

## Precision Farm Labour Supply for Effective Cocoa Production in Nigeria

K.A. Oluyole and J.O. Lawal

Economics Section, Cocoa Research Institute of Nigeria, P.M.B. 5244, Ibadan, Nigeria

**Abstract:** In Nigeria, labour is an essential factor in farming. In view of the importance of labour in agriculture, this study was carried out to investigate the sources of labour used in cocoa production. Multi-stage sampling technique was used to select 100 cocoa farming households. The first stage was a random selection of two Local Government Areas (LGAs), the second stage was the selection of two communities from each of the LGAs while the third stage involved the random selection of twenty five cocoa farming households from each of the communities, thus making a total of one hundred respondents. The data collected was analyzed with descriptive as well as inferential analysis. Descriptive analysis showed that most of the farmers (53.0%) utilized share cropping source of labour, 22.0% utilized hired labour, 19.0% used communal labour while 6.0% of the farmers used sole family labour for their farming activities. In terms of labour used for different activities, 94.0% of the farmers utilized hired labour for farm clearing, while 61.0% utilized hired labour for harvesting. All (100%) of the farmers used male labour for farm clearing while 60.0% utilized female labour for harvesting. The result of the multi-variate regression analysis shows that cocoa farm income ( $p < 0.01$ ), farm size ( $p < 0.05$ ) as well as wage rate ( $p < 0.05$ ) significantly affected the use of labour for cocoa production in the study area. The study recommended that government should equip rural areas with infrastructural facilities so as to stem rural-urban labour migration. There is also a need to educate farmers and encourage them on the use of labour relieving technologies such as mechanization and/or herbicides as these could be alternative methods to reduce excessive spending on labour and a surety during of scarcity of man-labour.

**Key words:** Farm labour, cocoa production, hired labour, share cropping, farmers, Nigeria

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### INTRODUCTION

In Nigeria, labour is a major constraint in peasant production (Gocowski and Oduwole, 2003). The availability of labour has been found to have impact on planting precision, better weed control, timely harvesting and crop processing (Oluyole *et al.*, 2007). Empirical evidence has shown that available labour force comprised mostly of old people to the exclusion of young men and women within the active working age thus having a negative impact on agricultural productivity (Anyanwu, 1979; Uwaka, 1982; Iwueke, 1987).

The increasing absence of people within the active age could be attributed to farm drudgery, absence of social infrastructure in the rural areas, poor farm income and generally low life expectancy in rural areas (Harris, 1970; Obibuaku, 1983; Gill, 1991). As a result, young people within the active working age who are to cope with the challenges of modernizing agricultural production are compelled to migrate to urban centre in search of white-collar jobs and improved standard of living. This development has not help agricultural productivity as it has left farming in the hands of the old and non-literate farmers while very few young energetic men who could

not leave village perhaps due to unavoidable circumstances (Adebayo, 1999). The implication of the foregoing is the decreasing availability of an energetic population who could cope with the task of farm operations.

According to Olayide (1980), the estimated rural population in the 1970s accounted for 75% of the total population and within the same period, the sector accounted for only 57% of the nation's total labour force. Worse still, the rural farm population accounted for only 16% of the total active labour force in Nigeria. According to Lele and Stone (1989), rapid growth in population which increases farm labour supply exerts so much pressure on land and reduces farm size per hectare.

Prior to the colonization of most African countries, tree cropping was mainly undertaken by men folk. But studies such as Pala (1976) and Martha (1982) have shown that colonial economy adversely affected traditional pattern of task allocation. These studies noted that there was a disruption in the pre-colonial division of labour between genders in the rural communities as a result of male absenteeism from the countryside. In line with the fact that wage employment draws men away from

their own farms and western education changing men's attitude about agriculture, many women were found doing what was traditionally meant for men. In several parts of sub-Saharan Africa, women undertake up to 70% of production, processing and marketing of agricultural products.

In line with the relevance of labour to agricultural production in developing countries such as Nigeria, this study was designed to examine farm labour supply for effective cocoa production in the study area. The study was designed to provide answer to the following questions:

- What the different sources of labour supply are available for cocoa production in the study area?
- What factors affect the supply of labour for cocoa production in the study area?

**MATERIALS AND METHODS**

The study was carried out in Ondo, the highest cocoa producing state in Nigeria. The state is predominantly an agricultural area and most of the inhabitants (about 70%) are farmers. The farmers engage primarily in the production of cocoa but often intercropped with kolanut, oilpalm, plantain and banana. Also, food crops like cassava, maize, yam and vegetables are cultivated. Multi-stage sampling technique was used to select 100 cocoa farming households from the study area.

The first stage was a random selection of two Local Government Areas (LGAs) from the state (Ondo state), the second stage was the selection of two communities from each of the LGAs while the third stage involved the random selection of twenty five cocoa farming households from each of the communities, thus making a total of 100 respondents selected for the study. Information was collected from the respondent farming households with structured questionnaire and the data retrieved from the information was analyzed with descriptive analysis as well as multivariate regression model. Descriptive statistics was used to analyze the different sources of farm labour for cocoa production while multivariate regression model was used to determine the factors that affect farm labour supply for cocoa production in the study area. The model could be represented thus:

$$Y = \alpha + \beta X_i$$

Where:

Y = The vector of dependent variable and it represents the quantity of labour (mandays) used for cocoa production in the study area

X = The vector of explanatory variables  
 i = The number of respondent cocoa farmers

The explanatory variables used in the model include:

- X<sub>1</sub> = Farming experience of farmers (years)
- X<sub>2</sub> = Household size
- X<sub>3</sub> = Labour cost (₦)
- X<sub>4</sub> = Wage rate (₦)
- X<sub>5</sub> = Farm income (₦)
- X<sub>6</sub> = Farm size (hectare)
- X<sub>7</sub> = Farm input (₦)
- X<sub>8</sub> = Cocoa output (₦)

**RESULTS AND DISCUSSION**

Table 1 shows the type of labour used by the farmers for cocoa production. The Table 1 shows that most (53%) of the farmers in the study area used share cropping while 19 and 22% of the farmers used communal and hired labour, respectively. Meanwhile, only few (6%) of the farmers used family labour. The result however showed that share cropping is mostly used as source of labour for cocoa production in the study area. Table 2 shows the type of labour used for different activities in cocoa production in the study area.

