RESOURSE USE PATTERN AND FARMERS' PRODUCTIVITY IN SOUTH WEST NIGERIA

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ABSTRACT

Sustainable Agriculture is a way of farming that can be carried out for generations to come. This long-term approach to agriculture combines efficient production with the wise stewardship of the earth's resources. It is imperative to investigate the general welfare and social well-being of farmers' pattern of resources use as evidenced by their status relative to cassava and maize technologies.

The main objective was to investigate the farmers' personal, economic and socio- cultural characteristics as well as the contribution to their productivity.

Structured interview schedules as well as in-depth study devices were used to collect data, which were analyzed using appropriate descriptive and inferential statistics.

The study revealed that use of technology contributed significantly to explain the variance in the net benefits of the investment analysis on maize and cassava technologies. The study further revealed that Incremental Net Benefit (INB) of maize technology (₦39, 445.00) and cassava (₦51, 562.50) were realized which are added values to the use of the technologies. It could therefore be concluded that efficient use of resources of agricultural technologies contributed significantly to some dimensions of members' well-being and if technologies are sustained with full use of recommended inputs, it can alleviate the problems of peasant farmers and will obviously boost food production, as well as meeting the goal of being self sufficient in food supply to the ever increasing population.

KEY WORDS: Resource use, pattern and productivity

INTRODUCTION

The analysis of allocative efficiency usually assumes that the firm-farm seeks to optimise a profit-maximisation objective function subject to resource constraints. Resources are said to be efficiently allocated when the value of marginal product of each resource equals its price [5,14 and18], Intuitively, a profit-maximising entrepreneur will not use a resource beyond the point where the resource adds just as much to his revenue as it adds to his cost. If he uses the resource beyond this point, he incurs a loss; below this point, he can increase his profit by using more of the resource.

Comparing the value of marginal product with the price of the resource tests the efficiency of resource allocation [19,9,6 and 22] .The test gives an indication of the direction and magnitude of resource adjustment needed to achieve optimum resource allocation [16 and 4] .

In West Africa, population density decreases from the coastal and humid forests in the south towards the transition zone in the middle, and it increases again in certain areas of the dry semi humid savanna in the north [23]. Most of the agricultural farms are on small -scale cultivation varying from 0.1 to 10 ha, making the farmers peasant in

nature [20, 13 and 11.]

Generally, the road infrastructure is deficient in West Africa especially in Nigeria, bringing a major constraint to marketing of the produce where applicable. As a result[10], concluded that major centres in the south have attracted both international and national funds to maintain roads in good condition. However, the poor quality of road infrastructure increases marketing margins of inputs such as fertilizers,

making things more expensive for small-scale farmers especially compared to staple food prices. Therefore the study attempts to carry out an analysis of resource use pattern on

farmers' productivity in Southwest Nigeria. The specific objectives are to examine the demographic characteristics of the farmers and assess the effect of pattern of resource use and technologies on the farmers' farmers' output, and income in the study area,

MATERIALS AND METHOD

The population for this study consists of the Agricultural Development Programmes' contact farmers in the Southwest zone, Nigeria currently involved in farming system practices, such that had adopted recommended technologies (maize, and cassava) disseminated to them within a period between 1990 and 1995 or below.

The multi- stage sampling procedure was used to randomly select three states namely Oyo, Osun and Ondo where adoption (full or partial) of maize; cassava and soybean recommended technologies had been reported [8 and 17].

The second stage of the sampling procedure consists of purposive selection of two zones of ADP per state, however only one zone was eventually considered fit for Ondo State for logistic reasons. This represents about 60 and 50 percent of the zones in the States respectively. The zones are Saki and Ibadan/Ibarapa in Oyo State, Iwo and Ife/Ijesha in Osun State and Akure in Ondo state. Stage three consists of random selection of two blocks from the lists of blocks per zone where adoption of the technologies in question had taken place. The blocks selected were Saki, Igboho, Ido and Akinyele in Oyo State; Iwo, Ejigbo, Ijebu jesha and Atakumosa in Osun State; Ishua and Ibule in Ondo State. Stage four comprised of four cells selected randomly representing 50 percent of the selected blocks.Lastly, stage five was the purposive random selection of three farmers' households who have sustained use of the technologies (in the three crops namely maize, cassava and soybean) and three farmers' households that abandoned the technologies from the list of farmers that had adopted the technologies. This was derived from a preliminary survey that was carried out with the assistance of Extension staff of the ADPs. This helped in identifying the farmers that had adopted selected technologies within a stipulated period of time. The time frame chosen was between 1990 and 1995, this period recorded high adoption rates in the three crops according to ADPs' reports.

