, with the view to ensure that yield of primary agricultural products of participating households would have increased by 20%; and average real income of participating users may have increased by at least 40% by 2013 (Oladunni, 2014).

The growth in income of farmers is strongly correlated with the overall growth of the economy especially in the agricultural sector. This fact has been demonstrated in cross country and individual country studies (Osondu et al., 2014). There is an indirect link between poverty status and poverty reduction among the farming households through the relationship between productivity, income growth and poverty (Okechukwu, 2015). Therefore, in order to reduce poverty, fundamental economic policies should aim at promoting rapid economic growth with implication for rural farmers increased production. An effective approach towards more comprehensive poverty reduction is to enhance economic growth especially at the rural (farm) level (Osondu et al., 2015). It is in the light of the above that this study was carried out to determine the impact of Fadama III on participating food crop farmers in Yobe State.

Objectives of the study

The main objective of the study is to determine the impact of Fadama III on the poverty status of food crop farmers in Yobe state, while the specific objectives are;

i.) to compare the poverty profile of the participants and non-participants of food crop farmers in Fadama III;

ii.) And to determine effects of Fadama III programme on participant’s farm income, output, farm size, labour and fertilizer use levels in the study area.

Theoretical framework

The theoretical framework of this study hinges on the Community Based Development (CBD) theory. Community participation in development projects has become an important element in the design and implementation of development projects. Participation of the community is in the form of Community Based Development (CBD) and is among the fastest growing mechanism for channeling development assistance. The aim of community participation in CBD projects is not only to reverse the existing power relations in a manner that creates agency and voice for the poor but also to allow the poor to have more control over development assistance. It is expected that this will result in the allocation of development funds in a manner that is more responsive to the needs of the poor, better targeting of poverty programs, more responsive government and better delivery of public goods and services, better maintained community assets, and a more informed and involved citizenry that is capable of undertaking self-initiated development activity (Marston et al., 2013).

NSP Afghanistan as a national priorities rural development programme efforts to work with community. Initially it has paid attention on the community mobilization concept to be used for enabling the community to solve their own problems and initiate their own projects. In terms of situation analysis an assessment of resources and identification of community needs must to be relevant to the problems that communities face in their residential areas. Communities need to be encouraged to participate in discussions regarding their local issues. Their discussion is important for consideration and identifying appropriate solutions against problems in its various complex aspects and perspectives. Certain leaders or coalitions of actors is most important to active and move the community mobilization process ahead. This role can be played by specific structure in the best way of function for community development and problem resolution.

MATERIALS AND METHODS

Study area

Yobe state is in the Northeast of Nigeria and was created in 1991 from the western half of Borno state. The state borders the Republic of Niger to the north and the Nigerian states of Borno to the east, Gombe to the southwest, Bauchi to the west, and Jigawa to the northwest. Yobe state consists of 17 Local Government Area and has a total land area of 45,502 km² with an estimated population of 2,757,000 by 2011. Sorghum, millet, peanuts (groundnuts), cowpeas, corn (maize), sesame, and cotton are the primary crops. Cattle herding and farming are the chief occupations.

Sample and sampling techniques

A multi-stage random technique was used to select the farmer. In the first stage, the study area was stratified into 10 cells. The second stage involved random selection of five cells out of the ten cells. The third stage involves random selection of two villages from each cell making a total of 10 villages. The last stage involved random selection of 10 farmers from each village making a total of 100 farmers. Finally, 100 non-participating farmers
were also randomly selected from the same villages where the Fadama III participating farmers were selected from to give a grand sample size of 200 farmers.

Data collection techniques

Primary data were collected with the aid of questionnaires which was administered by the researcher as well as trained enumerators of the Yobe state Fadama III project). The pre- test of the questionnaires and actual data collection was done in the dry season, that is, between October and December; and between January to June respectively. The data collected covered farmers’ socio economic and crop production variables.

Analytical technique

The data collected for this study were analyzed using descriptive statistics of means, frequency distribution tables, standard deviation, and head count on poverty indicators. Inferentially, paired t-test was used to compare changes in outcome measures. The estimates of poverty indicators among the two groups of farmers followed the models used by (Ogbonna and Nwaobiala, 2014; Osondu et al., 2015) as follows:

\[ H = \frac{q}{n} \] ………………..1

Where H = Head count ratio = Poverty incidence
q = number of poor farmers in each group (that is those living below poverty line)
Poverty line (Z) = Average household expenditure (Naira/household);
N = total number of rural farmers involved in each group;
Poverty line Z = (Y)
Where,
Z = poverty line measured in Naira (₦)
Y = mean per capita household expenditure measured in Naira (₦)

