Mycopath (2014) 12(2): 95-101 **Research Article**

Assessment of household engagements and management of migrant farm workers in South-Eastern Nigeria

C. O. Emerole, *C.O. Anyiro, G.M.C. Ibezim, J.C. Ijioma, K.C. Osondu

Department of Agricultural Economics and Extension, Abia State University Uturu, Umuahia Campus, P.M.B 7010 Umuahia, Nigeria.
**Corresponding author's email: anyirochidozie@gmail.com*

Abstract

This study on household engagements and management of migrant farm workers was carried out in South-eastern Nigeria. A panel of 240 farm households in the region was constituted. The instrument of data collection was via a set of pre-tested structured questionnaire. The data were analyzed using descriptive statistics and Binary Probit Regression Model. Management of migrant farm workers hired by households was observed from 2008 to 2011 farming seasons. Results showed that young men and women migrated within and into south-eastern states of Nigeria in groups during farming seasons and were engaged by households for some farm activities. Decision to engage such migrant farm workers was positively influenced by farm size in excess of 3.0 hectares, availability and provision of accommodation for the workers and availability of persons to supervise them while they worked. Factors that had negative influence on households' decision to engage the services of these farm workers included household size, and provision of food in addition to cash wage. The men were engaged mainly in preparation of farm lands (bush clearing and tillage); the women were engaged in weeding, fertilizer application and harvesting of crops. Cost of feeding was the highest of 'hospitality cost' items, and cost of labour search was the least of such cost items in managing migrant farm workers. To sustainably reduce cost in the long run we recommended that hand drawn machines and two wheel motorized tractors be used to substitute human labour and reduce operational costs while maintaining and/or increasing crop yields.

Key words: Labour search, migrant farm worker, mound making, own labour.

Introduction

Farming is traditional occupation of south-eastern Nigeria inhabitants, where the people produced and exported palm (palm oil and palm kernel) in addition to other varieties of roots/tuber crops and vegetables. Traditional farming in the zone is characterized by manual labour and its associated drudgery. Labour autarky had been the style but still existing when economic and demographic changes have forced farm households to diversify means of their livelihood to increase their farm and nonfarm incomes (Okafor, 1991). In recent time many members of farm households do not provide sufficient labour required in their farms so they have to look for alternative labour source(s) especially from hired migrant workers. Culturally, children and youths in the area work with their parents and guardians in household farms, where they learn skills of crop production and land management practices helpful for their adulthood as well. Such alteration have forced members of farm households to abandon farming and engage in other petty jobs especially street hawking (UNICEF, 2006) and commercial motorcycling in urban and rural areas.

Literally, agriculture has been abandoned to the aged and few able-bodied men and women who by choice cannot do otherwise. This has created gap between farm labour needs and farm labour supplies. Bongaart (2001) recognized predominance of nuclear households in contemporary developing countries including Nigeria. In southeastern Nigeria increasing farm households are engaging off-farm works that are migrant in urban centers (Emerole *et al.,* 2008; Nwajiuba, 2012), worsening the problem of shortage of farm labour supplies.

These contemporary developments have forced farmers to rely on hired casual labour provided by migrant farm workers mostly available during farming seasons for land preparation, planting, harvesting and post-harvest processing. Increased reliance of households on hired casual farm labour have obvious management implications on costs of labour search, provision of temporary housing or accommodation, feeding, supervision and adoption of enterprise mix especially by those that

depend less on family labour (Doole *et al.*, 2009). These are challenging evolvements that invoke changing interrelationships between decisions on consumption and investment, household endowments, production and exchange decisions and household entitlements.

