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## **Impact Assessment of University-Based Rural Youths Agricultural Extension Out-Reach Program in Selected Villages of Kaduna-State, Nigeria**

Joseph Gambo Akpoko and Thomas M. Kudi

Department of Agricultural Economics and Rural Sociology, Faculty of Agriculture,  
Institute for Agricultural Research, Ahmadu Bello University, P.M.B. 1044, Zaria, Nigeria

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**Abstract:** The concern about youths development borders on the believe that they constitute an important labour force which can easily become leaders in employing and innovating modern techniques of agricultural production. The National Agricultural Extension and Research Liaison Services (NAERLS) of Ahmadu Bello University, Zaria, Nigeria in recognition of these potentials has established a rural youths extension out-reach Program to encourage the youths to adopt modern techniques of agricultural production. The purpose of this study was to determine the impact of this program on agricultural production. This study was carried out during the 2005/2006 cropping season by comparing the performance of the program participants with non-participants. The results revealed that the participants had an adoption level of improved practices higher than the non-participants. This was further confirmed by the significant relationship found between respondents access to extension services and level of adoption ( $R = 0.46$ ,  $p = 0.01$ ). Yield of major crops and income of farmers were slightly higher among the participants than the non-participants. The results of the study have helped to identify for the benefit of policy makers, the type of extension approaches required to encourage rural youths to adopt modern farming techniques.

**Key words:** Impact assessment, university-based extension out-reach, rural youths, crop yields, farmers income

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### **INTRODUCTION**

The term rural youths is best clarified at the onset, to remove the confusion that continues to exist as the concept of youths. The United Nations (1973) definition of youths as young men and women between the ages of 15 and 24 necessarily excludes many youths in the tradition of Nigerian Societies where the youths are any persons a particular society deems as youths. The notion of youth as a bachelor, still under-going training or looking for first employment as defined by Josue (1986) is unrealistic when applied to Nigeria. For instance, an average Nigerian rural girl of 15 years in some parts of Nigeria is a woman, because she is married and, therefore, cannot technically be classified as a youth, going by Josue's definition. Also many children under the ages of 18 years in Nigeria are school leavers in the sense that they are never school beginners. Similarly, many people above the ages of 40 years are still under-going training or looking for first employment in Nigeria.

In spite of the obvious limitations of the above definitions, age category appears to be the most objective and widely acceptable definition of the concept of youth

(Ekong, 1989; Akinola, 1991). Thus, the concept of youths in this study, is young men and women within the ages of 18 and 30. They are those people who are sufficiently matured, but have not acquired the full rights and successes of independent livelihood. The age 18 years had been conceived as a base from when a person can be said to be sufficiently prepared within a farming community to be gainfully involved on the farm (Kuvlesky, 1976; Torimiro, 1999). The concern about youths development borders on the fact that they possess abundant physical energies, greater knowledge acquisition propensity and less conservative and, therefore, constitute the most important segment of any community development activities (Jibowo, 1989; Torimiro, 1999). They serve as a reservoir of important labour force which can most easily become leaders in employing and innovating modern techniques than their adults counterparts (FAO/UN, 1990; Torimiro, 1999).

For decades, institutions of higher learning have been criticized because they have not responded to the needs of agricultural and rural development. The major criticisms have been on the curricula that seemed incompatible with agricultural education objectives and

lack of linkages between educational institutions and rural communities (Apantaku, 2004). The National Agricultural Extension and Research Liaison Services (NAERLS) of Ahmadu Bello University, Zaria's main function is to undertake research into extension methodologies and adoption processes including intensification of the use of mass media. Conscious of those criticisms, the NAERLS has attempted to link up with farmers directly through extension outreach programs. One of such programs is the Rural Youths Extension Program (RUYEP).

