AGRICULTURAL INTENSIFICATION AND POVERTY IN OYO STATE

Yusuf Sulaiman. A; Odutuyo Omobolaji E. and Ashagidigbi Waheed .M

[1,2,3] Department of Agricultural Economics University of Ibadan, Nigeria
ashagidigbi2000@yahoo.co.uk. +2348062328579.

ABSTRACT: The study examined the linkage between agricultural intensification and poverty in Ido local government of Oyo state. Structured questionnaire was used to collect data from 100 respondents on socio-economic characteristics, land use intensity and expenditure pattern of rural farming households. The data collected were analyzed using descriptive statistics, Probit and Tobit regression models. Most of the farmers cultivate less than 2 hectares and 86.1percent has intensity index of 0.71-1.0. Mean intensity index of 0.83 shows that continuous cropping with little fallow period is prevalent in the study area. Farm experience, marital status, farm size, household size and gender are factors influencing land use intensity. On the other hand, farm size, farm experience and household size are determinants of poverty status of farmers in the study area. However, land use intensity was found to be positively related to probability of farmers being poor.
[Yusuf Sulaiman.A; Odutuyo Omobolaji E. and Ashagidigbi Waheed. M. Agricultural Intensification and Poverty in Oyo State. World Rural Observations 2011;3(4):98-106]. ISSN: 1944-6543 (print); ISSN: 1944-6551 (online).
http://www.sciencepub.net/rural.

Key words: Agricultural Intensification, Land use intensity, poverty, tobit regression

Introduction

Background to the study

Nigeria is blessed with a large land area of about 92.4 million hectares with 91 million hectares of this land being suitable for agricultural cultivation. Approximately, half of this cultivated land is used under permanent and arable crops while the rest is covered by forest, woodland, permanent pasture and built up area (Onaolapo, 2006).

In Nigeria, agricultural land areas are fertile which make agriculture easy to practice with a good weather condition to enhance crop growth. The best and fastest way a country can grow economically is through the agricultural sector but currently; barely 40% of the arable land in the country is under cultivation (Soludo, 2006). However, small-scale farmers who largely depend on traditional methods of farming and are constrained by access to land available for farming dominate the Nigerian agricultural system. The traditional practice being unable to meet the increasing demand for food as induced by demographic pressures and rising demand for agricultural produce led to agricultural land intensification-a new practice in agriculture, involving change in land use and land use pattern.

Land use intensity refers to any practice (system of land use) that increases productivity per unit land area. It is also viewed as any practice that raises the cost of labour or capital inputs per unit land (Dixon et al. 2001). Agricultural intensification can lead to production and income increase, which improved the economic conditions of the farmers. The processes associated with agricultural intensification include an increased (per fixed unit of land) frequency of cultivation, an increase in labour inputs, or a change in technologies. Evidence of the increased use of natural or artificial fertilizer, improved seeds, animal traction, mechanization, multicropping, or series/relay-cropping and changes to the landscape such as irrigation, or soil conservation measure would suggest that intensification is occurring (Carswell, 1997).

However, with rate of erosion, loss in soil fertility, cost of input and workloads on the land following an increasing trend, the long run effects may lead to reduced soil fertility, environmental pollution, loss of productivity, land degradation and decline opportunity cost. These ultimately lead to a decline in the standard of living of farmers. This scenario paints a picture of the complex interactions existing between land use, environmental degradation and household welfare; as was stressed by Muller (2004) that land use and land cover changes are common where strong links exist between rapid environmental degradation and high poverty incidence. In view of this, serious concern is now expressed about the effect of land use and resource degradation on the livelihood of rural dwellers, particularly those in previously degraded agricultural areas.

In order to forestall the impending consequences of unsustainable use of the natural resource base, this study investigates the effect of land use intensity (a major component of agricultural intensification) as it affects poverty status of farming households.