Farm households need to have comprehensive understanding of ways to manage this emerging circular relationship among aforementioned factors, which are further impacted upon by household institutions, labour markets, and have outputs in terms of resource use, environmental impact, food production and distribution. An important factor in this labour issue, which is often overlooked, is how to precisely quantify the human mobility involved (UNAIDS and IOM, 2003). Some people have chosen to migrate to neighbouring states in search of jobs and money to cushion excruciating bites of poverty in their respective households. Migrant workers face numerous social and health challenges when they leave their communities for other places (Obadan and Ayodele, 2000). They have limited access to recreation, health facilities and are relatively deprived and some are prone to sex trading to get whatever they need to facilitate their mission. The specific objectives of this study therefore were to: (i) describe socio-economic characteristics of migrant labour hired by farm households in south-eastern Nigeria; (ii) explain gender mobility and distribution of hired labour for tasks in crop production in the area; (iii) estimate mean annual costs incurred by households on hired services of migrant farm workers in the area; and (iv) determine factors that influenced decision to use services of migrant farm workers in crop production in the area.

Materials and Methods

This study involved a survey of farm households within southeastern Nigeria. Five states namely Abia, Anambra, Ebonyi, Enugu, and Imo (all are of Ibo tribe in Nigeria) were studied. Farming is the predominant traditional occupation of many households in this high population dense (> 900 persons per square kilometer) region (Okafor, 1991). The 2006 National Population census put the inhabitants of this area at 16, 384,729 made up of 8, 306, 306 males and 8, 075, 425 females (NPC, 2006). The region stretches from the rainforest vegetation of Abia and Imo states to the derived Savanna vegetative belt of Anambra state within latitudes 7- 10^0 52N and longitudes 6^0 and 7^0 E. Two distinct seasons (rain and dry) characterize the region. The rain season stretches from the month of April to October and the dry season comes from the month of November to March. Topography of the zone is partly flat and rolling in many parts of Imo and Abia States and partly hilly and undulating in other parts of Anambra and Abia States. Flood and gully erosion constitute ecological problems ravaging the area as soils are of the deep porous ferralithic type (Nweke and Winch, 1980; Ugwumba *et al.*, 2010). Prominent rivers draining the region are Niger, Imo, Anambra, Orashi, Aba, Azumini blue, and Cross River.

In selecting respondent households, three-stage random sampling technique was adopted with assistance from the various state ADPs. In the first stage of the sampling, three states out of the five were randomly selected. These were Abia, Anambra and Imo states. Abia and Imo States have three agricultural zones each and Anambra state has four agricultural zones. Thus, 10 agricultural zones were directly considered in this survey. Abia State included 17, Anambra State comprised of 21and Imo State made of 27 Local Government Areas (LGAs). These gave a total of 65 LGAs in the 10 respondent agricultural zones (Aba, Umuahia and Ohafia in Abia State; Owerri, Orlu and Okigwe in Imo State; Onitsha, Ihiala, Anambra and Awka in Anambra State). In the second stage, one agrarian community was randomly chosen from each of the ten agricultural zones. The agrarian communities chosen were Umuekechi Asa from Aba zone, Ndioro from Umuahia zone, Eluama Isuikwuato from Ohafia zone in Abia State; Ohaji from Owerri zone, Ehime Mbano from Okigwe zone and Nkume from Orlu zone in Imo State; Ogbaru from Onitsha zone, Otuocha from Anambra zone, Okija from Ihiala zone and Agulu from Awka zone in Anambra State. In the third stage, twenty four farm households were chosen following a stratified random sampling of households in each of the selected communities. This gave a sample size of 240 farm households. The chosen households were visited at the end of each farming season and primary data on migrant labour sources, gender, farm task done (use), cost, and annual welfare issues for four years covering 2008 to 2011 cropping seasons. Six enumerators were assigned two to each state were used in generating this four-year panel data on same variables on the same households using the same semi-structured questionnaire.

The collected data were analyzed descriptively and inferentially in addressing the study objectives. Frequency distribution table and mean estimates of socio-economic variables were used in realizing objectives and were analyzed

with Probit Regression Model. Factors that determined households decision to use migrant labor were subjected to a model of limited dependent variable as introduced by Tobin (1958) and as applied by Amamiya (1981) and corrected for bias in participation decision (Heckman, 1976). This Probit Model was stated as follows:

$$Yij = \alpha j + \beta j \sum_{k=1}^{s} Hijs + \varepsilon ij \ldots\ldots\ldots\ldots\ldots\ldots\ldots eq1$$

