



LABOUR-USE AND AGRICULTURAL PRODUCTIVITY: IMPLICATION FOR RICE FARMING IN KWARA STATE NIGERIA

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ABSTRACT

Farm labour productivity is a measure of efficiency with which labour is used on the farm for the production of specific farm products. However of recent there has been a constant decline in the supply of agricultural labour as a result of several factors among which are increased off-farm employment opportunities as a result of industrialization. It is therefore imperative to compare the level of productivity for hired and family labour particularly in rice production one of the crops for which Nigeria is known to be a major importer. Using survey data from Kwara state Nigeria, this article compares family and hired labour productivity in rice farming. The analytical tools used are the descriptive statistics, multinomial logit and production function analysis. The result showed that hired labour is more productive than family labour and was found to be significantly correlated with a negative coefficient. The household size, farming experience and wage rate are the factors found to significantly influence the type of labour used. While the farm size, quantity of fertilizer used and the type of labour used significantly influence productivity. The study therefore recommended that rice farmers be given improved access to credit facilities to help them cover the cost of wage rate. This will help them increase their productive capacity and thus improve food security among the rural households.

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INTRODUCTION

The ultimate interest of economists particularly in productivity is to find ways of increasing output per unit of input used. It also involves attaining a desirable optimum level of production given the available resources thereby raising the standard of living. Over the years, agriculture in Nigeria has been restricted to the small-scale level. This is because over seventy percent of Nigerians engage in small-scale farm holding therefore the level of production cannot cope with level of demand. This is against what is obtainable in some of the developed economies like United States of America (USA) where only about 5 percent are engaged in agricultural production, yet it feeds itself with even enough surpluses for export (FAO, 2005). Thus increases in agricultural productivity can contribute to the wellbeing of an individual and the economy as a whole. In Nigeria, agriculture plays significant role in the nation's economic development. These roles include contribution to the country's gross domestic product, source of income and decent living for a large proportion of the population. Others include the provision of adequate food for the people, supply of raw materials to the industrial sector and the generation of foreign exchange through export (PCU, 2005).

However, agricultural productivity has been declining in Nigeria. Its contribution to the Gross Domestic Product declined from about 90 percent before independence to about 41 percent at an average annual growth rate of 6.48 percent (NBS, 2010). The low agricultural output has led to the poor performance of the food sector. Food production has not been able to keep pace with the demand in spite of the evidence showing that Nigeria is producing more food staples than it was a decade ago (CBN, 2005). Demand is also high as a result of the rapid increase in population which is estimated to be growing at 3.2 percent per annum (NPC, 2006) while agricultural production is growing at 2.5 percent per annum. This difference has led to a demand – supply deficit which has caused huge increase in the country's import bills from ₦3.47 billion in 1990 to ₦113.63 billion in 2002 and then to ₦348 billion in 2007 (Okuneye, 2002; Okunmadewa, 2003 and Ogundari & Ojo, 2007). This has subsequently increased the prices of major food staples over the years. Nigeria's food crisis is compounded by the fact that more than 54 percent of Nigerian population is poor (NBS, 2007). This has left many Nigerians in the dilemma of having neither the means to produce food nor the money to buy food (Adeoti & Ekwudike 2003; Ogundari & Ojo, 2007). As a result, 16

percent of Nigerians are currently severely undernourished while, about 41 percent are food insecure (FAO, 2005). This situation calls for an urgent need to look into ways of increasing agricultural productivity.

Labour is one of the important inputs that must be considered when discussing agricultural production in Nigeria. This is because land and labor are essential inputs in any study on agricultural production, as such, assessing the labor productivity of rice farming is considered essential in this study. Although rice is widely consumed among the agro-ecological zones, one reason that might account for the dry savannah region being the most efficient user of labor is the fact that this agro-ecological zone is blessed with a vast expanse of land suitable for the cultivation of rice as well as sound infrastructural support (such as irrigation and processing facilities provided by Fadama and other related projects) (Oni *et al.*, 2009). Labour productivity therefore provides a measure of the efficiency with which labour is used in the production of goods and services (Freeman, 2008). There are basically two forms of labour usually employed in agricultural production. They are the hired and family labour.