Problem Statement:

Poverty in Nigeria is multifaceted, pervasive and chronic. It is basically a rural phenomenon. It lowers the ability to forego immediate consumption and stimulates rapid resource extraction to meet present income and consumption needs (Fajingbesi et al, 2003). Although environmental problem facing the country is partly due to climatic changes and natural factors such as erosion and drought, the major factor is due to poverty-driven human activity. Conditions of high poverty are believed to induce the poor to use their resources in an unsustainable way, both due to inability to invest on decent land use practices as well as myopic survival strategies that could have detrimental effects on the natural resource base (land). The decline in these resources in turn deepens their poverty, making the poor both agents and victims of environmental degradation (Dasgupta and Maler, 1994). The implication of such a vicious cycle relationship between poverty and environment is that policies that improve the environment will reduce poverty and reducing poverty will have a positive impact on the land.

Objectives of the study

The main objective of this study is to examine the relationship between agricultural intensification and poverty status of rural farm households in Ido Local Government Area of Oyo State. The specific objectives of the study are:

- To profile land use intensity by socio-economic characteristics of farmers.
- To determine the factors affecting land-use intensity among farming households.
- To assess the effect of land-use intensity, on poverty status of rural dwellers.

Justification of the study

Poverty is a relevant contemporary issue because it affects the people and consequently the agricultural sector. For Nigerian agriculture to attain a break-through there must be a big push applied in short time span to ensure its effectiveness (Soludo, 2006).

Various policies and programmes that provide a range of direct and indirect incentives to farmers to encourage them to adopt new technologies for sustainable land use practices have been pursued in the past and still in practice. Such programmes are Operation Feed the Nation (OFN) in 1976, the Green Revolution Programme in 1980, the National Fadama Project (NFP) in 1992, the National Special Programme for Food Security (SPFS) in 2006 etc. and such policies like the Land use policy, Agricultural Research policy, National Fertilizer policy of 2006 etc (CBN, 2006).

World leaders and stakeholders have devoted substantial resources, both human and material, to poverty reduction especially in less developed countries making it the first priority in the millennium development goals. Government of Nigeria at all tiers, overtime, has devoted significant resource to the issues of poverty reduction, either directly or indirectly, with minimum progress. There is emerging consensus that increasing agricultural production to achieve food security, higher income and sustainable economic growth while preserving the natural resource base remains the central challenge of poverty in African development (Falusi, 2008).

The poor in the rural areas rely heavily on their environment for most of their needs and are affected by the deterioration in the quality and quantity of these resources. Poverty influences farmers` ability and willingness to control land degradation and land degradation leads to lower agricultural productivity and therefore, increase poverty (Barbier, 1998). This relationship between agricultural growth through intensification, poverty alleviation and sustainable land management is, however, complex and a subject of much controversy. The links between these issues are conditioned by various factors including demographic, economic, institutional, and policy conditions. It is, thus, essential to find policies, technologies and institutions that reduce land degradation and poverty at the same time.

Land though fixed in nature, cultivable land is however not fixed owing to irrigation, drainage and land reclamation measures as well as erosion, landslides and cultural practices. With the rising population pressure in the southwestern part of the country, there is need for increase in food production and sustainable use of resource to meet up with this demand. There is much pressure on the land as population increases due to migration and resettlement. Land therefore, must be used in an expansionary form (increasing the supply of cultivable land) rather than using it in a contractible form (reducing the supply of cultivable land). This is necessary by considering the present and future effects of land-use pattern and their likely environmental consequences as it affects the populace.

This can be applied only when the relationship between farmer's welfare and land-use pattern can be established and communicated to agents of land use change.

This study therefore aims at determining the factors influencing the intensity of land use and the resultant effects on poverty status of farming households in Ido Local Government area of Oyo state. A good knowledge and understanding of such relationship should assist decision makers at the local and state levels in the formation of policies that will

ensure efficient agricultural land use practices that will be environmentally friendly, enhance agricultural productivity and reduce poverty status of farmers.

Conceptual Framework

Poverty, Agricultural Intensification and Land Degradation

Poverty is a state of lack. It is the deprivation of the basic human needs required for human survival. The basic needs include food, clothing, shelter, education, good health facilities and information (Omonona, 2008). Agricultural intensification according to Dixon et al. 2001 is an increase in the productivity of existing land and water resources in the production of food and cash crops, livestock, forestry, and aquaculture. Land degradation is defined as loss of fertility or potential utility or the reduction, loss or change of features or organisms, which cannot be replaced.

