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LABOUR-USE EFFICIENCY BY SMALLHOLDER YAM FARMERS IN ABIA STATE NIGERIA: A LABOUR-USE REQUIREMENT FRONTIER APPROACH

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Abstract

Production of yam is a labour intensive set of activities especially in the Tropics. In Eastern Nigeria this is done by small farmers at subsistent level due to inadequate and short supply of labour. This study examined labour-use efficiency by smallholder yam farmers in Abia State, Nigeria. A two-stage random sampling technique was used to select 120 smallholder yam farmers from Ikwuano and Umuahia North Local Government Areas of the state. Data were collected during a survey with a well-structured questionnaire administered by personal interview method with the farmers. The result revealed that farm households provided an average of 336 man-days used in yam production activities, with 36.66% using hired labour while family labour, share croppers, and exchange labour provided the balance labour (63.34%) required. The Cobb-Douglas functional form of labour-use frontier estimates shows that the quantity of harvested yam, size of cleared farm land and quantity of fertilizer applied significantly affected the amount of labour used in yam production at 10.0%, 5.0% and 1.0% level of significance respectively. The socio-economic determinants of labour use efficiency were age, education, farm size, gender, labour wage and household size which were statistically significant at 1.0% risk level except the coefficient of age which was significant at 5.0% risk level. The result showed that the estimated farm labour-use efficiency ranged from 0.20 to 0.97 with a mean labour-use efficiency value of 0.76. Policies aimed at increasing yam farmers' scale of operation through improved access to production inputs like fertilizer, agrochemical and capital are required for increasing labour use efficiency in the area.

Key words: *Labour-use, efficiency, smallholders yam farmers, labour use requirement frontier.*

1. Introduction

Yams (*Dioscorea sp.*) are annual or perennial tuber-bearing and climbing plants. The genus Dioscorea has over 600 species but only a few are cultivated for food and others for medical uses. The major edible species of African origin are white guinea yam (Dioscorea rutundata poir), yellow guinea yam (Dioscorea cayenesis lam) and trifoliate or bitter yam (Dioscorea dumetorum kunth) (Mignoun *et al*., 2003). In Nigeria the common species grown are white yam (Dioscorea rutundata) and water yam (Dioscorea alata) (Brand-Miller, *et al*., 2003; Osunde, 2008). Nigeria is by far the world's largest producer of yams, accounting for over 70 to 76 percent of the world production. Statistically in 2004, the global yam production was about 47 million metric tons, which about 95 percent of the metric tons was produced in Africa. Nigeria alone accounted for about 70 percent of the world production (FAO, 2006).

In Eastern Nigeria, yam is in great demand for consumption by households such that the local productions do not meet with its demand. This has made traded yams in the area very expensive amongst other tubers in the local market. Farmers in the area complain of unavailability and high cost of labour, long period of propagation and high use of crude technologies in yam production (Anyanwu, 1993; Gocowski & Oduwole, 2003). To have sustainable development in agriculture there is need to make efficient use of basic production factors, which include; labour, land and capital (Bervidova, 2001) Human labour activates other production factors and transforms other farm inputs into the required outputs.

The scarcity of farm labour has impacted negatively on planting precision, better weed control, timely harvesting and crop processing (Oluyole *et. al.,* 2011). The inadequacy of farm labour to facilitate expansion of yam farms and intensify the already selected area for yam production in Eastern Nigeria has been noted (Ugorji, 2013). Empirical evidence has shown that available labour force comprised mostly of aged farmers to the exclusion of men and women within the active working age. This has impacted negatively on yam productivity (Oluyole & Lawal, 2010) The increasing absence of people within the active age could be attributed to drudgery in farm activities, rural-urban migration, and absence of social infrastructure in the rural areas, as well as poor farm income and low life expectancy in rural areas (Gill, 1991).

Human labour is about the only main source of labour available to small-holder yam farmers in Nigeria. Some studies (Echebiri & Mbanasor, 2003; King, 1972) confirm that farm labour supply by humans on the farm is not homogenous and job contents differ. These studies found that in general, men performed heavy farm operations such as land preparation, staking and harvesting with women and children performing lighter operations such as planting, fertilizer application and weeding. Ajibefun *et. al*., (2000) noted that hired labour contributes 88.0% of the total labour use on farms thus emphasizing its importance in agricultural activities. Other types of labour that could be employed are family labour and exchange labour. Researchers on farm labour supply have observed that total supply of labour depends on such factors such as the size of the population, its age composition and certain institutional factors (Hardwick, 1994).