Where the H_{ijs} are vectors of s explanatory variables of the jth household using services of migrant farm workers; Y_{ij} is a vector of binary variables such that Y_{ij} =1 if the jth household employs the services of migrant labourers, and 0 otherwise. Since Y_{ij} can only assume two different values for the decisions, 1 or 0, the expected probability was defined as follows:

$$E(Yij) = E[\alpha j + \beta j \sum_{k=1}^{s} Hijs + \varepsilon ij]$$
$$= \alpha j + \beta j \sum_{k=1}^{s} Hij \; E(Hij) \ldots\ldots\ldots\ldots\ldots eq2$$

Equation (2) defines the proportion of households with characteristics (H_{ij}) likely to use the services of migrant labourers in their farms. The empirical model was specified thus:

$$EXPij = \beta 0 + \beta 1(FSij) + \beta 2(FDij) + \beta 3(DWij) + \beta 4(EDij) + \beta 5(OCij) + \beta 6(HAij) + \beta 7(CAij) + \beta 8(LSij) + \beta 9(SVij) + \beta 10(HSij) + \varepsilon ij. \ldots\ldots\ldots\ldots\ldots\ldots eq3$$

These variables are as defined in Table 1. The dependent variable was the decision of a household to hire services of migrant farm workers as defined in equation (1). The explanatory variables were binary, continuous and/or discrete in nature. It was hypothesized that hiring the services of migrant farm labour by a household would positively be influenced by: FSij; OCij; HAij; EDij; SVij and CAij; but would negatively be influenced by: LSij; DWij; FDij; and HSij.

Results and Discussions

General characteristics

The characteristics of sampled 240farm households in south-eastern states of Nigeria are summarized in Table 2.

Table 2 revealed that farm sizes to a good proportion of the farm households (43.3%) was at most three hectares with only a small proportion (16.7%) cultivating more than three hectares. Forty percent (40.0%) of the households cultivated farms of less than one hectare on the average and this farm size we adjudged small. Small sizes of farms have implications on enterprise mix, technical efficiency of labour used as well as on source and type of labour used (Shehu *et al.*, 2010). The mean size of the households was comprised of 7 members. Size of households has implication on source of labour used in farm activities (Bongaarts, 2001). All farm households made use of their own labour and this was sufficient for only 26.7% of the respondents, while 73.3% cumulatively cause to hire labour. It was further revealed that two sources (other farm households-local and migrants) provided the labour hired by these households to augment own labour in their farms.

As much as 43.3% of the households relied on migrant farm workers to meet their farm labour needs. Use of hired migrant labour enabled some farm households to invest relatively higher mean annual labour of 575.9 man days compared to 75 and 250 mean annual man days invested by households who patronized neighbors selling labour locally and those using own labour respectively. The mean daily wage paid to males was ₦500.00 (3.33$) and that paid to the females was ₦350.00 (2.33$) with the youths aged below 18 years paid a mean daily wage of ₦250.00 (1.67$) in the area during the period under review. The literacy level of heads of farm households in the area was relatively high since only 25.0% of them had no formal education. Level of literacy of a household head could influence his/her decisions on source of labour and the type of labour used in crop farming.

Decision to engage migrant farm worker in crop farming

Maximum likelihood estimates of Probit model is shown in Table 3. Table revealed five factors influencing farmers' decision to engage services of migrant farm workers in south-eastern Nigeria. Three of the factors, farm size in excess of 3.0 hectares, availability and provision of housing to accommodate the workers and availability of persons to supervise the migrant workers as they worked had positive significant influences on the decision of households to use services of migrant farm workers in the area.

These findings were in line with the espoused hypotheses of the study. Positive influence meant that a farm household decided to hire more of the services of a migrant farm worker when farm land was relatively large and when farmers had spare rooms to accommodate workers and when there was available personality to supervise the workers as they worked in the field. Relatively large farm lands offer opportunities for use of more labour to accomplish the tasks effectively within required time. Availability of accommodation helped to save major logistic hindrances and assured safety of the workers. Supervising the workers in the field as they worked ensured consistency in quality of work rendered and limited excesses in enjoyed leisure at

a time they were supposed to be working. However, two other variables, household size, provision of food as an addition to daily cash wage, had negative significant influences on decision to hire migrant farm labour. Negative influence meant that as the size of household increased the need to hire services of the migrant labour decreased.