The proposed sample size amounted to a total of 240 households for both sustained users and abandoned users of technology. However, a sample size of 208 farmers' households was eventually considered for the survey, being the group having adequate information required for the survey. In-depth interviews were conducted with some experienced personnel in the community who were sustained and abandoned users to elicit information to substantiate other findings.

RESULTS AND DISCUSSION

Personal characteristics

Farmers within the study area are on the average fairly old with a mean age of 49 years. The fact that only 14.9 percent were below active age of 41-50 years and 48.12 percent were above it suggests that farmers were growing older. They are also not being succeeded by the younger generation. Above suggests that younger people are abandoning the farm for greener pastures in cities

and in other professions. This agrees with findings of [3]. Lack of succession in agricultural profession might result into lower aggregate national food production resulting in food insecurity with less attractive option of food importation resulting in higher foreign exchange on food importation. Similarly in [2] study it was concluded that the most virile age category were less involved in farming in the study area in his study on determinants of sustained use of selected technologies in Cross-river state.

The greater percentage of respondents being males (91.35%) implies that majority of the clientele of ADP are males. The result of this study agreed with [2] where 78 percent were males shows that ADP's farmers were mostly males. The implication being that women were not considered as male counterpart in most of ADP programmes. Similarly, [12 and 1] found that less than 15 percent and 32 percent respectively of the females in Cross River State had farms of their own. However, other studies from [21 and 24] have found that women are just as productive as men or even more if given same access and control over inputs as men.

Most of the farmers in the study area were married (89.90%). The fact that no farmers were single among the respondents denotes that the household members were needed in most agricultural operations; therefore the respondents could not afford to be single (Table 1).

Table 1: Distribution of Respondents According to Age, Sex and Marital Status

Variables	N= 208	
	Freq	%
Age Group		
≤20 years	1	0.48
21-30	4	1.92
31- 40	26	12.50
41-50	101	48.56
51-60	63	30.29
61-70	12	5.77
Above 70	1	0.48
Mean		49.00
Range		20 -77yrs
Standard Deviation		8.76
Sex		
Female	18	8.65
Male	190	91.35
Marital status		
Single	-	-
Married	187	89.90
Widowed	16	7.70
Divorced	3	1.44
Separated	2	0.96

Source: Field Survey Data, 2002.

Farm Labour Resource

Farmers in the study area used two main types of labour resource mostly family and hired labour. The respondents used exchanged and communal labour sparingly. None of the respondents used family labour for weeding operation whereas hired labour were used for weeding operation. The harvesting operation being performed by the family members mainly is an indication of family involvement in farming operations. It also confirms that farmers are subsistence in nature, a larger part of the farm produce are consumed by family members, no wonder they have to do the harvesting as well engage in the processing aspect. All the respondents still engaging the service of hired labour in major farm operations especially the most tedious ones such as ridging, weeding and clearing suggests that family labour were inadequate and possibly those tedious ones can not be performed by household members have to be contracted out. Labour resources are competitive, as other sectors still require their services at better remunerations. Thus agricultural labour had been at ever increasing higher costs. This has implication on costs of production and farmers hardly breakeven if all cost had to be actually considered in farm budget analysis (Table 2).

Enterprises' Returns

The mean of farm returns of respondents was ₦57,225.72, the fact that the modal income group was ₦60,001- ₦ 70,00 which is slightly close to the mean shows that agriculture can be a paying venture bearing in mind that the farmers might have taken care of feeding aspects of the family members, give to labours, friends and relations before declaring whatever they say is the income. Most farmers always be silent to relay exact amount realised from farm produce more so, that they hardly keep records. The gross income of about ₦ 57,000.00 is grossly inadequate to sustain the farm family if feeding costs were not previously considered (Table 3).

Income Position

Farmers in the study area as shown by their judgment on income position to family upkeep suggests that the farmers assessed themselves as being comfortable since over 60 percent of the respondents agreed to their income being more than enough for their family upkeep. This can be said to be so since majority of them live in rural areas, they hardly pay for transport to their daily movement to and fro farm locations unless in rear cases where the farm sites are far to where they live and there were transport facilities. Also no maintenance of social amenities such as electricity bills, water rates and so. If all these costs were to be added into family upkeep, no sooner, they would

Table 2: Types of Labour and Uses :N=208

	Clearing		Ridging		Planting		Weeding		Harvesting	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Family labour	38	18.75	18	8.65	67	32.21	-	-	84	40.38
Hired labour	56	26.92	95	45.67	-	-	57	27.40	-	-
Exchanged	8	3.85	8	3.85	2	0.92	-	-	-	-
Communal	-	-	18	8.65	-	-	-	-	-	-

Source: Field Survey Data, 2002.

