Impact of Training the Trainers' Programme on Rice Farmers' Income and Welfare in North Central, Nigeria

J. H. Tsado, M. A. Ojo, and O. J. Ajayi
Dept. of Agricultural Economics and Extension Technology, Federal University of Technology, Minna, Niger State. Nigeria
Email: jacobtsado2007@yahoo.com

***Abstract*—The study was conducted in North central, Nigeria. It investigated the impact of training programme on rice farmers. A total of 320 respondents were selected and interviewed using a well structured interview schedule. The data were analyzed using descriptive statistics, inferential statistics and F-Chow –test. The study revealed that the main reasons for participants participation in the intervention programme was for poverty alleviation, increased in productivity and for economic empowerment which ranked 1st 2nd and 3rd respectively, and their major source of information was USAID MARKERT field officers. The study showed a significant mean difference between the income of the participants (N308,235.63) and non-participants(N152,420.63) implying that participation in the programme had a positive and significant impact on rice farmers' income. The Chow F-calculated for income (60.97) was greater than the Chow F-tabulated (2.04) which implies that there was a significant impact of the programme on participants' income. The training had positive impact on adoption at 1% level of significance. On the basis of the above, it is recommended that training rice farmers should be given topmost priority to improve their skills on the adoption of improved rice packages to increase their productivity and consequently their income for escaping poverty.**

***Index Terms*—impact, training, rice, farmer, income.**

I. Introduction

Rice is the world's leading staple food crop and the sixth major crop in area cultivated after sorghum, millet, cowpea, cassava and yam in Nigeria [1] and [2]. However, rice production is still dominated by small holder farmers using traditional methods that are fraught with drudgery and a lot of constraints. It is also the only cereal crop that is grown in all agro-ecological zones of Nigeria from Sahel to Coastal Swamp. The area cultivated to rice is however, small [3]. Income in rural areas in Nigeria are low hence rural population remain poor. [4] Smallholder agriculture, the dominant occupation of rural Nigeria is mainly rain fed and characterised by low productivity and income. Their income remains low and they are unable to make the necessary investments in farm expansion. The consequence of this is that they are unable to improve their living standard, hence Farmers are said to be trapped in this vicious poverty cycle due to their low output, low farm production and consequently low income. [5]. In 2006, Nigeria was considered one of the poorest countries in the world, with over 70% of the population as poor and 35% living in absolute poverty [6]. Widespread poverty in Nigeria is especially severe among farmers who dwell in the rural areas [6], where agriculture engages over 60% of the labour force, responsible for producing 90% of the total food consumed in the nation.

Generally, training involves acquiring information, knowledge and developing abilities or attitudes, which will result in greater competence in the performance of a work. There are two main agents in training viz; the trainee and trainer. The active participation of both agents at every stage of the training programme is very important. [7] and [8] emphasized that training needs exists anytime an actual condition differs from a desirable conditions in the human or people aspect of organizational performances.

Training of farmers and the adoption of improved technologies can lead to increase in productivity and higher income to the farmers [9]; [10]. In the same vein [11] emphasized that increased in availability and adoptions of improved packages of production technology are two of the factors which favour the growth of food production in Nigeria.

This study therefore examined the impact of the training programme on rice farmers income in North Central Zone of Nigeria, sources of information and training, participants reasons for participating in training and the impact the training has on the rice farmers welfare.

II. Materias and Methods

This study was conducted in North Central Zone of Nigeria. The area is located between latitude $6^0$30' to $11^0$20' North and longitude $2^0$30' to $10^0$30' East [12]. More than 77% of the people in the region are rural dwellers and are mostly engaged in one form of agricultural activities or the other [12]. Multi-stage sampling technique was used to select a total of 320 rice farmers from two of the rice growing states who

Manuscript received June 16, 2014; revised September 20, 2014.

doi: 10.12720/joaat.1.2.157-160

participated in programme. (160 participants and 160 Non participants)

Data were analyzed through the use of simple descriptive statistics, such as, frequency distribution, percentages, mean, ranking, measures of variation such as variance and standard deviation to make comparison between the participating and non-participating farmers

