ANALYSIS OF HOUSEHOLD LABOUR-USE IN YAM PRODUCTION: THE CASE OF BENUE STATE, NIGERIA

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ABSTRACT

The study examined the analysis of household labour-use in yam production in Benue State, Nigeria. Data collection involved the use of primary data using a structured interview schedule to elicit relevant information from the yam farmers. A total of one hundred and fourteen yam farmers were randomly selected for the study. The analytical techniques used to achieve the specified objectives involved descriptive statistics and ordinary least square regression analysis. The study revealed that 74.6% of the yam farmers in the study area were male with a mean age of 43 years which was an indication that they were in their economically active age. In addition, allocation of labour varied with farming activities with 94.7% of the sampled farmers engaged both family and hired labour for their farm operations in the study area. The analysis of the determinants of household labour-use showed an R^2 value of 25% while the F-value was significant at $p < 0.01$ which implied that the model was of good fit. Years of experience (X_3) and household size (X_5) were statistically significant at $p < 0.01$ while age (X_1) and, extension contact (X_4) were statistically significant at $p < 0.05$. This indicated that those who had contact with extension agent better used the knowledge gained to enhance production efficiency of household labour in the area. The main household labour use constraints were inadequate farm inputs and lack of relevant information. Based on these results, it is therefore recommended that government and non-governmental organizations should sensitize the yam farmers on relevant information that would improve their productivity and efficient use of household labour in the area.

Key words: Labour, production, household, labour-use

INTRODUCTION

Agriculture serves as a vehicle for economic development in Nigeria. Despite its declining contribution to Gross Domestic Product, its centrality as employment provider for large percentage of active labour force from which household labour emanates cannot be overemphasized. Yam (*Dioscorea spp*), is an annual root tuber and climbing plants with over 600 species (International Institute for Tropical Agriculture (IITA), 2009). It is a tropical crop which originated in South East Asia and was brought to West Africa in the 16th century (Mignoun *et al.,* 2003). Its significance lies not only as a source of income and carbohydrate in the diet of Nigerians, but in its cultural, traditional, ceremonial and religious acceptance. Since Nigeria is dominated by small holder farmers, the use of household labour in carrying out various farming activities such as land clearing, planting, weeding, harvesting and marketing of yam product is very rampant because it is cheap and readily available. Division of roles and responsibilities among the households cut across management,

performance of tasks, decision-making, and ownership control over resources and distribution of benefit/product (Durno & Stuart, 2005; Simonyan & Obiakor, 2012). Despite the availability of household labour almost all the year round, access to household labour in recent times is difficult due to the growing strength of education and rural urban migration.The young, energetic and productive members of household migrating to urban areas to search for white collar jobs are now on the increase leaving the dependants, aged and children, who are inactive and unproductive, to perform the tedious farm operations embedded in yam production. In addition, the decline in yam productivity in Nigeria from 2001-2006 constitute a major challenge to increasing yam production and its availability as food in the 'food basket' State of Nigeria (Simonyan & Obiakor, 2012). Moreover, for economic growth to result in an increased standard of living, it is necessary for output to grow faster than the labor force in the population, which implies that labor productivity must grow (Ukoha, 2000 and Simonyan & Obiakor,

2012). Therefore, to achieve higher productivity from yam production, it is pertinent that the current level of household labour-use should be increased. Hence, this study analyzed the determinants of household labour-use in yam production and the constraints faced by yam farmers in the study area.

METHODOLOGY

Study area: Benue State was created in 1976 with its headquarters in Makurdi. The State has a landmass of 30,955 Square kilometers as well as estimated population of 4,219,244. It is made up of 413,159 farm families (National Population Comission, 2006). Most of the people in the State are farmers while inhabitants of the riverine areas engage in fishing as their primary or secondary occupations. Benue State experiences two distinct seasons, the wet and the dry seasons. The rainy season lasts from April to October with annual rainfall between 150mm-180mm and the dry season begins in November and ends in March. The State lies within the lower river Benue in the Middle belt region of Nigeria with geographic coordinates of longitude $7^\circ 47'$ and $10^\circ 0'$ East. Latitudes $6^\circ 25'$ and $8^\circ 8'$ North; and shares boundaries with five other States namely; Nassarawa to the north, Taraba to the east, Cross-river to the south, Enugu to the south-west and Kogi to the west. The State also shares a common boundary with the Republic of Cameroun on the South-eastern part of the country. (Ministry of Information and Culture (MIC), 2004.)

It is acclaimed the nation's "food basket" because of its rich and diverse agriculture produce which include yams, beans, cassava, potatoes, maize, soybeans, sorghum, millet, and coco-yam. It also boasts of the longest stretches of river systems in the country with great potential for a viable fishing industry, dry season farming through irrigation and for an inland water way through irrigation (MIC, 2004)

Sampling technique: A multi-stage sampling technique was used for this study. In the first stage, one out of the twenty three Local Government Areas (LGAs) was randomly selected from the State while in the second stage, six towns/villages was randomly selected from the LGA. In the third stage,

nineteen yam household farmers were randomly selected from the town/villages making a total of one hundred and fourteen respondents.