Table 3: Distribution of Respondents According to Income Groups

	N= 208	
Farm Returns (₦)	Freq	%
≤ 10,000	4	1.92
10,001-20,000	4	1.92
20,001-30,000	12	5.77
30,001-40,000	25	12.02
40,001-50,000	25	12.02
50,001-60,000	16	7.69
60,001-70,000	91	43.75
Above 70,000	31	14.90
Mean	57,225.72	
Range	2,000-95,000	
Standard Deviation	14,965.16	

Source: Field Survey Data, 2002.
CONVERSION RATE: 180 Naira = 1EURO

realise the money they were having will be inadequate.

The implication of this result is that farmers believe they are sufficient in as much as they are able to feed family members and get some quantity of farm produce as gift to their friends and relation all season round would be judged by custom as being adequately capable man. This implies that farmers in the study area can adequately feed well, all season round. In other words, the indication that they still have the produce from the previous harvest at the time new crops are matured, or at least the farmers can sufficiently buy from the market to feed his household (Fig 1).

Pattern of Resource use by Respondents

Data collected from in-depth study of selected respondents (sustained users and abandoned users) were used to calculate the cost of practicing technologies and otherwise. The package of recommendations served as the guide. From one hectare of maize production investment analysis, based on prevailing market prices, total cash out flow of ₦29, 250 was expended with technology situations while ₦ 31,875 was spent for without technology situation. With sustained and abandoned users, an average sustained user was assumed to have used mechanized farming since it was included in the package of recommendations. Fertilizer cost was also included at an average cost of ₦3, 000 for 50 kg assuming 250kg./ ha. Other costs include, planting materials at current market price of ₦ 60/kg for improved maize seeds. The study showed that average abandoned users did not use fertilizer even when it was available. An estimated cost of ₦500 was assumed as the cost of local varieties planted. The use of herbicide was also included for sustained users or with technology. An average output of 1850 kg / ha was realized from the cultivation of maize improved varieties as against 929.5 kg / ha from local varieties.

If the price of grain was ₦40/kg then total revenue of ₦74, 000 were realized from with technology situation as against ₦37, 180 for without technology/ abandoned use situations.

A net benefit of ₦44, 750 was realized from with technology/sustained use situation while a net benefit of ₦5, 305 was for without technology/-abandoned use. This gave an Incremental Net benefit (INB) of ₦39, 445 when maize was solely considered.

From the study, it was observed that an average respondent favourably adapted to farming system situation of Southwest Nigeria where maize is inter- cropped with cassava.

An average output of 12 tons per hectare was realized from improved cassava varieties as against one or two tons from local varieties.

All other costs being constant, returns of ₦56, 250 were calculated from with technology situation at ₦15, 000 per 200 stands or ₦4, 687.5 per ton. Total revenue of ₦4, 687.5 were recovered from without technology situation. An incremental Net benefit (INB) of ₦51, 562.5 was calculated for cassava technology. This gave a total of Incremental Net Benefit of ₦91, 007.5 from maize / cassava mixture.

Similarly farm investment analysis of soybean production was also considered, Table 5.26 shows the details of costs