The major objective of the NAERLS' RUYEP is to provide technical advisory services that would improve agricultural production and living standards of the youths. Action plans that have been developed and implemented include: formation of rural youths co-operative groups; provision of technical advisory services; provision of necessary production inputs; explore, assist and advise on market locations and current prices in order to increase their income and keep up productive enthusiasm. The RUYEP also implements a special small holder water pump hiring scheme to boost dry season farming amongst the youths (NAERLS, 2004). The main objective of this study was to determine the impact of the NAERLS' Extension Program on agricultural and income of rural youths. The specific objectives of the study were to identify demographic characteristics of the participants and non-participants to determine the impact of the Program on crop yields and farmers income and to assess the respondents' perception of the effectiveness of the Program.

It was also hypothesized that participation in the NAERLS' RUYEP will have significant impact on crop yields and farmers' income.

#### **MATERIALS AND METHODS**

The data used were collected by means of structured interview schedule from a sample of rural youth farmers in Kaduna State during the 2005/2006 cropping season. Out of the 23 Local Government Areas (LGAs) in Kaduna State, three namely: Zaria, Sabon-Gari and Giwa were purposively selected for the study. These three LGAs were among the major agricultural producing areas of the State and where the activities of the NAERLS' extension Program, were heavily concentrated, thus, the basis for the selection.

The NAERLS extension program was implemented in thirteen villages in the selected LGAs. Seven of these villages were purposively chosen since they had considerable number of program youths (312). The main purpose of the study was to evaluate the effectiveness of

the NAERLS RUYEP. Against this background, there was the need to involve both participants and non-participants to serve as control for comparison. The whole target population within the selected villages was, therefore, stratified into Program participants and non-participants. The names of the participants in the selected villages were written alphabetically and from the list, 76 participants were randomly selected. An equal sample of 76 non-participants were randomly selected from the villages where participants had been chosen. In all, a total of 152 rural youths were involved in the study.

The conditions for the selection of the respondents included:

- He/she should be in the range of 18-30 years old,
- He/she should be a farmer.

Data were collected on some personal characteristics of the farmers, adoption of the recommended practices, crop yields and income of the farmers. Yields estimations were based on a sample plot size of 40 m<sup>2</sup>. All the plant stands within a plot were counted, harvested, weighed and extrapolated. Income from crops production was estimated based on the market prices at the time of data collection. These information provided the indicators for attaining the objectives of this study. Descriptive statistics (frequency counts and percentages) and other statistical techniques such as mean, standard deviations, Chi-square and Pearson-Product-Moment correlation analyses were used to analyse the data. The level of significant was set a priori at 0.05.

#### **RESULTS AND DISCUSSION**

**Demographic characteristics of the respondents:** The study revealed that about 79% of the participants were 30 years or younger, while 63% of the non-participants were within this age category. The implication of this is that both the participants and non-participants were within the age category with abundant energies and prone to innovations adoption to increase production and income. Only 12% of the participants farmers had no formal education, while 35% had quoranic education. The remaining had educational exposure ranging from primary to post secondary education. About 17% of the non-participants had no formal education, while about 40% had quoranic education. A similar number (33%) of them attended primary school, while 10% had either secondary or post secondary school education (Table 1). The implication of the education variable is that both the participants and non-participants possessed the

**Table 1: Demographic characteristics of the respondents**

Characterisation	Participants		Non-participants	
	No	(%)	No	(%)
<b>Age</b>				
18-20	6	7.9	2	2.6
21-23	19	25.0	20	26.3
24-26	35	46.1	26	34.2
27-30	16	21.0	28	36.9
<b>Marital status</b>				
Married	53	69.8	61	80.3
Single	23	30.2	15	19.7
<b>Household size</b>				
Below				
3	17	22.3	13	17.1
3-5	38	50.0	35	46.1
6-7	16	21.1	21	27.6
Above				
7	5	6.6	7	9.2
<b>Level of education</b>				
No formal education	9	12.0	13	17.1
Quoranic education	27	35.5	30	39.5
Primary education	31	40.8	29	38.2
Secondary education	7	9.2	4	5.2
Post. sec. education	2	2.5	0	0.0
<b>Farm size</b>				
Less than				
1 ha	29	38.2	27	35.5
1-3.9	43	56.6	40	52.7
4-6.9	4	5.2	9	11.8
7 and above	0	0.0	0	0.0
<b>Extension contact</b> (number of visits/month)				
1-2	16	21.1	69	90.8
3-4	20	26.3	7	9.2
Above	4	52.6	0	0.0

education required to read and understand written information which could increase knowledge about new farm practices.