Hired labour in agriculture is usually no residual claimant and their effort cannot be adequately observed because of the unpredictable nature of agricultural production (such as seasonality, weather effects among others). Therefore, hired labourers have the likelihood to evade some duties. This perceived problem can be mitigated by supervision. Hence, additional costs in the form of supervision costs arise, making farm production based on hired labour more expensive. However, the some arguments in favour of hired labour are often overlooked. These arguments are evident in growing farms with larger stock of workers where more specialization and the division of labour into distinct tasks can help improve productivity. In this case, family members might concentrate on management and/or supervision tasks, while hired labourers specialize in non-managerial tasks. Therefore, the productivity of hired labour tends to exceed that of a family member who is not a specialist (Allen & Lueck, 1998; Kimhi, 2009). Family labour on the other hand, is a critical element within the production process, both in terms of its availability and productivity. However, both variables can be compromised through poor nutrition, illness and death, lack of interest in subsistence agriculture, competing claims on time with other labour-intensive household tasks and the drift in search of alternative livelihoods. Households which are heavily reliant on family labour are thus extremely vulnerable to the loss of labour (Blanc *et al.*, 2008).

Rice farming is a labor-intensive activity which demands both skilled and unskilled labour. Operations like sowing, application of plant protection chemicals, weeding among others requires skilled labour. From nursery preparation to post harvest operations, the use of human, bullock and machine labor tend to be very intense. Traditionally, the use of draught animals has been common for preliminary land preparation and leveling works. Later on, consequent to mechanization, the share of animal and human labour may be reduced (Devi, 2012). It is however important to note that rice farming takes about four months between planting and harvesting. Therefore, whatever is invested, the return is

sure within the next five months. Rice is a very high yield crop with acre of rice farm capable of producing over 100 bags of rice. All that is needed is a very good swampy, less acidic land, high yield variety of rice specie, the right fertilizer and proper application, good weed control at the proper time and early planting (Omeh, 2013). Kwara State has a comparative advantage in rice production in Nigeria with yield being put at 2.37 tons per hectare of cultivated land (Kwara State Ministry of Agriculture 2004).

Agricultural production in Nigeria unlike the developed world has remained labour-intensive with more than 90 percent of population being small-scale farmers, cultivating less than two hectares and utilizing unpaid labour as a major source of farm labour supply (Arikpo *et al.*, 2009). Of recent, there has been a sharp decline in labour supply for agricultural production in Nigeria. This is attributed to a host of factors amongst which are rural-urban migrations, increase enrolment in school, increased employment opportunities accompanying industrialization, urbanization as well as increased off farm employment. Therefore, because of these, there is great fear that agricultural growth and development may be retarded and the effort of reducing hunger and achieving self-sufficiency by 2020 would remain a mirage. Hence, effort should be directed towards ensuring efficient choice allocation and utilization of available agricultural labour force. More so, most agricultural activities are traditionally dominated by small to medium family farm operations, farm sizes with the share of hired workers in total labour force steadily increasing. According to the European Commission (2012), regularly employed non-family members on the average contributed 14.7 per cent of the total agricultural workload whereas irregularly employed non-family members contributed another 7.7 per cent. This share has been on the rise in recent years, thereby calling for an urgent attention.

However, labour scarcity in agriculture, especially in rice farming, is reported to be an important reason behind declining paddy in most developing countries Nigeria inclusive. The shortages in labour supply and the resultant high wages are some of the major reasons for the poor performance of agricultural sector especially in rice production. This decline from some studies has been reported to the tune of 1.63 per cent per annum in the autumn season, 1.92 per cent in winter and 1.98 per cent in summer. On an average, the decline rate was 1.84 per cent per annum (Devi, 2012). Many studies have reported the uneconomic level of human labour use which has been estimated to be the single item of highest expenditure (Parayil, 2010; Sussha *et al.*, 2011). It was stated that when taken as a separate variable, investment in labour has shown inefficient level, as the marginal value product (MVP) and marginal factor cost (MFC) ratios have been observed to be less than unity as seen in Sreela (2005) for vegetables and Balakrishnan (2000) for different varieties of banana in Kerala agriculture. It is therefore, necessary to compare level of productivity of type of labour used in rice farming. Rice is a strategic food security crop in Nigeria with the country being the largest producer and consumer in West Africa. Nigeria produced an average 3.4 million metric tons of paddy rice, equivalent to 1.8 million metric tons of milled rice (Daramola, 2005; UNEP, 2005). Prior to independence,

rice was treated with negligence as the country was self-sufficient in rice production. However, this situation has since changed as the status of rice in the average diet has been transformed from being a luxury food item that it was at independence to that of a staple food, taking the place of cassava, yam among others. This is because both the rich and the urban poor now rely on it as a major source of calories (WARDA 2003; 2004; Daramola 2005). Rice consumption on the other hand can thus be said to have risen tremendously since 1970 (10.3 percent per annum), a result of the accelerating population growth rate (2.8 percent per annum) and increasing per capita consumption (7.3 percent per annum) leading to an increase in domestic demand over domestic supply. In response to meeting the shortfall in the supply-demand gap, Nigeria government has resorted to importation of milled rice (CBN, 2008). Therefore, considering the rate at which the country's population is increasing, there is the need to match the population increase with food production hence increase in rice production through improved labour productivity might be one of the ways of realizing this dream.