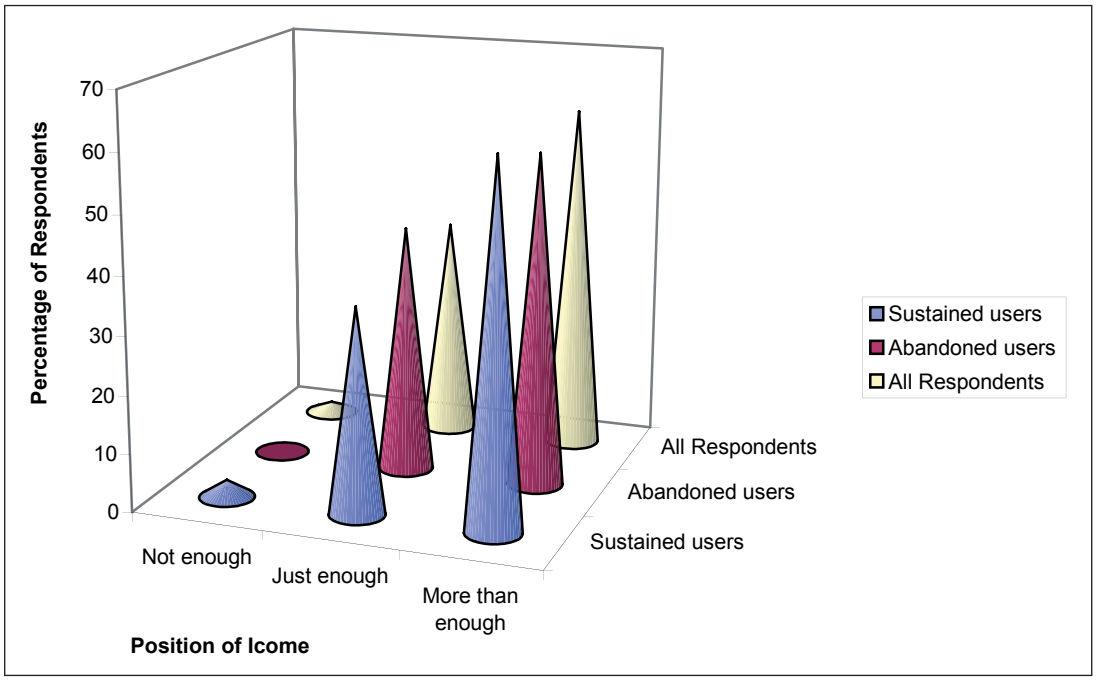

Figure 1: Distribution of Respondents According to Position of Income

Table 4: Costs and Returns Analysis From One-Hectare Farm Investment in Maize and Cassava Production

Cash Outflow=₦	With technology Sustained users	Without technology Abandoned users
Land preparation	3,750.00	5,500.00
Fertilizer cost	2,500.00	9,375.00
Cost of weeding/herbicide	15,000.00	-
Planting materials	2,500.00	12,500.00
Harvesting cost	1,500.00	500.00
Post harvest treatment cost	1,000.00	1,000.00
Transportation cost	1,000.00	1,000.00
	2,000.00	2,000.00
Total	29,250.00	31,875.00
Cash Inflow=₦		
Output from maize	1,850kg	929.50
Unit costs ₦40/kg	₦ 74,000.00	₦ 37,180.00
Farm production Revenue		
Net Benefit (Maize)	₦ 44,750.00	₦ 5,305.00
Incremental net benefit (INB)	₦ 39,000.00	
Returns from cassava	12 tons	1 ton
In mixture at 1,500.00/igba or 4,687.50/ ton	₦ 56,250.00	₦ 4,687.00
INB	₦ 51,562.00	
Total INB from maize and cassava	₦ 91,007.00	

Source: Field Survey Data, 2002.

incurred for with technology and without technology in the production of one hectare of soybean in the study area.

A total cost of ₦15, 250 were incurred for with technology situations as against ₦23, 500 spent on without technology situations.

An average output from the production of soybean gave 1200 kg per hectare from improved varieties as against 624 kg from local varieties or old varieties.

When the costing was done at ₦60/kg of soybean grains, total revenue of ₦72, 000 was realized as against ₦37, 440 for without technology situation.

A net benefit of ₦56, 750 were realized for with technology/ sustained use and ₦13, 990 for without technology/abandoned situations. This gave an incremental net benefit (INB) of ₦42, 760.00 for the soybean technology (Table 4).

This finding is in agreement with [7, 8, 14,and 15] studies showing a tangible benefit of ₦ 5,750.00 and ₦ 11,070.00 respectively in the cultivation of one hectare of soybean and maize respectively, following the recommended practices as over the existing farmers' practices.

The implication is that a farmer that adopts the recommended practices is at an advantage over abandoned users of such technology [14.] Sustained users would realize higher income and consequently better standard of living will result.

CONCLUSION

Based on evidences in the study, some conclusions could be drawn. It is concluded that despite the fact that farmers interviewed were not too different in their demographic characteristics and social status, they were more different in farm characteristics and much more different in their effect of technologies on their well being, economic status, adoption level, family health status and information accessibility. Farmers with full use of resources had higher level of income and output. It is therefore concluded that farmers that adopted and sustained the use of technologies have better standard of living. However, as evidence from the study, farmers in Southwest, Nigeria

have not maximized their capability as they have larger room for expansion and higher productivity if they are given opportunity to do so.

REFERENCES

[1].Abang,S., B. F. Oko and F. Solomon, Report on the wetland soil of Cross River

State, Nigeria for CRSADP Pp.8-13 (1994).