Poverty is cited as a major factor behind land degradation in many developing countries. This is because the rural poor in many developing countries depend heavily on their natural resources and lack access to alternative sources of income. Moreover poor households are usually marginalized to less fertile and steeper slopes, which are prone to high risks of soil erosion and could not be cultivated sustainably without the use of appropriate conservation measure. However, these farmers do not have the resources to undertake investments that enhance long-term productivity of their land (Barbier and Bishop, 1995). Poor households are also thought to have short time horizon due to lack of ability to forgo present consumption to maintain the quality of their land and ensure future consumption (Prakash 1997).

Poverty is also believed to affect natural resources especially land through the indirect effects on levels of education, population growth, and off-farm employment (Dasgupta, 1992). Poor households, for example, usually have higher family sizes because they live at a subsistence level and may consider children as an investment for their old age. They also have little or no access to education and, therefore, no access to information about birth control methods. Poverty, therefore, accelerates population growth among the rural poor and thereby the pressure on land.

The links between poverty, agricultural intensification and the environment are, however very complex and are conditioned by many factors (Ekobom and Bojo, 1999; Lee et al., 2000). Reardon and Vosti (1995) maintain that the links between poverty and land degradation were not systematically explored. They introduce the concept of "investment poverty" and show that the links between poverty and land degradation are determined by the type of assets held by the rural poor and the type of environmental degradation they face. According to this theory, for example, "welfare-poor" household may not be necessarily "investment – poor" if they own abundant labour to build stone bunds from locally available materials but will still be "investment-poor" if the materials needed for stone bunds must be transported from afar and if this involves cash expenditures. Thus whether poor people in a given locality will adopt a given natural resource management technology depends on the type of poverty they suffer (lack of labour, capital etc) as well as the type of technology in question.

Methodology

Ido Local Government was created during the second republic on May 29, 1989 with its headquarters at Ido. It shares boundaries with Oluyole Local Government, Ibarapa East Local Government, Akinyele Local Government, Ibadan North West Local Government, Ibadan South West Local Government, Ibadan North Local Government areas of Oyo State and Odeda Local Government in Ogun state.

It covers an area of about 8,000 square kilometers and lies between latitude $6^0 45^1$ and $9^0 45^1$ north of the equator and longitude $2^o 30^1$ and $9^o 45^1$ East of Greenwich Meridian.

Like most cities in Southern Nigeria, Ido is characterized by two distinct seasons: the dry and the rainy season. Ido enjoy abundant rainfall of over 1800mm annually and the southwesterly winds blow most of the year.

The people are predominantly Yoruba and the area is blessed with fertile land. The main occupation of the people is farming mainly food and cash crops such as cassava, maize, yam, vegetable and cocoa, oilpalm and kolanut. The people also engaged in animal husbandary. The non-farming activities vary from trading, food processing, metal crafting, and vocational jobs to civil service. There are also some industries located within the Local Government Area. These include Nigerian National Petroleum Corporation (NNPC), Nigeria Wire and Cable, Nigeria Mining Corporation etc.

Data Collection and Sampling Procedure

The study made use of Primary data, which were collected with the aid of well structured questionnaires designed for collecting information on the socio-economic characteristics of the farm households such as: age, farm size, educational background, marital status, household size of farmers etc. Information on farmer's expenditure and land use was also obtained.

Multistage simple random sampling procedure was used for the study. The first stage involves the random selection of 4 out of the 10 principal wards in

Ido Local Government Area, which are: This is followed by selection of a village each from the four wards, namely: (second stage). Lastly, the third stage involves the random selection of 25 farming households from each selected village, giving a total of 100 respondents in all.

Method of Data Analysis

Descriptive statistics such as percentages, frequency, mean, median, mode and standard deviation were used to describe the socio-economic characteristics of the farmers.