Furthermore, efficiency of resource use, such as labour can serve as a key to effectively addressing the challenges of achieving food security. Raising productivity in agriculture will certainly lead to availability of food and reduction in the real price of food. However, increased food production will have to come from increased yield. Therefore, a critical assessment and analysis of these variables will make it possible to deduce the effect of the type of labour used on productivity and offer possible ways of improving on it.

1.0 Literature Review

Labour productivity is also one of the key drivers for economic performance and it directly affects the welfare of any society as a whole. It increases, maintains the standard of living and keeps countries at the forefront of global performance (OECD, 2011). Although employment on farms has declined as a result of the substitution of capital for labor and the adoption of other new labor-saving technologies such as machines, many farms most especially large farms still depend on hired labor in some form (Kendel, 2008). According to Taylor (2010), there was a reduction in the supply of migrant workers, who work as hired labor in the United States as a result of booming economies back in their home countries and also to immigration reform. The study stated that U.S. agriculture is especially impacted by these. The reduced supply of migrant farm workers (hired labor) resulted in the U.S. growers looking for substitutes and/or increasing wage rates at a time of rapidly increasing prices for other inputs. This was said to be as a result of growth in farm size and the increase in the numbers of family members working away from the farm. It became increasingly important to balance these divergent trends through technological change, hired labor (domestic or immigrant) or a combination thereof that can allow the operator to more efficiently manage the farm.

Various studies have been undertaken in Sierra Leone, India, Sri Lanka, the Philippines, Ethiopia, and Mali to assess the impact of labor on productivity of agricultural workers. They all came to a consensus that low labour productivity is a distinguishing characteristic of developing-country. They also concluded that labour productivity (measured in terms of agriculture value-added per worker) is quite low in low-income and developing countries, when

compared to high and middle-income countries which rely more on farm labor. Moreover given the labor-intensive nature of agricultural systems in developing countries, loss of labor can have significant consequences. Most farm households were discovered to have attempted to address the shortage of labor through various methods, such as reducing the area under cultivation or narrowing the range of varieties planted on the farm. Some others have showed that, the introduction of decoupled payments decreases the incentives to produce and therefore have a negative effect on the use of production factors such as labour (Asenso-Okyere *et al*, 2011).

Also, according to the Farm Labour Survey of the National Agricultural Statistics Service (NASS, 2008), hired labour makes up one-third of all those working on farms with the remaining two thirds being self-employed (consisting of the farm operators and their family members). The majority of this hired labour is found on large farms. In the past, family labour and hired labour worked side by side on cash grain farms with similar productivity. However the degree of differentiation between family and hired labour is traditionally the result of the impact of managerial and supervisory duties by the family worker. Moreover, things have changed because increasingly families' workers (operator and spouses) tend to work off-farm where they are more productive and receive higher income and fringe benefits like health insurance and retirement income. Therefore in the absence of family labour, hired labour is left to perform major tasks on the farm with reduced productivity (Jeremy *et al* 2004).

However, development economics literature provides a different explanation for the differentiation of hired and family labour (Fafchamps and Quisumbing, 1999; Taylor and Adelman, 2003). Johnston and Leroux (2007) for instance reported that for farmers, family labour can be more efficient than hired labour because it is assumed to be better productive and less likely to evade essential duties. These arguments for the differences in productivities of the types of labour were based on the idea that both have diverging incentives. This is because the efforts of hired labour cannot be adequately observed because of the uncertainties associated with agricultural production (such as seasonality, weather effects). Therefore, hired labourers have likelihood to evade some duties, resulting in effort levels that are only a fraction of those achieved by family labour. As a result, both kinds of labour are not easily substitutable.

