ASSESSMENT OF THE EFFECT OF AGRICULTURAL PRODUCTIVITY ON RURAL HOUSEHOLD FOOD SECURITY IN KATCHA LOCAL GOVERNMENT AREA OF NIGER STATE

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ABSTRACT

The study examined the assessment of the effect of agricultural productivity in rural household food security in Katcha local government area of Niger state, Nigeria. The specific objectives were to examine the socioeconomic characteristics of rural household, examine the effect of socio-economic variables on household food security status of the respondents and to identify the constraints affecting agricultural output andfood security. Descriptive statistics and multiple regression analysis were used. A survey conducted using 108 randomly selected respondents revealed that about 54.9% of the respondents have an average household size and about 77.8% of the respondents spends 60% of their total income on purchasing food items for their household and about 58.3% of the respondents use their personal farm produce both for household consumption and sales up to 56.4% of the respondents indicated that they are in dire need of more food. 42.7% of the .total variation in food security index was explained by the regression model while the remaining 57.3% of the variation was accounted for by the exogenous factors. Major problems faced by the rural household include inadequate capital, lack of good road network, marketing offhrm produce and insufficient or excessive rainfall. Social infrastructures should be provided and fanners should be given concession in disbursement of loans from financial institutions.

INTRODUCTION

Agriculture constitutes a significant sector of Nigeria's economy. The sector is significant in terms of employment of labour, contribution to Gross Domestic Product (GDP) and until early 1970; agricultural exports were the main sources of foreign exchange earnings (Amaza and Olayemi, 2002). During the 1960s, the growth of the Nigeria economy was derived mainly from the agricultural sector. However, in more recent years, there has been a marked deterioration in the performance of Nigeria's agriculture. The contribution of agriculture to the GDP which stood an average of 56% in 1960-1964 declined to 47% in 1965, 1969 and more rapidly to 32% in 1996- 1998 (Amaza and Olayemi, 2002). The agricultural sector's changing share of GDP is partly a reflection of the relative productivity of the sector.

The Federal ministry of Agriculture (1993) estimated that the annual supply of food crops would have to increase at an average annual rate of 5.9% to meet food demand, and reduced food importation significantly. Studies have shown that aggregate productivity in Nigeria has been growing at about 2.5% per annum in recent years (Olayemi, 1998; Akinbile, 2002; Amaza and Olayemi, 2002). But the annual rate of population growth has been high (about 3%) (Akinbola, 2002). The reality is that Nigeria has not been able to attain self sufficiency in productivity despite increasing hectares put into production annually (CBN, 2000). The constraint to the rapid growth of food production seems to be mainly that of low crop yields and resource producti vity. The low agricultural productivity in Nigeria is revealed by the actual yields of major crops such as rice compared with potential yields (Federal Ministry ci Agriculture, 1993).

There is a general agreement that poverty is wide spread and prevalent in developing countries. Many studies have also confirmed that the rate of poverty in the rural areas is higher than in urban areas (Janvry and Sadoulet, 2001; Deinnger and Olintct 2001; ES colal, 2001). What is still a subject of debate however is the best strategy for reducing rural poverty (Lanjouw, 2001). Several poverty reduction strategies have been suggested and used in different contexts. In Africa, the focus of poverty reduction strategies has been on agricultural grou± as the pathway out of extreme poverty. Howevez.. unlike in many Asians and Latin Americz countries, where agriculture led growth played important role reducing poverty and transformi% the economics, the same is yet to occurr in Afri:z But, now it has been discovered that peasaz households in developing countries typically err income from many different sources (Dercon and Krishnan, 1996; Block and Webb, 20011 Furthermore higher productivity in agriculture will indirectly lead to social improvements. Hig±e incomes will enable either the use of hired laS:z or labour saving technologies in place of the lat« of school — age children in farming househoix thereby contributing directly to achieving univer•• primary education. The linkages bet%.ea. agriculture and child mortality are also strong, with agricultural productivity and diversificox assuring food and

nutrition security, there•scontributing to reducing child mortality (Gopiza and Roe, 1997).