Chow Test Statistic was used to test the differences between the income of the participants and non-participants. According to [13], chow test statistics is often used in programme evaluation to determine whether the programme has impact on different subgroup population. This was used to test the project impacts on participants output and income in the study area. The model is specified as follows:

$$\text{F-chow}=\frac{(RSS-RSS1+RSS2)/K}{RSS1+RSS2/\ N1+N2-2K}$$

where

R_{SS}= sum of squared residual from the pooled data

R_{SS1}= sum of squared residual from the first group (i.e. participants)

R_{SS2}= sum of squared residual from the second group (i.e. non-participants)

N_1N_2= number of observations in each group

K= total number of parameters

*Multiple regression analysis was used to determine the factors affecting rice farmer's income.

III. Result and Discussion

TABLE I. Participants Reasons for Participating in the Training the Trainers Programme

Reasons for Participation	Frequency	Percentage	Rank
Economic Empowerment	141	88.1	3rd
To Receive Training	135	84.4	4th
For Social Interaction	30	18.1	6th
Increase productivity	147	91.9	2nd
For Poverty Alleviation	156	97.5	1st
Source of Technical Information	127	79.4	5th

Source: Field Survey, 2013. *Multiple Responses

Table I reveals that the participants main reason for participating in the programme was for poverty alleviation, which ranked 1st (97.5%), followed by increase in yield which ranked 2nd (91.9%) and for economic empowerment (88.1%) which ranked 3rd. Poverty can only be alleviated through increase in productivity, as a result of increased yield the farmers become economically empowered. The result is in agreement with that of [14] who was of the opinion that rural farmers participate in development programmes is for poverty alleviation through increase in productivity and income.

Table II shows that non-participants and participants claimed that other farmers (93.1%) and USAID/Market field officers (100%) respectively were their main sources of information, closely followed by extension agents accounting for 69.4% and 79.4% respectively for non-participants and participants The results agree with that of [15] who found that it is the NGOs, other farmers and village extension workers that farmers in Ogun State of Nigeria use most as their sources information.

TABLE II. Distribution of Respondents According to Sources of Information and Training

Sources of Information	Non-Participants	Participants
Variables		
Extension Agent	111(69.4)	127(79.4)
USAID/ Market Field Officers	2(1.3)	160(100.0)
Other Farmers	149(93.1)	147(91.9)
Parents/ Relative/ Friends	67(41.9)	48(30.0)
Farmers Groups	123(76.9)	156(97.5)
Progressive/ Contact Farmers	78(48.8)	39(24.4)
Land Owners	46(28.8)	17(10.6)
Mass/ Print Media	141(88.1)	146(91.3)
Field Days/ Agric Showed Demonstration	99(61.9)	145(90.6)
	133(83.1)	153(95.6)

Source: Field Survey, 2013. *Multiple responses

TABLE III. Chow Test Result Showing Impact of the Training Programme on Participants' Income

F-cal	F-tab	Decision	Remark
60.97	2.04	if F-cal > F-tab; then there is a significant difference between participant and non-participant income	The programme had an impact on the participants income

Source: Field survey, 2013.

As revealed in Table III the Chow F-calculated was 60.97 while that of F-tabulated for 3 degree of freedom (df) and sampled population (N) of 320 was 2.04 at 5% level of probability. The result shows a significant impact of the programme on participant's income, since Chow F-calculated was greater than F-tabulated. This finding is in line with that of [16] who pointed out that training and adoption of improved package had a significant and positive influence on farmers output and consequently on their income.