Use of household labour in farming was predominant among the households in the area. In all the farm households investigated, hired labour of any form was only meant to augment household labour in execution of farm activities. This was plausible since farm households under traditional African farming system depend greatly on own land, seed stock and labour supplied by their members for executing farm activities than on hired labour of any type (Shehu *et al.*, 2010). Provision of food in addition to cash payment of wage increased real cost of the labour to the household that decided to enjoy services of migrant farm worker(s).

Hired Migrant Farm Workers, Farm Activities and Costs to Farm Households

Gender role in farm operations in the area was an issue that governed deployment of hired migrant casual labour in south-eastern states of Nigeria. Table 4 revealed that hired men were deployed in land clearing, making of mounds for roots and tuber crops and harvesting of yams. The hired women were deployed to planting of seeds (maize, melon, pepper, okra, telferia, cassava cuttings and cocoyam), application of fertilizers, harvesting of crops and post-harvest processing.

The mean daily wage rate for hired men was ₦500 (3.33$) and for the women was ₦350 (2.33$). The mean annual number of hired migrant labour varied from 10 to 40 persons amongst the households, using at least (29 man-day) for post-harvest processing and the highest (120 man-day) in weeding operations in the farms. The Table revealed that more migrant workers on the average were engaged in crop harvesting operations by the households. Fertilizer application was an operation that exclusively engaged services of female migrant labour while making of mounds exclusively engaged the services of men migrant workers in the area. These were in compliance to traditional sex- related household roles documented in the area (Okorji, 1988).

Farmers have learnt over the years that tilled soils helped greatly to increase growth, yield and facilitate harvest such that farm households now prefer tilled soils and mounds in cultivating their crops even though no serious adverse reports on yield of staples have been advanced against zero tillage in the area. Total investment as wages paid by labour hiring households to migrant farm workers on the average ranged from ₦10, 150.00 in post-harvest operations to ₦42, 000.00 in weeding of the farms in the area.

Other Migrant Labour Management Costs

In addition to paid wages or contract charges, households hiring services of these migrant farm workers incurred some other costs shown in Table 5. These costs were incurred in respect of labour search, transportation, accommodation, feeding, toiletries, and task supervisions.

Table 5 revealed that not all migrant labour hiring households incurred all anticipated costs in managing migrant farm workers in the area. However, all the labour hiring households incurred labour search and transportation costs to enjoy services of these workers. The migrant workers arrived in groups of at least two persons and also along gender lines. The search cost included expenses incurred in making inquiries (phone calls, search travels), negotiating and booking for available migrant farm workers as they arrived from homes they first called into or agents. This item of cost gulped the least annual mean sum of ₦4,250.0 from the studied farmers. The transportation of the workers to and fro the farms was also a cost borne by all the farm households who used services of migrant workers in the area. They transported their workers by roads using either local bus shuttles or commercial motor cycles popularly called ‘Okada’ which ever was convenient to them in their locality.

A total of 42 or 70.0% of the respondent households provided food to their hired migrant farm workers. Feeding cost took a total of ₦139,000.00 over the period under review with an average annual cost of ₦34,750.0 and comparatively was the highest of these ‘other management costs’ borne by the households. Supervision of the workers was meant to ensure consistency in the quality of work done and helped to avoid unnecessary leisure amidst work time. These supervision checks were provided by only 39% or 65% of the affected households and took an estimated sum of ₦27,500 or an annual mean cost of ₦6, 875 from the affected households.

Table 1: Description of variables analyzed by Probit Regression Model.