[2].Angba A.O.," Determinant of sustained use of selected technologies recommended to farmers by Cross River State Agricultural Development Programme (ADP) ". Unpublished Ph. D Thesis, University of Ibada, Nigeria (2000).

[3].Ewuola, S. O.,"An analysis of the effectiveness of Small Holder Farmer Credit Programme in Ondo State." Unpublished Ph. D. Thesis, University of Ibadan, Nigeria . (1985).

[4].Gittinger J. I., Economic Analysis of Agricultural Project 2nd edition. Balhmore Maryland, the John Itopkins University Press Pp 221. (1982).

[5].Henderson, J. M. and R.E. Quandt, Micro Economic Theory a Mathematical

Approach. McGraw-Hill inc Tokyo (1971):.

[6].Ikpi, A. E., Sustainable Agriculture and Economic Development Eds by Anthony E.Ikpi and Joseph K. Olayemi published by Winrock Internationa (1995).

[7].Institute of Agricultural Research and Training (I. A. R. &T.). The Fourth

earth Package of Recommendation for food crops and Livestock Production in

South-West Nigeria Pp 3-7, 22 -28 and 42 – 47 (1991).

[8].Institute of Agricultural Research and Training (I. A. R. &T.), The Impact Assessment Report of proven Technologies. N.A.R.P. report (2000).

[9].Ladipo, O. O., The variance of marginal value productivity estimates using The Cobb- Douglas function. Journal of Rural Economics and Development 11 (i)Pp 57-68 Lagos, Nigeria (1977).

[10].Manyong V. M. ,J. Smith. K. Weber,, S.S. Jagtab,and B. Oyewole Macro Characterisation of Agricultural System in West Africa; An overview in Resource and Crop management Research . Monograph No.21 Pp 9-12 IITA(1996).

[11].Ochai S., An Integrated production consumption Analysis of small scale Farming Households In Kogi State. Unpublished Ph.D.Dissertation Department of Agricultural Economics, University of Ibadan. Nigeria (1995).

[12].Ogar, O. A. "Socio – Economic impact of Cross River National Park Project on the Adjoining Communities". Unpublished Master Thesis in the Department of Forestry Economics and Management University of Ibadan Pp. 50 and 51(1995).

[13].Ogunfiditimi T. O., A new approach to food Distribution in Nigeria Nutrition and food policy and Strategic Studies Pp 105-108 (1983).

[14.]Ogunfiditimi T. O., Abandoned adoption why adopters Discontinued use of previously adopted innovations. Journal of Extension System. Vol. 3 Pp:12-22 (1981).

[15].Ogunfiditimi T. O., Community survey thresholds statistical Technical Techniques and computer analysis, Nigeria Many grant (Educational) Publisher. Pp 1-10 (1986).

[16.]Ogunfowora, O., J.K. Olayemi, A.F. Mabawonku and O.E. Okunfulure, A study of commercial Agriculture in Nigeria, A study commissioned by the Federal Department of Agricultural Planning Lagos (1985).

[17].Ogunsumi, L.O. Analysis of sustained use of Agricultural Technologies on farmer productivity in South-West, Nigeria. Unpublished Ph.D. Thesis, Federal University of Technology, Akure. Nigeria (2004).

[18]. Olayemi J. K and C.E. Oniyenwaku.Quantitative methods per Buskau Deusin. A Provisional Text, (1986).

[19]. Olayemi J. K., Peasant Cocoa production in western Nigeria. "An Economic Analysis .Unpublished Ph.D. Thesis ,McGill University (1970).

[20]. .Olayide, S. O., Characteristic, problems and significance of farmers. Nigerian small farmers – Problems and Prospects in Integrated Rural development. Edited by S. O. Olayide et al. Centre for Agricultural and Rural Development (CARD). University of Ibadan Nigeria pp. 1-15 (1980).

[21].Oloruntoba, B. S. "Food Production and Nutritional Problems in Nigeria: (In Nutrition as a National Priority) Seminar Proceedings. Food Science and Applied Nutrition Unit, University of Ibadan (1975).

[22].Oni, O. A , A Recursive Analysis of Enterprise Combinations Among Cocoa Farming Households in Ondo State, Nigeria. Unpublished Ph. D Dissertation Department of Agricultural Economics, University of Ibadan. (2000).

[23]. Weishet, A.O. and C. Cariedes. Research Transaction cost economics and governance of contractual relations. Journal of Law and Economics 22(2) 233-261 (1993).

[24].World Bank. Agricultural Research Report (1990).