Land use intensity model adopted by Ruthenberg's (1980) was used in determining the Land used intensity of the farmers in the study area. It is stated as:

$$R = \frac{C}{L} \times \frac{100}{1}$$

Where R = Land use intensity

C = Cropping years on land

L = length of cycle of land cultivation (i.e. cropping year plus fallowing years)

However, Tobit regression model was used to determine the factors influencing land use intensity, which is stated as:

$$R_1 = Xi\ \beta i + ei$$

Where R_1=Land use intensity

Xi=Vector of explanatory variables

β =Vector of unknown coefficients

ei=Independently distributed error term

i =number of households = 1, 2, 3….100

The Tobit model was estimated with the assumption that R, the land use intensity is related to the following independent variables explicitly stated as:

$$Ri = f(X_1, X_2, X_3, X_4, X_5, X_6, X7)$$

Where

X_1 = Sex of farmer (1 for male, 0 otherwise)

X_2 = Marital status of the farmer (1 for married, 0 otherwise)

X_3 = Educational status of the farmer

X_4 = Farm size (hectares)

X_5 = Farming Experience (years)

X_6 = Household size of the farmer

X_7 = Access to credit (1 for access, 0 otherwise)

With respect to the apriori expectation of the signs of the coefficients, marital status and household size are expected to be positively correlated to land use intensity while gender, educational status of the farmer, access to credit facilities, farm experience and marital status are expected to be negatively correlated with land use intensity.

However, in determining the poverty status of farming households, Foster, Greer and Thorbeck (1984) was adopted, and this is stated as:

Mean per capita Household Expenditure = Total per capita household expenditure

Total number of households

From this mean per capita household expenditure, two line sets relative to the standard of living were established for the respondents viz:

- The moderate poverty line equivalent to two-thirds of the mean per capita household expenditure
- A core poverty line equivalent to one – third of the mean per capita household expenditure.

Households were therefore categorized into 3 poverty classes namely: Core Poor, moderately Poor and non-Poor households. Any household whose expenditure falls below the upper poverty line (two thirds mean per capita household expenditure) is regarded as being poor while those above it are regarded as non-poor.

Lastly probit regression analysis was used to determine the influence of land use intensity coupled with other socioeconomic variables on poverty status of the farming households in the study area. This analysis ensures that the estimated probabilities are in the 0 – 1 range and are non – linearly related to the explanatory variables.

By introducing a dummy variable, representing the poverty status of each household, the probability of a household being poor was captured as.

$$Zi\ (1 \text{ or } 0) = \beta Xi$$

Zi=Poverty status (1=poor household, 0 otherwise)

βi =Coefficients of explanatory variables.

Where X1 – X6 are specified as above

X_1 = Sex of farmer (1 for male, 0 otherwise)

X_2 = Educational status of the farmer

X_3 = Farm size (hectares)

X_4 = Farm experience (years)

X_5 = Household size of the farmer

X_6 = Access to credit (1 for access, 0 otherwise)

X7 = Land use intensity

With respect to the apriori expectation of the signs of the coefficients, gender, education farm experience, farm size and access to credit are expected to be inversely related to poverty, while household size and land use intensity are expected to have a direct link topoverty.

RESULTS AND DISCUSSION

As shown in Table 1, farmers between the ages of 31-40 years had the highest percentage of 37.6

with Mean Land Use Intensity (MLUI) of 0.79. However, farmers within the age range of less or equal to20 years had the highest land use intensity of 1.0. This might be due to the acquisition of small parcel of farmland by this group due to their age. The mean age of the farmers is 34.57 years indicating that most of the farmers interviewed are in their active age. The grouping of the respondents by sex supports the evidence that farming is a male dominated activity, with male constituting 76.2 % of the total population. The MLUI of male and female farmers is 0.81 and 0.89 respectively.

Table 1. Socio-economic Characteristics of the Farming Household Heads

Socioeconomic characteristics	**Percent**	**Mean Land intensity index**
Age (Years) **Less than or equal to 20**	7.9	1.0
21-30	23.8	0.87
31-40	37.6	0.79
41-50	19.8	0.77
51 and above	10.9	0.85
Sex		
Male	76.2	0.81
Female	23.8	0.89
Marital Status		
Married	88.1	0.81
Widowed	3.9	0.93
Single	8	0.95
Total	100.0	-
Educational Status		
None	23.8	0.79
Primary	30.7	0.82
Secondary	44.6	0.89
NCE	1.0	1.0
Total	100.0	-
Years of Farming Experience		
1 – 10 years	39.6	0.92
11 – 20 years	37.6	0.82
21 – 30 years	22.8	0.73
Total	100.0	-
Household Size		
1 –3	21.8	0.80
4 – 6	28.7	0.81
7 – 9	40.6	0.84
10 and above	8.9	0.84
Total	100.0	-
Farm Size (ha)		
Less than 2	56.4	0.89
2 – 4	26.7	0.76
Greater than 4	16.9	0.73
Total	100.0	-
Access to Credit	Percent	Mean intensity index
No	51.5	0.79
Yes	48.5	0.85