Regression analysis in Table IV shows the factors that determine the income of the farmers that participated in the training programme. For participants, as reveals in Table IV, farm size, labour, capital and package cost were all significant at 1% probability level. For the non-participants: only package cost was found to be at 10% probability level. While for the pool regression: farm size at 10%, package cost at 5% and capital at 1% probability level respectively. Income of the participants and non-participants were also affected by various variables as shown in Table IV. This result is in agreement with the findings of [17], who stated that variables like farm size, labour and capital had significant effect on farmers income and consequently on their standard of living

Table V showed the responses of the participants on the training the trainers' programme and adoption of improved rice package had mostly impacted their lives. Majority (99.4%) of the participants claimed that their farm output and income increased significantly, Majority (98.8%) of the participants also claimed that participation

and adoption has led to additional acquisition of property like motorcycle, bicycle and cars, this is closely followed by the ability of the participants to increase their financial contribution to household, children education and improved dressing. The result is in line with those of [18] and [16] who indicates that participation in women-in-agriculture (WIA) extension programme has a positive and significant effect on the beneficiary livelihood.

TABLE IV. MULTIPLE REGRESSION RESULT SHOWING THE FACTORS AFFECTING THE INCOME OF PARTICIPANTS, NON-PARTICIPANTS AND POOL

Variables	Participants coefficient & Probability level	non-participants coefficient & Probability level	Pool coefficient & Probability level
Farm size	33366.65n (2.67)***	3144.478 (0.476)	14498.59 (1.78)*
Labour	200.152 (2.38)**	-1.03501 (-0.06)	11.707 (0.38)
Fertilizer use	-41.286 (-0.42)	-0.775 (-0.01)	9.235 (0.14)
Package cost	17.327 (6.02)***	-1.559 (-1.72)*	2.744 (2.00)**
Capital	11.872 (8.24)***	0.703 (0.58)	9.2691 (8.55)***
Intercept	-204116 (-2.55)**	1552 (6.79)***	30767.002 (0.88)
R^2	0.506	0.0202	0.453
Adjusted R^2	0.483	-0.081	0.443
F-stat	31.51	6.702	43.28
N	160	160	320

Source: field survey, 2011

***significant levels:** ***significant at 1%, **significant at 5%, *significant at 10%

TABLE V. RESPONSE OF PARTICIPANTS ON HOW THE PROGRAMME HAS MOSTLY IMPACTED THEIR LIVES (N=160) (IMPACT INDICATORS)

Indicators	Frequency	Percentage	Rank
Increase Yield	159	99.4	1st
Increase in income	159	99.4	1st
Acquisition of properties(bicycle motor cycle, cars etc)	158	98.8	3rd
Increase Financial Contribution to Household	156	97.5	4th
Increase in Financial Contribution to Children Education	156	97.5	4th
Enhance Decision Making Power	70	43.8	14th
High Respect from Spouse	89	55.6	12th
Improved Housing Conditions	152	95.0	7th
Improved Medication	156	97.5	4th
Improved Sanitation (building of modern toilet)	100	62.5	11th
Improved nutrition (more quality food)	117	73.1	10th
Improved Dressing for Household	150	93.8	8th
More Wives	89	55.6	12th
More Land	138	86.3	9th

Source: Field survey, 2011

IV. CONCLUSION AND RECOMMENDATIONST

The result revealed that a good number of participants benefited from the various services and training activities they were exposed to, this has greatly and significantly enhanced their output, income and consequently improved their standard of living, which is usually the ultimate aim of all the intervention programmes.

It is recommended that frequent training of the rice farmers in the study area should be given top most priority, so that the farmers can obtain optimum yield from the adoption of improved rice packages. Rice farmers should be encouraged and persuaded to take advantage and participate actively in such intervention programmes in order to increase their productivity and income for escaping poverty.

REFERENCES

[1] D. V. Tran, "Rice yields and eulogies: Information for agricultural development in ACP countries," *SPORE*, no. 105, pp. 3, June 2003.

[2] S. M. Misari, A. A. Idowu, and M. M. Ukwungwu, "Rice and soybean," in *The Nigerian Agricultural Research Strategy Plan and Extension Delivery, Plicy Concept and Consensus to the 2010*, N. O. Adedipe, J. S. Bakshi, and A. Aliyu, Eds., NARP Monogrph, no. 7, 1997, pp. 91-155.