Variable	Variable Type	Hypothesized Variable sign	Description of Variable
FSij	Continuous	+	1 if size of farmland is greater than 3.0 hectares; 0 otherwise
FDij	Binary	-	1 if food is provided in addition to daily wage to the hired labour;
DWij	Continuous	-	Daily wage/contract charge per day in Naira;
EDij	Binary	+	1 if household head had at least primary education; 0 otherwise;
OCij	Binary	+	1 if household major occupation was farming; 0 otherwise;
HAij	Binary	+	1 if housing accommodation was available and provided to the hired labour;
CAij	Continuous	+	Amount of credit obtained for farming in Naira;
LSij	Continuous	-	Cost of labour search in Naira;
SVij	Binary	+	1 if person(s) was/were available to supervise hired labour; 0 otherwise;
HSij	Discrete	-	Household size - refers to number of persons living and feeding from same pot.

Table 2: General Characteristics of Farm Households in South-Eastern Nigeria, 2008–2011.

Variable	Number	Mean of continuous Variables n=240	Percentage (%)
Annual Farm Size (Hectares)			
< 1.0	96	0.81	40.0
1.0 – 3.0	104	2.53	43.3
> 3.0	40	5.12	16.7
Household Size (Number):			
1 – 6	80	4.84	33.3
7 – 13	100	7.91	41.7
> 13	60	14.82	25.0
Mean household size	7 members		
Education Level of Household head (Years)			
No formal Education	60	0.0	25.0
Primary Education	56	5.1	23.33
Secondary Education	56	5.1	23.33
Tertiary Education	44	14.8	18.3
Annual Labour Source Used in household farm (Man days)			
Household only	64	247.0	26.7
Household/Hired local	72	75.5	30.0
Household/Hired Migrant	104	575.9	43.3
Daily Wage Rate (NGN Naira)			
Adult Male	500.0		
Adult Female	350.0		
Youth below 18years	250.0		

₦150.00 ≈ US $1.00; 1 man day ≈ 8 hrs of adult male labour ≈ 2/3 adult woman labour ≈ 1/3 youth below 18 years labour. Source: Field Survey, 2008 - 2011.

Conclusions and Recommendations

All farm households in the region used labour of their members (own labour) in carrying out their crop farming activities, but those whose own labour was not sufficient on account of cultivating relatively large farm lands or having

few own labour engaged services of migrant farm workers. Gap in supply of labour to a farm household determined her demand for labour from migrant farm workers in the area. Ability of a household to provide accommodation for lodging and other hospitalities including feeding, transportation and a person to supervise labour motivated decision to engage services of migrant farm workers in the area. Workers were hired for farm activities in line with prevailing gender roles with men involved in land preparation (land clearing, mound making), and the women involved in fertilizer application, weeding, harvesting, and post-harvest processing.

To sustainably reduce cost in the long run we recommend that hand drawn machines and two wheel motorized tractors be introduced to farmers and made popular to help them substitute human labour with use of light machines and reduce operational costs while maintaining and/or increasing crop yields.

Table 3: Maximum likelihood estimates of first-stage Probit Model explaining household decisions to hire migrant farm labour in South-Eastern Nigeria.

Variable	Coefficient	Standard Error	T Statistic
FS	3.244	0.712	4.556***
FD	-0.774	0.418	-1.852**
DW	0.216	0.483	0.447
ED	0.472	0.677	0.697
OC	0.535	0.474	1.129
HA	0.999	0.552	1.809**
CA	0.597	0.747	0.799
LS	-0.226	0.287	-0.787
SV	1.514	0.561	17.825***
HS	-1.038	0.466	-2.227***
Intercept	-3.197	0.253	-12.636***
Log-Likelihood	74.222	-	-
R-Squared	0.699	-	-

Dependent variable (D) = Augmenting Household labour with hired migrant Labour
** significant at 5.0%; *** Significant at 1.0%.; Source: Field Survey Data, 2008-2011

Table 4. Distribution of hired migrant farm labour by activities and paid wages in South-Eastern Nigeria (n=240)

Farm Operation	Gender of hired migrant labour	Mean Annual Number hired	Mean Annual Man day Supplied	Mean Daily Wage (₦)	Mean Annual Investment as Paid wage (₦)
Bush Clearing	Men	22	56	500	28,000
Mound Making	Men	31	62	500	31,000
Planting	Women	30	71	350	24,850
Weeding	Women	40	120	350	42,000
Fertilizer Application	Women	10	30	350	10,500
Harvesting	Men	11	11	500	5,500
	Women	15	45	350	15,750
Post harvest Processing	Women	10	29	350	10,150
Total			424		167,750

₦150 ≈ US $; 1 man day ≈ 8 hrs of adult male labour ≈ 2/3 adult woman labour
Source: Field Survey, 2008 - 2011.