Efficiency of labour use as a production factor is expressed by the level of labour productivity. Labour productivity is regarded as technical efficiency of human work utilized in creation of useful goods (Bervidova, 2001). Achieving increases in yam production according to Degras, (1993) requires increasing labour-use efficiency, intensification of use of land and expansion of indigenous technology. This study

therefore investigated labour-use efficiency among small-holder yam farmers in Abia State, Nigeria and specifically set out to (i) identify the labour-use types in yam production; (ii) examine labour-use by specific farm activities in yam production; (iii) determine the labour-use efficiency in yam production; (iv) identify the determinants of labour-use efficiency in yam production in the study area.

2. Materials and Methods

This study was conducted in Ikwuano and Umuahia North Local Government Areas (LGAs) of Abia State Nigeria. The LGAs were purposively chosen because of intensity of yam cultivation and role of yam in "New Yam Festival' in the area (Ugorji, 2013). Ikwuano and Umuahia North LGAs are two of the five LGAs that constitute Umuahia Agricultural Zone of Abia State Nigeria. The LGAs are located within Latitudes $05^0$30' N and $05^0$40' North of the Equator and longitudes $07^0$25' E and $07^0$32' East of the Greenwich Meridian. Its population stood at 361,127 people who are predominantly rural farmers, of which 48.0% are females and 52.0% are males, on a land mass of about 521km^2 (FRN, 2006).

Farmers that predominate these areas produce food crops such as yam, cassava, palm oil, plantain, banana, vegetables and cash crops such as oil palm, and cocoa (ABSG, 1992). A Two Stage random sampling technique was adopted in the selection of panel of farmers involved in this study. First, 3 communities each, were randomly selected from the LGAs (Ikwuano and Umuahia North), making a total of 6 communities. In the second stage, 20 yam-based farm households were randomly selected from each of the chosen communities giving a total sample size of one hundred and twenty (120) yam farm households involved in this study. The sampling frame used was provided by the Agricultural Extension Agents (EAs) of the Agricultural Development Programme (ADP) serving in the study area.

Instrument of data collection was a pre-tested structured questionnaire which was administered to yam farmers and their farming households by personal interview method. The analytical techniques comprised the descriptive statistics and the stochastic labour-use requirement frontier function.

2.1. Theoretical Framework

Labour-use requirement frontier model helps to determine minimum amount of labour required to produce a given level of output. From this frontier, labour-use efficiency is attained when actual labour employed is on the labour requirement (Masso and Heshmati, 2003; Akanni and Dada, 2012). Labour-use requirement frontier model is expressed as:

$$L_{it}* = f\ (W_{it}* Y_{it}* Z_{ut}* t: \beta) \qquad (1)$$

Where L_{it}* is the labour requirement frontier (optimal), Y_{it} is real value added (output), W_{it} is real wage, Z_u is a vector characterizing the production process and the environment (economic policy variables), β are unknown parameters associated with determinants of optimal labour-use. Finally, variable *t* denotes time. The first approach is the relationship between the actual labour used by farmer *i* at time *t* (denoted as L_{it}) and the labour requirement function:

$L_{it}* = L *_{it} eu_{it}$ (2)
Where $u_{it} > 0$;

Y_i and t was interpreted as technical inefficiency. $u_{it} = 0$ means that the employer uses labour efficiently which implies that $L_{it}* = L_{it}* eu_{it}$. The term $euit = L_{it}*$ when $L_{it}* \geq 1$ and measures labour-use inefficiency for *Yi*. This approach was estimated using standard stochastic function technique in which distributional assumptions were made on the inefficiency and random error term. Labour-use by farm households can be expressed as;

$L_n L_{it} = L_n L_i *_t + V_{it}$ (3)

Where, V_{it} is the randomly and identically distributed error term with zero mean and constant variance. The labour-use model is specified as a factor input requirement function in which labour is specified to be a function of independent variables. The empirical estimation was based on trans-log functional form of labour function using a simultaneous maximum, likelihood estimation method. In the second approach, estimation of labour-use efficiency was based on residual from the labour requirement model (Gocowski & Oduwole, 2003). Considering the residual plus intercept as a dependent variable, a labour requirement stochastic frontier model was estimated and efficiency point for each observation was computed. The estimable equation then became:

$V_{it} - \alpha_o + v_{it} + W\alpha$ (4)

The random error term is assumed to be normally distributed with N (*0*, σ^2 W) and independent of the inefficiency unit. The latter are non-negative, which is the random variables assumed to account for the inefficiency in labour-use, given the levels of output and the quasi-fixed capital input. They are obtained as truncations at *0* of the N (m_{it}. σ^2 W) distribution of v_{it}. The degree of labour over use is explained by a time trend, ownership and trans-regional trade;

$Mi_t = To + Tit + T2\ private_{it} + T3\ trans - regions_{it} + T4share_{it}$ (5)

These are variables affecting the labour-use efficiency. M_{it} is the average of the normal distribution truncated at 0. The lower the value of Mit the higher the labour-use efficiency. This frontier model based on Gocowski and Oduwole (2003) was treated as an invested factor requirement model and was estimated by method of Maximum likelihood. Thus, over use of labour is defined as 0 when *Li*t measure is > 1. In this study, however, labour use was assumed to be a flexible factor in production process in the yam farming economy of the study area.