Method of data collection: Data collection involved the use of primary data using a well-structured interview schedule to elicit relevant information from the respondents. The information included data on socio-economic and institutional characteristics of farmers such as gender, age, marital status, family size, level of education. Also, data about the determinant of household labour-use and the constraints affecting yam farmers in the study area were generated.

Data analytical techniques: The determinants of household labour-use was achieved using multiple regression model. The implicit form of the model is specified below as:

$Y = f (X_1, X_2, X_3, X_4, X_5, X_6, X_7)$………… (1)

The explicit form of the model is expressed as:

$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6 X_6 + b_7X_7 + e_i)$…………………….(2)

Where,

Y = Household labour (Mandays)

X_1 = Age (years)

X_2 = Level of Education (years)

X_3 = Farming experience (years)

X_4 = Extension contact (No)

X_5 = Household size (No.)

X_6 = Access to credit

X_7 = Wage Rate (₦)

b_o = Intercept

b_1- b_7 = Parameters

e_i = error term

RESULTS AND DISCUSSION

Socio-economic characteristics of yam farmers: Table 1 shows that 75% of the farmers in the study area were males, while 25% of them were females implying that yam production in the study area was dominated by male gender. This is expected since yam farming requires lots of energy and strength at different levels of its farming operations. This is in line with the findings of Izekor and Olumese (2010) in their study on the determinants of yam production and profitability in Edo State, Nigeria. The age distribution of yam farmers showed that 61% of the surveyed household farmers were within the active working age of 41-50 years. While 14.0% of the farmers fell within the ages of 31- 40 years, 13% of the respondents below 30 years, and about 12% were above 51 years.

The mean age was 43 years. This shows that yam farmers in the study area were still active and as such, may influence their production positively. This assertion agrees with the findings of Oluwatusin and Shittu (2014) in the study on the effect of socio-economic characteristics on the farm productivity performance of yam farmers in Nigeria. It was also discovered (Table 1) that 74% of the farmers in the study area were married, 23% were single while 4% were divorcee and widow(er). The implication of the result was that majority of the households may increase the supply of cheap family labour where the family labour made themselves available for farm activities. This may likely save cost and increase the profitability accruable from yam production. This result is consistent with the findings of Musa (2009) who affirmed that a large family size ensures that farmers had more hands to be employed for labour because of the number of the working persons in the family. The distribution of the yam farmers according to their level of education revealed that primary and secondary school leavers accounted for 61% while the farmers with post secondary level of education accounted for 39.5%. However, there was no record of illiteracy among the farmers. This result contradicts the finding of Izekor and Olumese (2010) who revealed that farmers with no formal education accounted for 58% of the farmers in the area. This could make the dissemination and adoption of innovation easier. This result was corroborated by the findings of Oluwatusin and Shittu (2014) in their study on the effect of socio-economic characteristics on the performance of farmers in production of yam in Benue State who found out that level of education had positive impact on productivity. The size of household indicates the population of people managed by someone with its resources. Table 1 further reveals that 51% of the respondents had 1-10 persons in their household, while 35% had between 11-15 persons, households with persons from 16 above was 14%.The result also reveals a mean household size of 11which implied that large family size will provide enough family labour for farming households. This agrees with the finding of Simonyan and Obiakor (2012) in a study on household labour-use in yam production in Anambra State who reported that majority (65%) of the respondent had family size of between five to six persons. In spite of this assertion however, households with many dependants comprising of children and aged,, could be of little or no benefit to the farming households and the productivity of the yam farmers. Farming experience of the sampled household heads, expressed as number of years the farming households have been in yam production revealed an average years of experience of 20 indicating that farmers with long period of faming experience will be able to make sound decision as regards management of risk and other decisions that could improve the productive capacities. Oluwatosin and Shittu (2014) reported that years of farming experience was found to be positively significant as the main determinant of yam production performance. Farm size is one of the major factors determining labour requirement. The larger the farm size, the more the number of labour required. From the Table, a large proportion (75%) of the sampled farmers had farm size of less than 2 hectares implying that majority of the respondents were small-scale household farmers.