Table 5: Distribution of hospitality/labour management costs by farm households in South-eastern Nigeria

Management Item	Number of households	Total amount (₦)	Mean annual cost (₦)
Labour Search	240 (100.0)	17,000.00	4,250.00
Transportation	240 (100.0	78,600.00	19,650.00
Accommodation	188 (78.3)	23,470.00	5,867.50
Feeding	168 (70.0)	139,000.00	34,750.00
Toiletries	188 (78.3)	31,420.00	7,855.00
Supervision	156 (65.0)	27,500.00	6,875.00

₦150.00 ≈ US $1.00; Figures in parentheses are percentages of households providing each case hospitality.
Source: Field Survey, 2008 - 2011.

References

Amamiya T, 1981.Qualitative Response Models: A Survey. *J. Ecol.,* **9**: 1483-1536.

Bongaarts J, 2001. Household Size and Composition in the Developing World. Policy Research Division. Population Council. Number 144.

Doole GJ, Bathgate AD, Robertson MJ, 2009. Labour scarcity restricts the potential scale of grazed perennial plants in the Western Australian wheat belt. *Anim. Prod. Sci.,* **49**: 883-893.

Emerole CO, Nwosu AC, Onyenweaku CE, Ukoha OO, 2008.Wage Differentials in employments and labour supply determinants in smallholder farm households of Ikwuano, Abia State Nigeria. *J. Res. Agric.,* **5**: 8-14.

Heckman IJ, 1976. The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimation for such models. *Ann. Eco. Soc. Meas.,* **5**: 475-492.

National Population Commission (NPC), 2006. Analysis of Population by States in Nigeria NPC, Abuja Nigeria.

Nwajiuba CU 2012. Does Agriculture Have a Future in Southeast Nigeria? Imo State University Owerri, Nigeria. Inaugural Lecture, Series No. 5, pp. 50.

Nweke FE, Winch FA, 1980. Bases for Farm Resources Allocation in Small holder Cropping System of Southeastern Nigeria. A Case Study of Awka and Abakiliki Villages. International Institute for Tropical Agriculture (IITA), Ibadan, Nigeria. Discussion Paper No. 4/80.

Obadan MI, Ayodele FO, 2000. Productivity and Unemployment in Nigeria. National Centre for Economic Management & Administration (NCEMA), Ibadan, Nigeria.

Okafor FC, 1991. Population Pressure, Agricultural Change and Environmental consequences in Southeastern Nigeria. Project on African Agriculture of the joint committee on African studies. Social Science Research Council/American Council of Learned Societies. Third Avenue NewYork

Okorji EC, 1988. Traditional sex-related household roles as determinants of income distribution. A case study of arable farming communities in Anambra State, Nigeria. *Trop. Agric.* **65**: 89-95.

Shehu JF, Iyortyer JT, Mshelia SI, Jongur AAU, 2010. Determinants of yam production and technical efficiency among yam farmers in Benue State, Nigeria. *J. Soc. Sci.,* **24**: 143-148.

Tobin J, 1958. Estimation of relationships for limited dependent variables. *Econometrica,* **26**: 24-36.

Ugwumba COA, Okoh RN, Ike PC, Nnabuife ELC, Orji, EC, 2010. Integrated Farming System and its Effect on Farm Cash Income in Awka South Agricultural zone of Anambra State, Nigeria. *Am-Eur. J. Agric. Environ. Sci.,* **8**: 1-06.

United Nations Children Education Funds (UNICEF) Nigeria, 2006. Information Sheet: Child labour. Nigeria country programme

United Nations AIDS (UNAIDS) and International Organization for Migration (IOM) Studies Report, 2003. Mobile Populations and HIV/AIDS in Southern African Region.