A study carried out by Mathias and Martin (2014), showed that the results rejected the notion that hired labour is generally less productive than family workers. As a most striking outcome, hired labour is more productive than that of family members in countries traditionally characterized by family farms, namely France, West Germany and Poland. In about half of these countries, there are no statistically different effects of both types of labour. Only in the United Kingdom was there found a classical case with family labour being more productive than hired labour. As a result, little evidence of non-constant technical returns to scale was found. It was then concluded that, farm growth in Europe may thus indeed be increasingly driven by scale neutral technologies which allow the realization of gains from labour specialization.

Also Otoo (1993) and Ahiaphor (2003) in their studies of Central Region and Eastern Region respectively found that the main source of labour employed on oil palm farms is family labour. More farmers (47 percent) employed hired labour only for maintaining their oil palm farms and 30 percent employed family labour only. About 18 percent of the farmers used both family labour and hired labour. This implied that hired labour is an important source of labour for oil palm farmers. The mean labour supplied per hectare by family labour (65.64 man-days/ha) was significantly (at 1 percent level) higher than the amount supplied by hired labour (41.13 man-days/ha) for farm maintenance. Thus, it was noted that even though more farmers use hired labour in terms of magnitude of labour supplied per hectare that is labour use intensity), the amount supplied by family labour was significantly higher than the amount supplied by hired labour. The coefficients of variation for the average labour supplied per hectare by family labour and hired labour were also quite high at 0.94 and 0.62 respectively which suggested that the labour supplied per hectare (either family or hired labour) for the maintenance of oil palm farms is not stable. Also, the relationship between the type of labour used by the farmers and the size of oil palm farm indicated that farmers who use hired labour only for the maintenance of their oil palms have larger average farm size of about 8.34 hectares.

According to Oluyole *et al* (2007) in a study on the structure of farm labour as well as the determinants of labour use in cocoa production found out that majority of the farmers utilized sharecropping source of labour. Although about 94 % of the farmers utilized hired labour for farm clearing while 61percent and 51percent of the farmers utilized family labour for harvesting and on-farm cocoa processing respectively. Wage rate, farm size and farm income were some of the factors found to have significantly affected the use of labour for cocoa production. Okoye *et al.* 2008 also used the log linear model derived from the Cobb-Douglas functional form to explain labour productivity of small holder cocoyam farmers in Anambra State. The study found fertilizer, cocoyam setts, capital and farmer's experience to be positively and significantly related to labour productivity. However, farm size and household size had a negative relationship with labour productivity. According to Simonyan and Obiakor (2012) in another study also analyzed the use of household labour in the production of yam in Anambra West Local Government Area of Anambra State, Nigeria. The findings revealed that age, education, household size, farm size, wage rate, hired labour, credit, cooperative membership and occupational status were all found to significantly determine the household labour use in the study area.

2.0 Methodology

Study Area

The study was conducted in Kwara state, Nigeria. The state has a population of over 2.37 million people in 2006 according to the National population census (NPC, 2006).

This was projected in 2012 to be 2.86million at 3.2 percent annual growth rate and an average density eighty eight (88) persons per square kilometer (NPC, 2006; KWADP 2011). It comprises of 16 Administrative local government areas divided into four Agricultural zones in consonance with ecological characteristics, cultural practice and project administrative. The zones are;

- Zone A: Baruten and Kaima local government areas;
- Zone B: Edu and Patigi Local Government Areas;
- Zone C: Ilorin East, Ilorin South, Ilorin West, Asa and Moro Local Government Areas; and
- Zone D: Ekiti, Ifelodun, Irepodun, Offa, Oyun, Isin and Oke Ero Local Government Areas.

Data Collection and Sampling Procedure

A four stage sampling procedure was used to solicit response from 120 rice farmers. The first stage is the purposive sampling of zone B from the four agricultural zones in the study area. This is because zone B is majorly known for rice farming. The second stage was a random selection of one local government from the zone. The third stage was the random selection of the five communities from the selected local government area. The last stage was the random selection of 24 rice farmers from each of the selected community.

Analytical Tools

The following analytical tools were employed to evaluate the data that was collected in this study:

- Descriptive statistics
- Multinomial logit model
- Production function analysis

Descriptive Statistics

This was used to analyze the socio-economics characteristics of rice farmers in the study area. Descriptive statistics deals with presentation of numerical facts, or data, in either tables or graphs form etc. Inferential statistic on the other hand involves techniques for making inferences about the whole population on the basis of observations obtained from sample.

Multinomial Logit Model

This was used to assess the factors that influence the type of labour used in rice farming. Multinomial logistic regression was to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables. The independent variables can be either dichotomous (binary) or continuous (interval or ratio in scale). Multinomial logistic regression is an extension of the binary logistic regression that allows for more than two categories of the dependent or outcome variable. The multinomial logistic regression uses maximum likelihood estimation to evaluate the probability of categorical membership (Croissant, 2011).