Given; Per capita expenditure= Total monthly household expenditure
Household size
Mean capita household expenditure = Total per capita household expenditure
Total number of households
Poverty depth was measured with poverty gap index (Q);
\[ Q = \left[ \frac{(Z - Y)}{Z} \right] \] ………………..(i)

Z = Poverty line
Y = Average income of the poor rural farmers in each group

The study employed use of paired treatment test (paired test) developed by William Sealy Gosset and was adopted in a similar study by Ogbonna and Nwaobiala (2014)

\[ t = \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}} \]

\[ n_1 + n_2 - 2 \] degrees of freedom

Where:
\[ t = \text{paired t statistic} \]
\[ X_1 = \text{Mean parameters of Fadama III farmers;} \]
\[ X_2 = \text{Mean parameters of non-Fadama III farmers;} \]
\[ S_1^2 = \text{Variance of parameters of Fadama III farmers;} \]
\[ S_2^2 = \text{Variance of parameters of non-Fadama III farmers;} \]
\[ n_1 = \text{Number of selected Fadama III farmers;} \]
\[ n_2 = \text{Number of selected non-Fadama III farmers.} \]

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

Age is an important factor that affects agricultural activities of individuals. The comparison of the age distribution of participants and non-participants is shown in Table 1. It shows that most of the participants (64%) fall within the age bracket of 30-50 years while most (70%) of non-participants fall within the age bracket of 30 - 50 years. There was no difference observed between the mean age of participants (42 years) and that of non-participants (42 years). This therefore shows that majority of the two groups are within their economically productive age (30 - 50 years). The finding affirms the claim of (Ike, 2012), who stated that, the farmers’ average of 30 years and 50 years are still within a productive and active working age range, hence their ability to participate or produce to earn some revenue in the Fadama project in the study area. Table 1 reveals that, majority of the respondents (58%) were male while 42% were female. This might not be unconnected with the fact that the selection of respondents for the study skewed towards male and that is because more male participated in Fadama III projects. This shows that, male generally show more interest in activities that entails community involvement The distribution of respondents according to years of experience in food crop farming showed that participants food crop farmers have a mean of 10 years of farming experience while non-participants’ food crop farmers have a mean of 11 years of farming experience. This finding implied that non-participating farmers were more experience in food crop farming as such could manage risk better than the participating farmers. The longer experience in food crop production by non-participating farmers may also imply better production efficiency. However, due to input supply and close supervision and monitoring by Fadama officials, the
Table 1. Socio-economic characteristics of the respondents.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fadama 111 farmers</th>
<th>Non Fadama III farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
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<tr>
<td>Age</td>
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<td>31-40</td>
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<td>58</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
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<td>Household size</td>
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<tr>
<td>1-10</td>
<td>43</td>
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<td>11-20</td>
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<tr>
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<td>Mean</td>
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<tr>
<td>1.1-2.0</td>
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</tr>
<tr>
<td>2.1-3.0</td>
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<td>5</td>
</tr>
<tr>
<td>Mean</td>
<td>1.04</td>
<td>.87</td>
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<td>48</td>
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<td>Primary</td>
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<tr>
<td>Secondary</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Tertiary</td>
<td>-</td>
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</table>


The influence of farming experience may not manifest in participants productivity. There is a similarity in household size distribution pattern of the respondents. Household with 1-10 persons constitutes the majority for both participant and non-participant categories with 43 (43%) and 42(42%) respectively. This is followed by household size with 11-20 persons with 36(36%) and 38(38%) for participants and non-participants respectively. The next range is 21-30 persons and has 21 (21%) of participants and 20 (20%) of non-participants. The similarity in distribution of this parameter result in having no significant difference in the mean household size of participants 9 and that of non-participants 10. This mean household size is in agreement with those of (Yakubu and Abbass, 2012; Osondu et al., 2015). This large household size of both groups suggested the polygamous nature of families in the study area. The result also implied the availability of family labour among both groups which sometimes can lead to over utilization of family labour input in production process. The importance of education towards boosting the efficiency and effectiveness of farming enterprise cannot be overemphasized. This is because it is what enables the farmers to be competitive, more efficient, more responsive to consumer demands and able to adopt new technologies easily. The participants categories were found to have 48% to be educated in Quaranic education, 33% and 19% had primary education and secondary education respectively. The result also revealed that the non-participants’ category also has 50% respondents with Quaranic education, 48% and 2% of the respondents has primary and secondary school education respectively. This result is in line with (Oladunni, 2014) who maintained that education is an essential element in all human endeavors. The educational level of a farmer helps him or her in making rational decision regarding efficient production method, sales of farm produce, inputs utilization, enterprise selection and even access to fadama project grant or fund.