Also, most of the respondents (88.1%) are married and also had the least Mean Land Use Intensity Index (MLUI) of 0.81. This could be attributed to the fact that married farmers are more experienced in terms of adopting land use technique when compared to their single counterpart. Level of education of farmers showed that 30.7 and 44.6% of the respondents had primary and secondary education respectively. This indicates that that literacy level is very high in the study area. However, farmers with no n formal education had the least MLUI of 0.79. Years of

farming experience revealed that farmers with 21-30 years of experience had the least MLUI of 0.73, while that with 1-10years had the highest (0.92). This shows that there is a positive relationship between years of farming experience and better land use practices.

Farming households with size ranging from 7 and above constitute the highest percentage of 49.5% as found out in Ashagidigbi et al, 2011,and also have the highest MLUI of 0.84. However, farming households of 1-3 had the least Mean Land Use Intensity Index of 0.80. This reveals that farmers with larger household size tend to use land in an unsustainable way compare to that of small size.

Also, farming household with farm size of 4 ha and above (16.9%) had the MLUI (0.73), while household with less than 2 hectares constituting 56.4 percent has the highest (0.89). The implication of this is that farmers with larger household size tend to utilize their farm more intensively than household with smaller size. Lastly, 48.5% of the respondents have access to credit with remaining percentage being that of those with no access. The former however have higher MLUI of 0.85.This may be due to the use of the credit on the purchase of more farm inputs without corresponding increase in cultivable land.

Table 2: Distribution of farmers by Land Management Practices

Application of chemicals	**Percent**	**Mean intensity index**
Yes	77.2	0.83
No	22.8	0.80
Fertilizer use	**Percent**	**Mean intensity index**
Yes	84.2	0.85
No	15.8	0.74
Crop rotation Practice	Percent	Mean intensity index
Yes	92.1	0.78
No	7.9	0.84
Bush fallow	Percent	Mean intensity index
Yes	64.4	0.74
No	35.6	1.0

With respect to Table 2, more than three-quarter of the respondents with MLUI of 0.83 and 0.85 applied chemicals and fertilizer respectively. The implication of these could be attributed to the productivity enhancing effects of these inputs, which also encourage continuous cropping. 7.9% and 35.6% of the total farming households with MLUI of 0.84 and 1.0 respectively do not practice crop rotation and bush fallow. The higher values of MLUI are expected because the 2 land management practices discourage continuous cropping, which leads to soil depletion.

Table 3: Distribution of Farmers by Land use intensity

Intensity index	**Percent**
Less than or equal to 0.5	6.9
0.51 – 0.6	4.0
0.61 – 0.7	3.0
0.71 – 0.8	26.7
0.81 – 0.9	19.8
0.9 – 1.0	39.6
Total Mean 0.83	100.0

Table 3 shows that majority (86.1%) of the respondents had MLUI ranging from 0.71-1.0. This shows clearly that land management practices, which favour continuous/intensive cropping and discourage fallowing, are mostly practiced in the study area.

Table 4: Poverty status of Farming Households

Values	Status	Percentage
<271.87	Core poor	-
>271.87 and <543.75	Moderately Poor	70.3
>543.75	Non poor	29.7
MPCHHEXP	815.63	

From Table 4, the Mean per Capita Household Expenditure (MPCHHEXP) is N815.63. 29.7% of the farming households are non-poor, i.e fall above the poverty line, while 70.3 % are moderately poor. However, none of the household members are core poor. The table reveals that majority of the households in the study area are poor with values that are below the moderately poor line.