As also shown in Table 1, 38% of the participants cultivated less than 1.5 ha, while 36% of the non-participants cultivated less than 1.5 ha. The remaining, cultivated above 1.5 ha. It can, therefore, be deduced that both the participants and non-participants had the land holdings required to adopt improved agricultural practices. They also had fairly large household sizes which suggests their capabilities to provide the farm labour often required to adopt improved practices.

**Impact of the program on adoption of recommended practices:** The study area is one of the major maize producing areas of Nigeria, endowed with a high potential for maize production. As such, the program gave much attention to maize production. This crop was, therefore, selected for a detailed impact assessment of the program extension activities. Consequently, to determine the adoption of the recommended improved agricultural practices, each respondent was awarded an adoption score based on consistent and large-scale, use of the 8 recommended maize production practices shown in Table 2. One point was scored for each of the 8 practices. Table 2 shows that majority (54%) of the participants had

**Table 2: Adoption scores of the recommended production practices and level of adoption**

Adoption score	Participating youths (%)	Non-participating youths (%)
Less than 4	15.3	42.9
4-6	42.5	34.4
7-8	42.2	22.7
<b>Level of adoption of improved practices</b>		
Improved varieties	83.1	57.5
Fertilizers application	100.0	93.1
Sowing dates	48.3	31.3
Spacing	51.1	38.2
Plant population	45.0	34.0
Grain storage chemicals	42.3	39.9
Weeding	56.2	41.4
Herbicides	1.4	0.6

**Table 3: Average maize yields of participants and non-participants**

Yields (t ha <sup>-1</sup> )	Participants		Non-participants	
	No.	(%)	No.	(%)
Below 1	12	15.8	26	34.2
Above 1	64	84.2	50	65.8

between 4-6 points, while 43% of the non-participants fall within this category. Also, while about 28% of the participants had between 6-8 points, only 3% of the non-participants had above 6 points of adoption scores.

The recommended practices mostly adopted by the participants were improved varieties (83%), fertilizer application (100%), sowing dates (48%), spacing between holes (51%), plant population (45%) and weeding (56%). The adoption pattern reflected the farmers access to the NAERLS extension services. This was further confirmed by the significant relationship found between respondents access to extension services and level of adoption ( $R = 0.46, p = 0.01$ ). The claim that the youths are prone to innovation adoption, possess knowledge acquisition propensity and less conservative (Jibowo, 1989; Torimiro, 1999) has been justified in this study.

It implies that farmers having more access to NAERLS extension services had higher adoption scores. Chi-square analysis also indicated that difference between participants and non-participants in adoption score was also significant at 1% level [1% level ( $\chi^2$  by 14.23)]. Additionally, age, education, farm size and income were found to be significantly related to adoption of the recommended practices.

**Impact of the program on crops yields of participants and non-participants:** Maize is the most important crop cultivated in the study area and the crop that the NAERLS' RUYEP emphasized. Table 3 shows clearly that about 84.2% of the participants had average yield of maize above 1 t ha<sup>-1</sup>. Only, 15.8% of the participants obtained average yields below 1 t ha<sup>-1</sup> compared with about 34% of the non-participants in that level of production.

Table 4: Mean and Standard Deviations of Yields of Major Crops

Crops	Yield (kg ha <sup>-1</sup> )					
	Participants		Non-participants		p-value	t-value
	Mean	SD	Mean	SD		
Maize	871.1	910.1	810.5	890.6	7.100	0.2760*
Sorghum	762.4	818.2	735.3	626.4	4.291	0.0906
Millet	656.7	577.8	589.2	73.40	6.283	0.0659
Cowpea	321.5	310.3	290.3	140.2	7.351	0.1824
Rice	780.4	407.1	620.0	823.4	1.826	0.1511

\*: Significant at p<0.05

A part from maize, the Program also popularised the adoption of improved practices of other crops such as sorghum, millet, cowpea and rice. A comparative yield estimates of these crops is shown in Table 4. The means and standard deviations of the yields per hectare show that yields of the participants were only slightly higher than those of the non-participants of the scheme. The t-values show that the mean yield of all the crops except for maize, did not differ significantly among participants and the non-participants.