The result shows that the mean sizes of farmland cultivated by participating and non-participating food crop farmers were 1.04ha and 0.87 ha respectively. This implies that most of the participating and non-
participating food crop farmers in the study area were small holder farmers who either inherited or accessed marginal parcels of land. This is in agreement with (Kainga, 2013) that farmers in Nigeria are mostly smallholders with average farm size of between 1 and 2 hectares.

Estimation of the poverty profiles of participating and non-participating Fadama III crop farmers in Yobe State

The poverty indicators of the participating and non-participating Fadama III food crop farmers in Yobe State are shown in Table 2. The table shows that the poverty line (mean monthly household expenditure) of the participating and non-participating Fadama III food crop farmers in Yobe State was ₦14629 and ₦10926 per month respectively. The incidence of poverty otherwise called head count ratio was 0.517 for Fadama III crop farmers in Yobe State and 0.685 for non-Fadama III crop farmers. This implies that 51.7% of the Fadama III crop farmers and 52.22% of non-Fadama III crop farmers were poor because their incomes fell short of the mean household expenditure or the poverty line. The coefficient of poverty depth (gap) also known as the income shortfall for participating and non-participating Fadama III food crop farmers was 0.425 and 0.516 respectively. This implies that the participating Fadama III food crop farmers in the State required 42.5% of the poverty line to get out of poverty. While non-participating Fadama III food crop farmers required 51.6% of the poverty line to get out of poverty.

Effects of NFDP III on farm output, farm income, farm size, labour and fertilizer use levels of participants and non-participants

Table 3 shows the paired t-test of difference in means of farm outputs, farm incomes, farm sizes, fertilizer use levels and labour use between Fadama III food crop farmers and non Fadama III food crop farmers in Yobe State, Nigeria. Table 3 shows that mean farm size of Fadama III farmers was 1.04 ha while that of the non-Fadama III farmers was 0.87 ha. This gave a mean difference of 1.14 ha that was statistically significant at 5.0% alpha level of probability. Participants used some of the provisions of Fadama project to acquire and/or expand their farmlands. This result agrees with the
findings of Adesiji et al. (2015). The mean monthly farm income of the Fadama III farmers was ₦14629 while that of the non-Fadama III farmers was ₦10,926 with a mean difference of ₦3703. This income difference was statistically significant at 5.0% alpha level of probability. By this finding, the null hypothesis of no difference in monthly farm income was rejected. Despite the fact that the mean difference of their monthly income was significant for the average farmer, all monthly incomes below N50,000.00 was classified low (Osondu et al., 2015). Since many of these farmers had low income they can rightly be classified as smallholders with low income earnings. The result compared favourably with (Oladunni and Aduba, 2014) who obtained similar results among Fadama and non Fadama participants in Kwara State respectively.

Conclusion

The poverty line and core poverty for participants were found to be higher than that of the non-participants, indicating that the participants had better standard of living when compare with non-participants, meaning the programme have positive impact on their consumption expenditure through increased in income accrued. Hence, more participants were non-poor than the non-participants. This suggests that, the resources, capacity building training and services provided on the use of farm inputs by Fadama III project have gone a long way in improving their standard of living and thereby brought them out of core poverty or moderately poor level of poverty to non-poor level. The basis of the poverty indices of the participants, the scope of subsequent phases and disbursement should be enlarged to accommodate more willing food crop farmers and ensuring that non-participants are incorporated.

Recommendation

Based on these findings, therefore, there is need for government and relevant stakeholders to provide this group of farmers with education. This could be through adult literacy programmes and extension education.

To sustain the observed gains amongst participating farm households, the study recommend that governments at all levels (Federal, State and Local Government) should allocate more land to Fadama Farmers to help boost agricultural output and reduce high level poverty amongst them. More farmers should be encouraged to join the Fadama groups (FUGs and FCAs) to enjoy the provisions of the programme and reduce poverty in their households.

Increased funding of agriculture through groups such as Fadama groups would truly empower farmers to venture into new areas of investments including product processing and packaging to add value and increase net returns.

There is also need for Fadama III participants to have access to credit, as financial assistance from Fadama project cannot meet their demand for inputs. The federal government should as a matter of deliberate policy initiated moves towards forcing state and local government through direct deduction from statutory allocation to pay counterparts fund for sustenance of the project.

Also, efforts should be overhauled in providing the farmers with adequate inputs. Besides, the facilitators of the programme (and of similar ones) should strengthen their efforts in giving the farmers practical training on pest and disease management as well as soil management.

Moreover, agencies responsible for releasing the fund for such programmes should always make it timely, especially to this group of farmers. This is not only due to their condition but also to the seasonal nature of crop farming.

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