Socio-economic Factors Determining Land Use Intensity

Table 5: Tobit Regression Analysis

Variables	Coefficients	Standardized Error	P (1Z/>z)
Constant	117.2856	7.1314***	.0000
Gender/Sex	-8.0661	3.4371**	.0189
Marital status	-15.9837	5.9518***	.0072
Education	-0.4751	0.3308	.1510
Farm size	$0.1261x\ 10^{-1}$	$0.3551x10^{-2}$***	.0004
Farm Experience	-1.0417	0.2994***	.0091
Household size	2.2898	0.7697***	.0029
Access to credit	-0.2409	2.9347	.9346
Sigma	13.5744	0.9551***	.0000

Significance: 1percent***, 5 percent**

The tobit result shows that the sigma is 13.5744 and is significant at 1 percent this shows the model a good fit. Four of the socio-economic variables namely marital status, farm size, farming experience and household size are significant at 1 percent, while gender is significant at 5 percent level. However, the marginal effects show that a unit increase in number of males and married farmers will reduce land use intensity by 8.06 and 15.98. This is expected because male and married farmers tend to be more knowledgeable in terms of soil conservation measures compared to their female and single counterpart as shown in their MLUI values. A unit increase in years of farming experience will lead to decrease in land use intensity by 1.04, thus showing the inverse relationship between the two variables. This may be because farming experience increases the technical know-how of farmers towards soil conservation by guarding against continuous cropping which leads to soil depletion. A unit increase in hectare of farmland marginally increases LUI by 0.0126, while LUI is increased by 2.289 for a unit increase in household size. This is expected because the larger the household hold size, the more their consumption/expenditure and the more intense their activities on the farm land.

Table 6: Determinants of Poverty status of farmers (Probit Analysis)

Variables	Coefficients	Standardized Error	P (1Z/>z)
Constant	-0.3664	0.4512	.4167
Gender/Sex	$-0.7510x10^{-1}$	0.1201	.5319
Education	$-0.1490x10^{-1}$	$0.1181x10^{-1}$	0.2074
Farm size	$-0.3101x10^{-3}$	$0.1508x10^{-3}$**	.0397
Farm Experience	$-0.4321x10^{-1}$	$0.1639x10^{-1}$***	.0084
Household size	0.1342	$0.3048x10^{-1}$***	.0000
Access to credit	$-0.\ 6849x10^{-5}$	0.1076	.9493
Land use intensity	$0.16179x10^{-2}$	$0.3410x10^{-2}$	.6355

Significance: 1percent***, 5 percent**

Chi-square = 54.2, Restricted log likelihood = -61.44

The analysis reveals chi-square to be 54.2 indicating 1 percent level of significance. This shows the model is a good fit. However, farm size, farming experience and household size significantly influence poverty status of the farmers. The level of significance is at 1 percent for farming experience and household size, while farm size is significant at 5 percent level. The three variables are with the expected signs with farm size and farming experience having negative signs while household size is directly related to poverty status. The implication of this is that increased hectarage and years of farming experience reduce poverty status of farmers, while increased household size enhances the probability of farmers being poor. However, the marginal effect of a unit increase in farm size and farming experience will reduce the poverty status of farmers by $0.3101x10^{-3}$ and $0.4321x10^{-1}$, while a unit increase in household size will increase poverty status by 0.1342. Coefficient of land use intensity though not significant has a positive relationship with poverty status. This reveals land use intensification as an agent of poverty among farmers.

Summary and Conclusion

The study was set out to examine the land use intensity and its influence on the poverty status of rural farming households in Ido Local Government Area of Oyo State. The study shows that most of the farmers are in their active age with the mean of 37.6years. Also, 76.2 percent of the farmers are male while 88.1 and 76.3 percent are married and have formal education respectively. Farmers with 11-30years of experience constitute 60.4 percent of the total farmers while 49.5 percent has household size of 10 and above. Farmers cultivating less than 2 hectares of land constitute 56.4 percent of the total farmers, with 86.1 percent having intensity index of 0.7-1.0.

The implication of this is that majority of the farmers has large household size and also cultivates small hectarage of land which could be responsible for the greater percentage of the farmers having higher intensity index due to increased pressure on farm land.