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Food security exists when "all people at all times have access to safe nutritious food to maintain a healthy and active life" (FAO, 1996). The main goal of food security is for individuals to be able to obtain adequate food needed at all times, and to be able to utilise the food to meet the body's needs. Food security is multifaceted (Obamiro et al., 2003). Food availability for the farm household means ensuring sufficient food is available for them through own production. However, due to lack of adequate storage facilities and pressing needs, they mostly end up selling excess produce during the harvesting period, and sometimes rely on market purchases during the hungry season (Obamiro et al., 2003).

In Nigeria, one of the major factors responsible for declining agricultural productivity is farmers' limited access to production inputs which are necessary for attaining a high level of production. Poor productivity in agriculture leads to low income of the farmers and a decline in household food security. In Nigeria, population growth has outstripped agricultural output growth thus the issue of food security is of high importance to the nation. Some other factors that contribute to the diminishing of agricultural productivity is poor soil fertility influence of weather, pest and diseases, are to be controlled before high productivity can be attained. Problem of poor productivity in agriculture can lead to low income of the farmers and household. This study intends to provide answer to the following research questions:What are the socio-economic characteristics of rural household in the study area? .

What are the effects of socio-economic variables on household food security status of the respondents?

(iii) What are the constraints affecting agricultural output and food security of farmers in the study area?

The broad objective of this study is to assess the effect of Agricultural productivity in rural household food security in Katcha local government area of Niger State. The specific objectives of the study were to:

examine the socio-economic characteristic of rural household in the study area. examine the effects of socio-economic variables on household food security status of the respondents.

identify the constraints affecting agricultural output and food security of farmers in the study area.

This research result would provide ways in =reasing agricultural productivity and improving nome generated by rural farmers, which will ikely improve their standard of living and reducing poverty rate faced by rural people. Efforts have been made by the research institutes and Extension organizations to improve the income generated by rural farmers and improve the nutritional status of the rural household. Research institutes have greatly increases the yields of important staple food crops. For many people this has meant more food availability and trade opportunities especially for people living in rural areas to increase the productivity and income. It is hoped that the study will assist the government and policy makers to improve productivity in future.

METHODOLOGY

Niger State is located within latitudes 8^0, 12 ^{O}N — 11 ^{0}, 30 ^{O}N and longitudes 3^0,30^0E - 7^0,20E. The State is bordered to the North by Zamfara State, North west, by Kebbi State, South by Kogi State, South west by Kwara State; while Kaduna State and the Federal Capital Territory bordered the State North East and South East respectively.

Furthermore, the State has over a total land area of 76,000/q/km or about 9% of Nigeria's total land area. This makes the State the largest in the country. Niger State has twenty-five Local Government Areas. Katcha Local Government is characterized by two seasons. The dry and wet seasons. The annual rainfall varies from about 1,200mm — 1,500mm, the raining season is usually between June and October, the region has a mean temperature of about 23%, the Soil type is Alfisol and the major crops grown in the area are:Sorghum, Rice Sugarcane, Maize, Groundnut, Cowpea, Millet, Melon and Cassava.

The purposive sampling technique was used to choose Katcha Local Government area because the people are practically farmers in the area. A systematic random sampling technique was use to select the farmers among the selected villages. The Local Government Area is divided into two districts and under these districts are Wards and villages. The districts are Katcha and Badeggi, from each district Six (6) villages were randomly sampled, which bring the total number of villages to twelve (12). The villages sampled from Katcha district were. Tsaduko Nanagia, Twaki, Boro, Emi Tsowa, and Muchita. While those sampled from Badeggi were Gara, Edotsu, Kangi, Gbakogi gugata, kangimaba and Gbakogi Kotamisu. From each of the sampled villages ten farmers was be randomly selected, which bring the total sample size to 120 farmers.