The model is specified as:

$$P_{ij} = \frac{e^{\beta_j X_i}}{\sum_{k=j} e^{\beta_k X_i}} \dots \dots \dots (i)$$

Where

$i = 1, 2, \dots, n$ variable.

$k = 0, 1, \dots, j$ groups.

β_j = vector of parameters that relates X_j 's to the probability of being in group j where there are $j + i$ groups.

The logarithm of the odd ratio in the equation to base e can be estimated as

$$\ln \frac{P_{ij}}{P_{io}} = [\beta_j X_i] \dots \dots \dots (ii)$$

For this study, we have three categories of Y namely

Y_1 = Hired labour

Y_2 = Family labour

Y_3 = Combination of hired and family labour

Where Y_1 (Hired labour) will be the reference group with the following independent variables:

X_1 = Gender (Male =1, 0 otherwise)

X_2 = Ages (years)

X_3 = Household size

X_4 = Income (₦)

X_5 = Farming experience (years)

X_6 = Wage rate per day (₦)

X_7 = Farm size (hectares)

X_8 = Access to credit (Yes = 1, 0 otherwise)

The Production Function Analysis

The production function analysis was used to compare the productivity of family and hired labour in rice farming. The production function is a mathematical representation of the various technological recipes from which a firm can choose to configure its production process. In particular, the

production function tells us the maximum quantity of output the firm can produce given the quantities of the inputs that it might employ. This is written as:

$$Q = f(L, K) \dots \dots \dots (iii)$$

Where:

Q is the quantity of output,

L is the quantity of labor used, and

K is the quantity of capital employed.

It is stated in implicit forms as follows:

$$Y = F(X_1, X_2, X_3, X_4, X_5, U) \dots \dots \dots (iv)$$

Where Y = Labour productivity (kg/man-day)

X_1 = Farm size in hectares (ha)

X_2 = Type of labour used (0 = Hired labour, 1 = Family labour, 2 = Combined labour)

X_3 = Quantity of chemical fertilizer use (kg)

X_4 = Agrochemical (herbicide) use in litres

X_5 = Quantity of rice seed plant (kg)

U = error term.

4.0 Results and Discussion

Table 1: Summary Statistics of variables

Variables	Mean	Standard Deviation
Age (years)	43.4	7.6
Household Size (AE)	8.3	2.9
Years of schooling	6.4	5.3
Farm Size (hectares)	1.4	0.6
Farming Experience (years)	26.3	8.6
Wage rate (₦/man-days)	717.4	835.6
Total Income (₦/month)	30,229.2	27,521.5
Off-farm Income (₦/month)	17,158.3	19,737.0
Frequency of extension Contact	8.7	4.2
Household Expenditure (₦/month)	40,500.8	27,428.4

Source: Survey data, 2015; Number of observation = 120, AE= Adult Equivalent

Table 1 shows the summary statistics of the socio-economics characteristics. An average farmer in the study area is about 43 years old with a household size of 8 persons and cultivates a farm size of 1.4 hectares. The average farming experience was 26 years and earns a total income of ₦30, 229.20 per month. This implies that most of the

respondents in the study area are on the average very agile and can still be actively involved in rice farming. More so, the household size might in turn help provide the needed labour force that can engage in rice farming.

Table 2: Factors influencing the type of labour used

Variables	Types of labour Used	
	Family labour	Combination of hired and family labour
Gender (male =1,0 otherwise)	-0.76 (3.23)	-0.66 (1.07)
Age (years)	-0.23 (0.17)	-0.01 (0.69)
Household Size	1.69 (0.51)***	0.88 (0.28)***
Total Income (₦/month)	0.00 (0.00)	0.00 (0.00)
Farming Experience (years)	0.36 (0.19)*	0.15 (0.08)**
Wage rate (₦/man-days)	0.01 (0.01)***	0.00 (0.00)
Farm Size (hectares)	-0.89 (2.72)	0.62 (1.00)
Access to credit (yes =1,no = 0)	1.05 (5.22)	0.89 (1.19)
Log likelihood	-29.3858	
LR(chi ²)	158.48***	
\bar{R}^2	0.7295	
Number of observation	120	

Source: Survey data, 2015; Reference group = Hired labour; Figures in bracket are standard errors.