Tobit regression analysis shows that gender, marital status, farm size, farming experience and house hold size are major factors influencing land use intensity, with male, married farmers and farming experience discouraging intense use of farm land and household size and farm size promoting continuous use of land.

The mean per capital household expenditure of farmers in the study area is ₦815.6. The poverty status shows that 70.3 percent are moderately poor while 29.7percent are non-poor. The probit analysis reveals that farm size, farming experience and house hold size are the major determinants of poverty in the study area. While increased farm size and farming experience reduce poverty in the study area, increased household size on the other hand enhances the probability of a farmer being poor in the area.

In conclusion land use intensity though does not significantly influence poverty in the study area; the sign of the coefficient however shows a positive influence on poverty status. Thus, being a major determinant of poverty in the long run is possible.

In order to ensure poverty reduction in the study area, anti-land use intensity policy option that will encourage farmers' access to land, and moderate household size should be implemented.

Correspondence to:
Ashagidigbi Waheed . Mobolaji
Department of Agricultural Economics
University of Ibadan, Nigeria
ashagidigbi2000@yahoo.co.uk

REFERENCES

1. Ashagidigbi W.M.' A.O Falusi and S. O. Awopeju (2011): The Effects of Rural Infrastructure Development on Crop Farmer's Productivity in Osun State. World Rural Observations 2011]. ISSN: 1944-6543.
2. Barbier, B. (1998), "Induced innovation and land degradation: results from a bio-economic model of a village in West Africa", Agricultural Economics, 19, 15-25
3. Barbier, E.B. and J.T. Bishop (1995), "Economic values and incentives affecting soil and water conservation in developing countries", Journal of soil and water conservation, 50, (2), pp 137-137.
4. Carswell, G. (1997), Agricultural Intensification and Rural Sustainable Livelihoods: A think piece ' IDS Working paper 64.
5. Central Bank of Nigeria (2006) Annual report and statement of account
6. Dasgupta, P. and K.G. Maler (1994), Poverty, institutions and the environmental resource base. World Bank Environment Paper Number 9. The World Bank Washington DC.
7. Dasgupta, P.S. (1992), "Population, resources and poverty", Ambio 21, pp 95-101.
8. Dixon J.A., D.P. Gibbon and A. Gulliver (2001) Farming Systems and Poverty: Improving Farmers' livelihoods in a changing world. Rome, FAO, Washington DC; World Bank.
9. Ekobom, A. and J. Bojo (1999), Poverty and Environment: Evidence of links and integration into the country assistance strategy process, Discussion Paper No. 4, Environment Group, Africa Region, The World Ban
10. Fajingbesi, A.A., Obadan M.I., Uga E.O. (2003), Integrating Poverty Alleviation Strategies into Plans and Programmes in Nigeria.

11. Falusi, A.O. (2008), Food Policy Analysis, synthesis note, Department of Agricultural Economics, University of Ibadan.
12. Foster, J. E; J. Greer and E. Thorbecke. 1984. A class of decomposable poverty measures, Econometrica 52(1): 761-766.
13. Lee, R. D. (1988). Population, Food and Rural Development, International Studies in Demography, Oxford: Calderon Press.
14. Muller, D. (2004), From agricultural expansion to intensification: Rural development and determinants of land use change in the Central Highlands of Vietnam.
15. Omonona, B. T. (2008). Poverty in Nigeria, synthesis note, Department of Agricultural Economics, University of Ibadan.
16. Onaolapo, T. S. (2006), Resource use efficiency of food crop farmers in Owo Local Government, Ondo State. An unpublished B.Sc. project, Department of Agricultural Economics, University of Ibadan.
17. Prakash, S. (1997), Poverty and Environment linkages in mountains and uplands: Reflections on the 'poverty trap' thesis, CREED Working Paper Series No 12 IIED London.
18. Reardon, T, S.A. Vosti (1995), "Links between rural poverty and the environment in developing countries: Asset categories and investment poverty", World Development 23(9) 1495-1506.
19. Soludo C. C. (2006): Can Nigeria be the China of Africa, Lecture Delivered at Founder's Day of University of Benin, Benin city, Nigeria on Nov. 23, 2006.

16/11/ 2011