Primary data was used for the study. The primary data was obtained by the use of structured questionnaires. Information collected include: (A) Socio economic characteristics of sample respondents such as: age education level, sex. Marital status,

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household size etc. (B) Consumption pattern and household expenditure such as:-total household assets and amount of food consumed in a period (C) production variable such as output of crop, labour input, capital inputs etc.

The socio-economic characteristics of farmers include age of the farmers, their farm size, educational attainment, household size, farming experience. The age of the farmer was measured by asking the farmers what their age was and their level of education the farmer had their household size that is the number of people that depends on them for livelihood. The farm sizes of the farmers were based on the hectares and the farming experience they had.

The following analytical techniques were used to achieve objectives stated:- Descriptive statistics and multiple regression Analysis.

This involves the use of mean, frequency distribution and percentages. The percentage was used to determine the proportion of respondents to a response.

$$\text{I.e percentage} = \frac{\text{Number of respondent} \times 100}{\text{Total number of respondent}}$$

This is used to achieve objective 1, and 3.

This was used to determine the extent to which the inputs used explained the variability in the output. To estimate the production function, the linear, semi-log and the Cobb-Douglas regression function were employed. The best regression fit is determine by a combination of R^2, the level of significant of the overall equation (F- statistic) the level of significance of each coefficient (T- statistics) and the correct signs of the coefficient relative to a prior expectation (Olayemi and Olayide, 1981).
The model in general form is:-

Where. Food Security (index)
X^1 = Age (years) X^2 = Educational Level x^3 = output (N) X^5 = Household Size et = Error term
Explicitly, these functions take the following forms:b4 +X^4 + b5+X^5 + et (Linear).
Logy = a + bl+ x^1 + b2+ X^2 + b3 + X^3 + b4 ++ b5 + X^5 + et (Semi - log).
Logy = a + b I + x^1 + b2 + X^2 + b3 + b4 + X + b5 + X^5 + et (Double - log)
This was used to achieve objective two (2)

RESULTS AND DISCUSSION

Table l: Distribution of respondents by Socio economic characteristics

Characteristic	Frequency	Percentage
Gender	84	
Male	24	
Female	108	
Total		
Marital Status		
Married	102	
Single	6	
Total	108	
Age Distribution		
Less Than Or Equal To 20	2	
21-30	24	
31-40	43	
41-50 23 51-609		
Above 61	7	
Total	108	
Educational Level		
Primary Education	29	
Secondary Education	39	
Tertiary Education	1	
No Formal Education	6	
Arabic Education	33	
Total	108	
Household Size		
40188	22	
40502	56	
21-30 21 31 And Above	3	
Total	108	
Occupational Distribution		
Farming Only	89	
Trading	2	
Civil Servant	11	
Student	6	
Total	8	
Years Of Farming Experience		
40188	27	
40502	42	21
And Above	39	

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Total 108

Source-: Field Survey, 2009

Results from Tablel reveal that 77.78% of o respondents were male while 22.22% of respondents were females. This implies that in household production patterns man play a critical role in food security through farm labor, food preparation and day to day family subsistent. 94.44% of the respondents were matTied. Also 5.56% of respondents were single. There were no cases of divorced or widowed in the study area. The implication of this is that family labour would be the bulk source of labour for farming activities.

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Respondents whose ages range is between 31-40 .56 years accounted for 39.81% of the rural farming household whereas between 41-50 years accounted for 21-30%. Rahman et al (2002) believed that farmers' age may influence adoption in several l.ss ways. The active group here is between the age of 31-40 years which indicates that able bodied men were the active labour force engaged in food 9_Sl production activity. Results in Table 1 show the 213 distribution of the rural farming household according to their level of education. 36.11% of the s-33 respondents had secondary education. 30.54% with 6.49 Arabic education while 26.85% with primary education. Njoku (1991) observed that formal education has a positive impact on food security. This implies that education fastens understanding 20.5 and adoption of improved technology which will rapidly increase food production. About 54.90% of 3€11 the respondents have an household size of 11-20. This implies tlpat family labour is a vital source for arming operation and that most of the farmers have a large family size. This is according to Oyekanmi, 2004). Farmers in the rural areas are ominantly large families.