[3] Presidential Committee on Rice Production (PCRP) (2003). Report of the Presidential Committee on Increased Rice Production and Export, 2005, pp. 64.

[4] Adeeolu, B. Ayanwale, and T. Alimi, "The impact of the national fadama facility in alleviating rural poverty and enhancing agricultural development in South Western Nigeria," *Journal of Social Science*, vol. 9, no. 3, pp. 157-161, 2004.

[5] Adegeye, Dittoh, E. F. Omoregbee, and A. Ighoro, "Effect of agricultural cooperative membership on farmers' income and poverty in Delta State," *Open Science Repository Agriculture*, Nigeria, 2012.

[6] International Fund for Agricultural Development, Rural Poverty Report, The Challenge of Ending Rural Poverty, 2004.

[7] Farta Woreda Agricultural Office, Report on Agricultural Activities in Woreda (in Amgaric), Planning and Training Service, Debre-Tabor, 2001.

[8] O. A. Akinsehinde, *Elements of Agricultural Extension Administration*, Bounty Press Ltd. Ibadan, 2007.

[9] S. Benin and J. Pender, Impact of Land Redistribution on Land Management Productivity in the Ethiopian Highland, Socioeconomic and Policy Research Working Paper 43. ILRI, Addis Asaba, Ethiopia, 2001.

[10] O. O. Oyebanji, "Assessment of the impact of extension activities in agricultural production," in *The Nigerian Agricultural ResearchStrategy Plan and Extension Delivery Policy Concept and Consensus to the Year* 2010, N. O. Adedipe, J. S. Bakshi, and A. Aliyu, Eds., NARP Monography, no. 7, 1997, pp. 322-333.

[11] A. O. Falusi, "Agricultural development and food production in Nigeria: Problems and prospects," in *The Integrated Agricultural Production in Nigeria: Strategies and Mechanisms for Food Security*, B. Shuaib, N. O. Adedipo, A. Aliyu, and M. M. Jir, Eds., NARP Monograph, no. 5, 1997, pp. 151-170.

[12] B. Shaib, A. Aliyu, and J. S. Bakshi, *Nigeria: National Agricultural Research Strategy Plan, 1996 – 2010*, Dept of Agric. Science, Federal Ministry of Agriculture and Natural Resources, Abuja, Intec Printers Limited, Ibadan, 1997, pp. 335.

[13] C. Dougherty, *Introduction to Econometrics*, Oxford University Press, pp. 194.

[14] T. A. Sodangi, "Rural poverty and agrarian reforms: in rural, agricultural and environmental sociology in Nigeria," in *A Publication of the Nigerian Rural Sociological Association*, S. F. Adedoyin Ed., 2011, pp. 299-313.

[15] J. U. Agbamu, "A study of agricultural research extension linkages: With focus on Nigeria and Japan," Ph.D thesis. Tokyo University of Agriculture Tokyo, in Essential of Agricultural Communication in Nigeria, J. U. Agbamu, Ed., 1998, pp. 55-63.

[16] S. D. Y. Alfred, "Effect of socio-economic characteristics of farmers in food crop marketing in Yagba East local government area of Kog state," in *Agricultural Extension and Poverty Alleviation in Nigeria: Proceeding of the 6th Annual National Conference of Agricultural Extension society of Nigeria*, T. A. Olowu, Ed., 2000, pp. 151-156.

[17] J. B. Simonyan, "Impact assessment of fadama II project on income and productivity of beneficiary in Kaduna," Unpublished Ph.D thesis of the Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University Zaria, 2009.

[18] S. N. Odurukwe, E. C. Matthew-Njoku, and N. Ejiogu-Okereke, "Impact of the women – in – agriculture (WIA) extension programme on women's lives; Implication for subsistence agricultural production of women in imo state," *Journal of Livestock Research for Rural Development*, vol. 18, no. 2, 2006.

Dr. J. H. Tsado specializes in Agricultural Extension and Rural Sociology, presently a Senior Lecturer in the Department of Agricultural Economics and Extension Technology, Federal University of Technology, Minna, Niger State, Nigeria.