The Effect of Adoption of Agricultural   Extension Recommendations   for   Yam Production on Labour Among-Resource-Poor Farmers   In Cross- River   State, Nigeria

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Abstract
Labour is one of the factors of production. And it   is expected that with increase in adoption, the farmer's output would increase and, consequently,there would be increases in the quantities of production inputs, and labouris one of such inputs. This study was, therefore, conducted to find out the effect of adoption on labour used for yam production by resource-poor farmers in Cross River State of Nigeria. In conducting the study, 180 resource-poor   farmers were randomly selected using stratified random sampling   technique. The data collected were analyzed using linear correlation and regression analysis at 5% level. The result of the   analysisshowed   that adoption has no significant effect on labour.   The hypothesisthat there is no significant effect of adoption on   labour for yamproduction   was accepted, while the alternative hypothesis was rejected. On the basis of the findings made, some recommendations were made.
Keywords: Effect, adoption, yam, production, recommendations, labour,   resource-poor farmers.

1.   Introduction

Agricultural extension recommendations meant for farmers'   adoption are designed to primarily improve farmers' yield. And studies (Agbarevo and Obinne , 2009;   Agbarevo, 2010; and Agbarevo, 2011)   have shown that adoption of improved crop production technologies packaged by Agricultural Extension   Department not only significantly improved resource – poor farmers' yield but also led to increased farmers' income, which enabled farmers to increase the purchase of production inputs. Hence, a positive correlation exists between adoption on one hand and yield, income and ability to increase quantity of production inputs used   such as agro chemicals, equipment, finance, etc., on the other. It is expected , therefore, that increased adoption of extension recommendations would increase demand for labour on farms too.   In Africa and Nigeria, indeed, farm labour is usually provided mainly by the family. Hired labour is usually used to augment family labour. In this regard, Adegeye   and Dittoh (1985) observed that in Nigeria, and in deed Africa, although three types of labour can be distinguished, that is, family labour, hired labour and exchange labour; family labour is the major source of labour. They further pointed out that family

labour is predominantly used   in Nigeria. And it comprises the labour of all males, females and children in the family or household because they partake in the cultivation of the household holdings.

  The family constitutes the main source of labour and sometimes, the only source of labour employed by resource-poor farmers (small-scale farmers) who constitute about 95% of the farming population. Labour availability is known to increase the size of land put under cultivation, as strength of the labour availability is positively correlated with land placed under cultivation. Osabo (2004) in a study of labour mobility for agricultural production found that the amount of family labour determined, to a large extent, the family land requirement and the level of agricultural activities during the year. He further observed that labour availability during the peak season is frequently a greater constraint to increase agricultural production than land availability. Moreover, evidence abound that there is labour bottleneck even when the resource-poor farmer increases the amount of land put under cultivation. This becomes more severe as new agricultural technology is being adopted by farmers.

Labour is, therefore, a limiting factor to resource-poor farmers' production. It is worsened by the fact that resource-poor farmers may want to increase labour in order to increase area under cultivation and, consequently, production through hired labour but may not be able to do this because of cost of hired labour (Oyejide, 1986). Hired labour is, therefore, used under extreme circumstances where family labour drastically reduces due to rural-urban migration (Amos, 1993). It is against this background that study was conceived.

1.1 Materials and Methods

In conducting the study, 180 Agricultural Development Project (ADP) cassava farmers were randomly selected through stratified sampling technique. The state was divided into three Agricultural Development Project (ADP) zones. Three blocks were selected from each zone, and two cells from each of the nine blocks selected, giving a total of eighteen cells. Ten farmers were randomly selected from each cell, giving a sample size of 180 farmers.

The data used for the study were collected with use of a structured questionnaire. The researcher was assisted in the distribution and collection of the questionnaire by Agricultural Development Project Enumerators. The data on adoption of recommendations and labour were collected and analyzed using linear correlation and regression analysis. To obtain an adoption index for each farmer, farmers' responses were categorized into: (a) rarely adopted (b) adopted and stopped and (c) adopted and still using innovation, to which numerical values 1, 2 and 3 were assigned respectively. The mean response was computed and used as the adoption index. The null hypothesis that adoption does not influence labour was tested at 95% confidence level using linear correlation and regression analysis. The regression equation is given by the formula: $y = a + bx$

> Where:
> y = labour (dependent variable)
> a = intercept
> b = slope
> x = adoption (independent variable)

1.1.1 Results and Discussion

The result of the analysis showed that adoption had no significant effect on farm labour for yam production. This is because the F-value of 1.728 was found not to be significant. The null hypothesis that adoption has no significant effect on farm labour for yam production was, therefore, accepted; while the alternative hypothesis was rejected. This means that adoption of improved yam production technologies does not increase labour for yam production by resource-poor farmers. This because the labour used is mainly provided by the family farm. Hence, the number of farm hands used is determined by the family size so that even when adoption leads to increase in farm size, labour remains rather more or less static. This is because family size does not increase with adoption. Moreover, rural farmers organize themselves in labour groups, and work on individual member's farms in turns. Hence, it was not surprising to observe that adoption did not necessary increase labour in terms if persons involved in farming although the number of man-hours/man-days would increase with increased area to cultivate.