Table 4.1: Socio-economic characteristics of the farmers in the study area

Characteristics	Frequency	Percentage	Mean
Gender			
Male	85	75	
Female	29	25	
Total	114	100	
Age (years)			
Less than 30	15	13	
31 – 40	16	14	
41 – 50	69	61	43
51 above	14	12	
Total	114		
Marital Status			
Single	26	23	
Married	84	74	
Divorcee	3	3	
Total	114	100	
Level of Education			
Primary	27	24	
Secondary	42	37	
Teritary	45	40	
Total	114	100.0	
Household size			
1 - 5	1	0.9	
6 – 10	57	50.0	
11 – 15	40	35.1	11
16 above	16	14.0	
Total	114	100.0	
Farming Experience			
1 – 5	11	9.6	
6 – 10	12	10.5	
11 – 15	2	1.8	
16 – 20	29	25.4	
21 above	60	52.6	20
Total	114	100.0	
Farm size(hectares)			
Less than 2	70	75.4	3
3 – 5	24	21.1	
6 – 8	20	3.5	
Total	114	100.0	

Source: Field Survey, 2014

Labour-use pattern of household yam farmers: Allocation of labour varied with farming activities. Some tasks required specialized skills from hired labour while household labour was sufficient for some farm activities. Table 2 revealed that 94.7% of the sampled farmers used both family and hired labour for their farm operations, while a lesser percentage (5.3%) of them used exchange labour. The result revealed that there was only a little margin between the use of family and hired labour. This implied that though majority of them were married with large family size, yet the members of the household might not be readily available for yam production activities hence the need to augment with hired labour. This was corroborated by Ajibefun *et al.*, (2000) in their study on determinants of labour-use patterns of small holder farmers in Nigeria. Their findings revealed that hired labour contributed more than three-quarter (88.0%) of the total labour used for food crops on farms in the study area.

Determinants of household labour-use: Four functional forms namely, linear, cobb-douglas, semi-log and exponential functions were used for the analysis (Table 3). Based on economic and statistical criteria, cobb-douglas production function was selected as the 'lead' equation. The R^2 value showed that 25% of the variation in the household labour of yam farmers in the study area was jointly explained by the set of independent variables while the F-value was significant at $p < 0.01$ which implied that the model was of good fit. The variables in the model includes: age (X_1), education (X_2), farming experience (X_3), extension contact (X_4), household size (X_5), credit (X_6), wages (X_7). Four out of the listed variables were the only ones that conformed to the *a priori* expectation.

For instance, farm experience (X_3) was significant at $p < 0.01$, age (X_1) at $p < 0.05$, household size (X_5) at $p < 0.01$ and, extension contact (X_4) $p < 0.05$. Age and extension contact which were significant at $p < 0.05$ indicated that those who had contact with extension agent better used the knowledge gained to enhance production efficiency of household labour in the area. The negative sign of credit implied that an increase in this variable led to decrease in household labour-use in the study area. Increased access to credit facilities could afford the farmer the opportunity of purchasing modern farm tools and implements that would replace and/or reduce the household labour required to perform farm operations

Table 2: Distribution of household yam farmers according to labour-use pattern

Labour-use	*Frequency	Percentage (%)
Family	103	49.5
Hired	94	45.2
Exchange	11	5.3
Total	208	100.0

Source: Field survey, 2014.   *Multiple response were allowed

Table 3**:** Determinants of household labour-use in yam production in the study area

Variable	Coefficient	t-ratio
Age (X_1)	158.9721	0.027**
Education (X_2)	-8.406657	0.585
Farming experience (X_3)	103.1241	0.009***
Extension contact (X_4)	104.1456	0.032**
Household size (X_5)	145.551	0.002***
Credit (X_6)	-3.199165	0.954
Wages (X_7)	8.130425	0.865

$R^2 = 0.25$

Source: Field Survey, 2014

Constraints associated with household labour: Table 4 shows that inadequate farm inputs such as improved yam setts and tractor coupled implements were the most critical constraint to household labour-use in the study area which accounted for 34%. Other constraints ranged from, lack of information (26%), high cost of labour (19%), small household size (17%) to, use of crude farm tools such as cutlasses and hoes (5%).

Table 4: Constraints to Labour-use among yam farmers

Household constraints	* Frequency	Percentage (%)	Rank
Inadequate farm input	79	34	1st
Lack of information	60	26	2nd
High cost of labour	44	19	3rd
Small household size	39	17	4th
Crude farm tools	11	5	5th

Source: Field survey, 2014.   *Multiple responses

CONCLUSION AND RECOMMENDATIONS

 The study was conducted on the analysis of household labour-use in Benue State, Nigeria. The gender analysis revealed that yam production in the area were mostly (74.6%) performed by males. The mean age of the yam farmers was 43 years which showed that the household farmers were active and productive. It was also discovered that 74% of the farmers in the study area were married. In addition, large proportion (75.4%) of the sampled farmers had farm size of less than 2 hectares. Allocation of labour varied with farming activities. It was discovered that 94.7% of the sampled farmers used both family and hired labour for their farm operations. The analysis of the determinants of household labour-use

showed an R^2 value of 25% while the F-value was significant at $p < 0.01$. which implied that the model was of good fit. Years of experience (X_3), age (X_1) household size (X_5), and, extension contact (X_4) were the main determinants of household labour-use. The main household labour use constraint was inadequate farm inputs which accounted for 34% of the yam farmers. Based on these results, it is therefore recommended that provision of adequate modern inputs that would reduce the drudgery involved in yam production. Government and non-governmental organizations should sensitize the yam farmers on relevant information on improved methods of production that would aid an efficient use of household labour.

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