The result shows that 94% of the farmers used hired labour for farm clearing while only 6% used family labour indicating that hired labour is predominantly used for farm clearing in the study area. It could also be shown in Table 2 that 66% of the farmers used hired labour for seedling planting and 34% of the farmers used family labour for the operation. As for fertilizer application, 6% of the farmers used family labour for the operation while 25% used hired labour. However, there was no response from 69% of the total farmers as regards the use of labour for fertilizer application. Their response was that they don't use fertilizer on their farms. This finding is in consonance with Ogunlade *et al.* (2009) who claimed that

Table 1: Type of labour used for cocoa production

Types of labour used	Frequency	Percentage
Family labour	6	6.00
Hired labour	22	22.00
Communal labour	19	19.00
Share cropping	53	53.00
Total	100	100.00

Field survey, 2009

Table 2: Type of labour used for different farm activities

Farm activities	Hired labour	Family labour
Farm clearing	94	6
Seedling planting	66	34
Fertilizer application	25	6
Chemical application	89	11
Harvesting	61	39
On farm cocoa processing	51	49

Field survey, 2009

**Table 3: Gender of labour used for different farm activities**

Farm activities	Male	Female
Farm clearing	100	0
Seedling planting	92	8
Fertilizer application	26	2
Chemical application	94	6
Harvesting	40	60
On-farm cocoa processing	25	75

Field survey, 2009

**Table 4: Multiple regression model result**

Variables	Coefficient	Probability
Farming experience	0.3020767	0.955
Household size	-0.7123406	0.408
Labour cost	0.0000507	0.311
Wage rate	0.0353669	0.051**
Farm income	0.0003461	0.000***
Farm size	-0.9717971	0.016**
Farm input	0.0000934	0.215
Cocoa output	-3.992701	0.204
Constant	-13.98089	0.561
R <sup>2</sup>	0.9995	
Adj R <sup>2</sup>	0.9995	

Field survey, 2009

most cocoa farmers do not use fertilizer for cocoa production on their farms. About 89% of the farmers used hired labour for chemical application while just 11% used family labour. It could also be shown in Table 2 that 61 and 51% of the respondent farmers used hired labour for cocoa harvesting as well as on-farm cocoa processing indicating that on the average, hired labour was used for these activities in the study area. Table 3 shows the type of gender used for different farm activities for cocoa production in the study area. The Table 3 shows that all (100%) of the farmers used male for farm clearing while none of the farmers used female for farm clearing. Hence, male is predominantly used for farm clearing in the study area. Results also shows that 92% of the farmers used male for seedling planting while 8% used female indicating that male is predominantly used for seedling planting in the study area. About 26% of the farmers used male for fertilizer application while just 2% of the total farmers used female for the operation.

There was no response from seventy-two farmers as regards the use of labour for fertilizer application. As for chemical application, 94% of the respondent farmers used male and just 6% used female for the operation. However, 60 and 75% of the farmers used female for cocoa harvesting as well as on farm cocoa processing indicating that females are predominantly used for these operations in the study area.

The result of multiple regression analysis is shown in Table 4. The Table 4 shows that out of the eight variables investigated, three variables were found to have significantly affected labour use among the respondents. The significant variables were wage rate ( $p < 0.05$ ), farm income ( $p < 0.01$ ) and farm size ( $p < 0.05$ ). Wage rate significantly and negatively affected labour use. This is

because wage rate determines the extent to which labour could be used. When wage rate is low, more labour could be employed and vice versa. The negative sign complied with the apriori expectation and it indicates that as the wage rate decreases, this will give the farmers an opportunity to use more labour.

Farm income also significantly and positively affected labour use. Increase in farmers income enables farmers to employ more labour for farm activities, this is because farmers with high income will be able to pay labour wages more and hence will be able to use more labour than the farmers with low income. The positive sign shows that as farmers income increases, labour use also increases. Farm size was also found to be significantly affected labour use. This is because the extent to which labour would be used is determined by the size of the farm. Large sized farms would require more labour than small sized farms and vice-versa. The positive sign of the coefficient of the variable indicates that as farm size increases, labour use also increases.

## CONCLUSION

Share cropping is the type of labour that is mostly used for cocoa production in the study area. Share cropping is a system in which the share cropper provides all the labour required for cocoa production and will later be entitled to a certain proportion of cocoa proceeds realized from the farm. More tedious operations such as farm clearing, planting of seedlings as well as chemical application were mostly undertaken by men, while less tedious operations such as harvesting and on farm cocoa processing were mostly undertaken by women. Wage rate, farm income and farm size significantly affected labour supply for cocoa production.

## RECOMMENDATIONS

Based on the empirical findings, the study therefore recommends:

- The need to educate and encourage farmers on the use of labour relieving technologies such as mechanization and/or herbicides as these could be alternative methods to reduce excessive spending on labour, drudgery and also serve as surety during labour scarce periods
- That government should equip rural areas with infrastructural facilities so as to stem rural-urban labour migration. If the supply of labour is high, therefore the wage rate may be forced down and this would encourage farmers to employ more labour for farm activities

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