 Supporting the above finding, Adegeye and Dittoh (1985) observed that in Nigeria (Africa), although three types of labour can be distinguished, that is, family labour, hired labour and exchange labour, family labour is the most important component of labour for small-scale (resource-poor) farmers. Family labour constitutes the main source of labour and sometimes, the only source of labour employed by resource-poor farmers (small-scale farmers) who constitute about 95 percent of the farming population.

Still in support of the finding, Osabo (2004) in the study of labour mobility for agricultural production found that the amount of family labour available to be employed during the peak periods of demand for labour determines to a large extent the family land requirement and the level of agricultural activities during the rest of the year. He further observed that labour availability during the peak season is frequently a greater constraint to increasing agricultural production than land availability. Moreover, evidence abounds that there is labour bottleneck, even when the

resource-poor farmers increase the amount of land put under cultivation. This becomes more severe as new agricultural technology (innovation for adoption) is introduced he concluded.

This implies that the difficulty in increasing labour on farms as demanded by the introduction of new technology is a limiting factor to the adoption of such new technology or technologies. This is because agricultural labour for resource-poor farmers positively correlates with family size, which cannot be increased with adoption of new technology. In the same vein, Amos (1993) observed that hired labour is used in extreme circumstances where family labour drastically reduces due to rural - urban migration, schooling or an increase in the average age of farmers. Poor labour availability is, therefore, an impediment to agricultural production as family and even child labour remain inadequate (IFAD, 2001; FAO, 2007).

1.1.2 Conclusion

The study has shown that adoption improved yam production technologies does increase labour significantly. This implies that although labour requirements may increase as a result of adoption, the number of farm hands employed remains more or less static. The inelasticity of labour does not mean that resource-poor farmers are unwilling to increase labour on farms when necessary, rather, they are limited by unavailability, or high cost of labour, or both since farming is organized on farm-family basis. Extra labour requirement needed would be met by members of the farm family putting in extra hours on farms rather than increasing the number of farm hands. This situation is worsened by the rural-urban migration, which robs the farm-families of available labour. To stem this tide of rural-urban migration, government needs to provide basic social amenities in rural areas with the establishment of agro-cottage industries. This is underscored by the fact that the present population of farmers is aging out without a corresponding replacement by youths. Due to rural – urban migration, the average age of rural farmers is about 50 years. This implies that the agricultural labour force is predominantly composed of those who have passed their prime and, therefore, have become less productive on farms.   Rural farmers would, however, be able to meet   with the challenges of hiring farm labour if they organize themselves into cooperatives. This would help to remove some of the bottlenecks associated with labour availability on farms for increased production.

1.1.3 References

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Table 1: The effect of adoption on labour for yam production

variables	b	standard co-efficient	t-value error
Constant	3.646	2.532	1.440
Adoption	1.598	1.215	1.315
R	0.09807		
R-Square	0.00962		
F-Value	1.72867*		
Sampling size	180		

*Not significant

Table 1 shows the estimated linear regression analysis - the effect adoption has on labour used for yam production among resource-poor farmers. The table shows that the co-efficient of determination (R-square) is 0.00962 indicates that very weak correlation/strength of association   exists between the dependent variable (labour) and the independent variable (adoption) in terms of the relative variables of Y around the regression line. The r-value 0.09807 equally shows very   weak correlation between adoption and labour.

The co-efficient 'b' represents the margin of increase of the dependent variable as a result of increase in the value of the independent variable as well as the relationship between the dependent and independent variable expressed   variously. The standard error estimates in the table, 2.532 and 1.215, show   the measure of error involved in the regression line. The values of the error estimate indicate that there is little scatter of observed Y-values around the regression line. The estimates of Y-values based on the computed values from the regression line would, therefore, be very close to the real or observed values of Y. The computed t-value   of 1.315 was not significant. The F-value of 1.73 on the table shows that the relationship between adoption and labour is   insignificant.

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