ults revealed that in almost all the rural areas in Nigeria, people engaged in different economic =tivities to earn a living. 82.41% of the respondents take farming as their primary

10.18% of sampled farmers are in civil service with farming. This corroborates the finding cf Olayemi (1998) that rural areas are the food asket of the nation.

r151e I revealed that 38.89% respondents had *ming experience between 11-20 years. About of sample farmers had more than 21 years. Its average (mean) year of experience is about 36 which implies that respondents had acquired ar:duction skills.

2: Distribution of income generated by esondents.

.b:ome (N) per month	Frequency	Percentage
and below	15	13.89
- 15000	47	43.52
- 25000	16	14.81
and above	30	27.78
Total	108	100.00

Source-: Field Survey, 2009

Table 3: Percentage of income expended on household feeding % of income on Frequency Percentage Household feeding

29% and below	04	3.70
30% - 59%	84	77.78
60% and above	20	18.52
Total	108	100.00

Source-: Field Survey, 2009

From Table 2: about 43.52% of the respondents generate between 6000 — 15000 in a month while 27.78% of the respondents generate 26000 and above. This implies that average real incomes of rural farmers are likely to rise as a result of increases in productivity. The results indicate future prospect in productivity. As can be seen from Table 3, 77.78% of the respondents spent between 30 59% of their total income in purchasing food items for the household, thereby contributing their quarter to household food security.

Table 4: Farm size (in Hectares) of respondents

Size of farmland	Frequency	Percentage
1 -5	68	62.96
6-9	40	37.04
Total	108	100.00

Mode of land acquisition by respondents

Sources	Frequency	Percentage
Inheritance	91	84.26
Lease		
Purchase	02	1.84
Borrowing	15	13.89
Total	108	100.00

Types of labour used by respondents

Types of labour	Frequency	Percentage	Types of labour	Frequency	Percentage
Family labour	63	58.33	Hired labour	19	17.59
Family labour	18	16.67	Communal labour	08	7.41
Total	108	100.00			

Sources of initial capital by respondents.

Sources of capital	Frequency	Percentage

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Personal saving 86 79.63 Loan from family 12 11.11 friends
Loan from 10 9.26 cooperative

Credit from bank		
Total	108	100.00

Purpose of growing crops by respondents

Uses of crops	Frequency	Percentage
Market/sale	15	13.89
Household consumption/sale	63	58.33
Mainly for household consumption	30	27.78
Total	108	100.00

Purpose of rearing livestock by respondents.

Purpose of rearing	Frequency	Percentage
Livestock For sale	17	15.74
For festivals/sales	76	70.37
Household consumption	15	13.89
Total	108	100.00

Household food requirement by respondents

Need for more food	Frequency	Percentage
Yes	61	56.48
No	47	43.52
Total	108	1 oo.oo

Source-: Field Survey, 2009

Table 4 indicated that 62.96% of the sampled respondents had less than five (5) hectares of land.

Furthermore, 37.04% of sampled respondents had 6-9 hectares of land. This result implies that very few proportions of the respondents are ready to to capital in farming may explain the tendency to improve in productivity.

About 58.33% of the respondents use their personal farm produce for household consumption and for sales to generate some income. While about 27.78% of the respondents use their personal farm produce mainly for household consumption.

Majority (70.37%) of the respondents reared livestock mainly for the purpose of festivities and for sales to generate some income. 56.48% of the household in the study area are in dear need of more food at the family levels, this points to the fact that many household are experiencing food crises.