Note: *** Significant at 1% level, ** Significant at 5% level and *Significant at 10% level

Table 2 shows the result of the factor influencing the type of labour used in rice farming as estimated using the multinomial logit model. The Likelihood ratio (chi²) is 158.48 and significant at 1%level. The factors that significantly influence a farmer's use of family labour relative to hired labour are the household size (positive), farming experience (positive) and wage rate (positive). This implies that as the household size and farming experience increases a farmer is more likely to use family labour when compared to hired labour. This is not too different from the results of Okoye *et al*, (2008) who also found a negative relationship between household size and hired labour. On the other hand as the wage rate reduces a farmer a farmer preference for hired labour increases as he can now afford

the cost involved. This is also consistent with the findings of Kannan (1998) for similar study on paddy farming in Kerala, Devi (2012) and Oluyole *et al* (2007).

Similarly, a farmer's preference to use a combination of hired and family labour was significantly influenced by the household size and farming experience (positive). This implies that as the household size and farming experience increases a farmer's preference of the combination also increases relative to that of hired labour. This may be because an experienced farmer with a relatively large household size will know the skills required in rice farming and as such know how to divide the activities involved efficiently between family and hired labourers.

Table 3: Effect of the type of labour used on rice farming

Variables	Estimates
Farm size (hectares)	17.39 (2.93)***
Types of labour used	-8.64 (-2.28)**
Quantity of fertilizer used (kg)	0.12 (4.96)***
Quantity of herbicide used (litres)	0.74 (0.93)
Quantity of rice seed (kg)	0.00 (0.27)
Constant	41.16 (5.44)***
LR chi ² (5)	57.27***
Log Likelihood	-566.4043

Source: Survey data, 2015; Figures in bracket are the T-values.

Note: *** Significant at 1% level and ** Significant at 5% level

In table 3, the farm size (hectares) was significant at the 1% level and its coefficient had positive sign. This implies that farm size (hectares) has to do with the output obtained from the farm, that is the larger the farm size, the more the rice seed that will be use and more output will be obtained by the farmers. Types of labour used were significant at 5% level and its coefficient had a negative sign. This implies that an increase in the use of hired labour results in increased labour productivity. This is consistent with the findings of Santha (1993) for a study in India, as well as those of Mbah (2006) and Mathias and Martin (2014). The quantity of fertilizer used (kg) was also significant at 1% level and its coefficient had a positive sign, indicated that the quantity of fertilizer used contribute to the yield of rice output in the farm. This result is not too different from that of Vichitkh (1994) for South East Asia.

Table 4: Labour Productivity in Rice Farming

Labour used	Productivity (kg/man-days)
Hired labour	15.51
Family labour	14.22

Source: Survey data, 2015; $\rho = -0.2641$, $Prob>(t) = 0.0036$

In the table 4, the marginal value product (MVP) was used to estimate for the labour productivity in rice farming. Hired labour had 15.51kg/man-days and more productive than family labour that has 14.22kg/man-days. Further correlation test was carried out and this shows that hired and family labours were found to be significantly correlated with a negative coefficient of -0.2641. This implies that hired labour is more productive than family labour. This may be attributed to the presence of strict supervision of farming activities. More so, hired labour is been paid for, so the farmers monitor what he is paying for and to ensure that

nothing is left undone to achieve high yield from the rice farm. Unlike family labour where there is no strict supervision because the work is done by the members of the family and this result in lower yield. This finding is not different from those of Allen and Lueck (1998) and Kimhi 2009 who concluded that “productivity of hired labour may well exceed that of family members who are jack of all trades but the master of none”.

5.0 Conclusion and Recommendations

The study found out that majority of the rice farmers in Kwara state, Nigeria use the combination of hired and family labour on their farms. Hired labour was found to be more productive with 15.51kg/man-days than family labour with 14.22kg/man-days. Household size and farming experience and wage rate were found to significantly influence a farmer's preference of the type of labour used in rice farming. Also, the farm size, quantity of fertilizer used and the type of labour used significantly influenced labour productivity in rice farming in the study area. Therefore based on these research findings, the study recommends that:

- i) Government should improve farmers' access to credit facilities which will help them increase their production capacity as well as cover the cost incurred in the production process such as the cost of labour (wage rate).
- ii) Government should also ensure that farmers have access to media so that they will be aware about new development in rice farming. This will help them acquire the skills needed to improve on their productivity. This is because most of them have large household sizes and so do not have enough to spare in order to hire labour on their farms. However, with enhanced capacity building they will be able to improve on their productivity.

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