**Impact on farmer's income:** An important measure of the impact of the Program is its effects on the income of the participants. It was hypothesized that participation in the NAERLS' RUYEP will have significant impact on farmers income. Income from arable crops cultivated by farmers were aggregated. This actually was estimated income as it included estimates of crops consumed, sold or given as gifts. Only 27% of the participants obtained income less than N50,000.00 from crops production during the season which data used in this study were collected. About 24% of them generated income greater than N100,000.00 from crops production. On the other hand, a majority (53%) of the non-participants generated income less than N50,000.00, while only 7% had income above N100,000 (Table 5).

This finding support the hypothesis that participation in the NAERLS' RUYEP will have significant impact on farmers income. In other words, the NAERLS RUYEP has improved the production techniques of the participants, thereby resulting in increased income. Nevertheless, even though the income of the participants was higher than those of non-participants, their income is considered in this paper to be generally low compared with others in non-farming occupations, if it is assumed that arable crops cultivation was the only source of their income. Further more, although the study shows an increase in the income of most of the participants, it was not quantitatively certain whether the increase in income translated to improvement in profitability of farming and improved standard of living of the youths and the local communities.

Table 5: Income (N) from crops production

Income	Participants		Participants	
	No	(%)	No	(%)
Less than 10,000	2	2.6	2	2.6
10,000-30,000	6	7.9	10	13.2
30,001-50,000	19	25.0	28	36.8
50,001-70,000	15	19.7	16	21.1
70,001-100,000	16	21.1	13	17.1
Above 100,000	18	24.1	7	9.2

Note: US \$1 = N130.00

**Perceived effectiveness of the NAERLS rural youths extension program:** When opinion of respondents about the NAERLS RUYEP was sought, the following results emerged. About 79% of the participants strongly agreed that the program had assisted them with regards to production problems and rural life improvement. About 8% simply agreed, while 3% disagreed and 10% either gave no response or were neutral. Considering these results, however, it could be said that majority of the participants considered the Program helpful.

## CONCLUSIONS

A number of general observations and conclusion can be drawn from this study. The first is that rural youths in the study area are willing to accept new improved farm practices if they know about them and if the practices prove economically advantageous. This means that they respond positively to economic incentives. Such incentives should, therefore, be provided by the government.

The second point is that extension work of the NAERLS' type appears to have a better pay-off than the extensive Training and Visit (T and V) system pursued in Nigeria (Chikwendu *et al.*, 2001). Thus, it has the potential for overcoming the weaknesses of the T and V extension system.

It is also clear from the study that if rural youths programs such as that of the NAERLS which emphasize modern farming and offers a career to young people within their rural neighbourhood are encouraged, the tendency for rural youth migration to urban centers would be substantially curbed.

The concept of RUYEP as exemplified by NAERLS may serve as a model for agricultural education institutions in Nigeria. The implication of the findings to the attention of policy makers is that if the country can adopt the NAERLS type of extension approach, the youths are capable of producing large quantities of food sufficient to feed the nation and surplus for export. It seems pertinent, therefore, to suggest that Nigerian governments should study the NAERLS approach

vigorously with a view to adopting it in other communities of the country. Further more, although the study shows an increase in the income of most of the participants, it was not certain whether the increase in income translated to improvement in profitability of farming and improved standard of living of the youths and the local communities. This matter deserves further investigation using more rigorous data and statistical tools to strengthen the findings of this study. Moreover, the contributions of higher institutions of learning to rural youths development is a very interesting aspect of rural community development studies which has not been adequately focused in Nigeria. This present study appears to be a good start.

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