Table 5: MULTIPLE REGRESSION ANALYSIS

Variable	Double 10
Constant	0.296
	(0.159) N.S
A e (Years) (Xl)	0.248
	(0.482) N.S
Educational level	-0.457
Out ut (N) (X3)	0.164
	(1.413) N.S
Farm size (ha) (X4)	0.447
	(2.704)
Household size (X5)	-1.102
Rs uare	0.427
R^2 ad •usted	0.399
F-ratio	15.231 ***

Source-: Computed from field survey data, 20.•

Note: *** Significant at 1%

** Significant at 5%

* Significant at 10%

N.S- Not Significant

Figures in parenthesis are the respective t-ratj&

expand their farm size while majority of the respondents continually practice the traditional small scale of production.

Land is a major factor of production 84.26% of the sampled respondents acquired land by inheritance while 13.89% by borrowing. The implication is that for agriculture to be fully mechanized and commercialized method of land acquisition has to be liberalized.

58.33% of respondents used family labour, Also 17.59% of respondents used hired labour. The implication is that family labour is commonly used on small farms generating incomes for farmers whose spending is predominantly on locally produced goods.

Table 4 Indicated that 79.63% of respondents acquired their capital for production through personnel saving, 11.11% of respondents acquired capital through loans from family and friends. Rahman et al.,(2003) indicated that access

The regression analysis that was determine the socio —economic relationship i' security as shown in the Table 17 the Dou* regression was chosen as the lead equatioa value of coefficient of determination, R^2 ir.±:::— that about 42.7% of the variation in de;e— variable was explained by the indge— variables included in the regression model regression coefficient Age (X l), Output (XE size (X4), are positive indicating that an inca=a any of these independent variable will increase in food security index implying variables significantly explained variation food security index. Conversely the coefficient level of education (X2), and Household size (X5) are negatively I'Sx::. that an increase in any of these variable will lead to a decrease in focd index. Educational level (X2) are significar farm size (X4), Household size (X5) and F-

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were significant at 1%, level of probability. According to Damodar, (1995) the fundamental psychological law is that men are disposed, as a rule and on average to increase their consumption as their income increase, but not as much as the increase in their income.

PROBLEMS/ CONSTRAINTS ENCOUNTERED BY RESPONDENTS Table 6: Production problems encountered by respondents

Production roblems	Fre uenc	Percenta e
Inadequate capital ut	100	52.08
Marketing of farm •roduce	64	33.33
Lack of road network	08	4.17
Hsufficient/excessive zinfall	20	10.42
Total	192*	100.00

Source-: Field Survey, 2009
*Multiple Responses

Tahle 7: Storage problems encountered by ndents

Scora oe roblems	Fre uenc	Percenta e
insect/ est attack	95	87.96
D•seases	09	8.33
	04	3.70
	108	100.00

%urce-: Field Survey, 2009

IÉle 6 reveal that inadequate capital input is the 'Zest problem encountered by the rural farming •ti.h 52.08% while marketing of their produce is 33.33% followed by insufficient or z:zssive rainfall and finally lack of good road r-•ork. All these affect their household living. problems can drastically reduce the impact i agricultural development.

show that 87.96% of respondents had of insect/pest infestation in storage; of respondents had problems of diseases cz:k on their production, while 3.70% of —cndents had problems of theft.

USIONAND RECOMMENDATIONS

on the findings of study, assessment of the of agricultural productivity in rural •e.sehold food security, the study identified some •saints which it overcome would ameliorate IZ.±ions of the people, improve the general —z±rd of the rural dwellers and Boast .xzltural productivity.

on the findings, the following •anmendations are made-:

Greet-nment should provide good road network for ition of agricultural produce of these household, Stakeholders at various levels should embark on investing in social infrastructures development of the rural area, Government should impact the ideas and knowledge about cooperatives societies in their various groups (Awareness), Government should provide credit facilities (loan) to the farmers .through agricultural banks, There should be a deliberate effort in enhancing rural activities in the study area, this can be achieved by posting extension workers to the area to help rural household in their activities and Extension agents should be adequately trained and equipped to help the farmers imbibe the culture of sound agronomic practices that would ensure increased productivity in the study area.

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