2.2 Model Specification

Determinants of technical efficiency of small holder crop farming in Nigeria, in which the amount of labour-use is a function of farm output was stated implicitly as follows:

$H\ (Li\ Yi\ Yn) = 0$ (6)

Where; L is labour used in producing farm products Y_i;, *Yn* are the yam outputs produced, using labour in a household. Solving for L gives;

$$L = H\ (Yi\ Yn) \qquad (7)$$

While the above equation was more simplified to ease quantitative analysis, we therefore had it that:

$$H\ (Yi\ Yn) = \frac{0 - Yi}{L} \qquad (8)$$

Thus, the equation was used as an index of labour-use efficiency. Given the output vector Y_0, demand for labour will depend on the production technology, technical inefficiency and factors outside the control of the farm. A Cobb-Douglas labour-use frontier was a function that was estimated in the study as given below:

$$L_n L_l = {}_o + {}_1 L_n\, Q\ Harvested + {}_2 L_n\, Q\ cleared + {}_3 L_n\, Q\ sprayed + {}_4 L_n\, Q\ fertilizer\ applied + V1 - V1 \qquad (9)$$

Where
Li = amount of labour-used (man-days);
Q Harvested = quantity of yam harvested (Kg);
Q Cleared = area of farm land cleared (m^2);
Q Sprayed = volume of agrochemical sprayed (litres);
Q fertilizer applied = quantity of fertilizer applied (kg);
V = the two sided, independent normally distributed random error.

2.3. Determinants of Labour-use Efficiency:

To determine factors contributing to the observed labour-use efficiency, the following model was formulated and estimated jointly with the stochastic frontier model in a single stage Maximum likelihood estimation procedure using the computer software frontier version 4.1 (Coelli, 1996) as follows:

$$LE = a_0 + a_1Z_1 + a_2Z_2 + a_3Z_3 + a_4Z_4 + \ldots\ldots\ldots a_{11}Z_{11} \qquad (10)$$

Where LE = Labour-use efficiency of the i-th farmer
Z_1 = labour wage (Naira);
Z_2 = Age of farmers (Years);
Z_3 = Level of education of the farmers (Years);
Z_4 = Membership of farmers association/cooperatives (1 = yes; 0 = no);
Z_5 = Farm size (hectare);
Z_6 = Gender of the farmer (Male = 1; Female = 0);
Z_7 = Farm distance (km);
Z_8 = Farming Experience (years);
Z_9 = primary Occupation (farming=1, otherwise=0);
Z_{10} = Household size (number);
Z_{11} = Farm income (Naira);
While a_0, a_1a_2 ……a_{11} are the parameters to be estimated.

Table 1. Socioeconomics of Yam Farmers in Abia State, Nigeria

Variable	Frequency	Percentage (%)
Age (Yrs)		
< 30	20	16.67
30 – 60	86	71.67
> 60	14	11.66
Gender		
Male	76	63.33
Female	44	36.67
Marital Status		
Single	20	16.67
Married	100	83.33
Household Size (number)		
1– 4		
5– 9	37	30.83
9-12	58	48.33
	25	20.83
Education level		
No formal Education	12	10.00
Primary Education	20	16.67
Secondary Education	70	58.33
Tertiary Education	18	15.00
Labour types Used		
Household only	24	20.00
Hired	44	36.66
Exchange	24	20.00
Casual	20	16.67
Share cropping	8	6.67
Farming Experience (years)		
1-10	30	25.00
11-20	44	36.66
21-30	26	21.67
31-40	20	16.67
Farm Size (hectare)		
< 1	59	49.17
1-2	41	34.16
3-4	20	16.67

Source: Field Survey, 2012

3. Results and Discussion

3.1. Socioeconomic profile of the respondents

The socio-economic characteristics of the yam farmers in Abia State, Nigeria are presented in Table 1. The Table revealed that majority of the yam farmers (71.67%) was aged between 30 and 60 years, suggesting that yam production was an enterprise that

demanded commitment of persons within the active labour force to activities (such as mound making, planting, staking, and weeding).

Dominance of male (63.33%) as against 36.67% female, suggests that yam production is gender sensitive and requires innate physical exertion of carefully selected force. Mostly married individuals (83.33%) were involved in yam production using labour provided from within their households and/or hired from outside. A fairly good proportion of the farmers (48.33%) had between five and nine household members and this was adjudged moderate and justifies decisions of some households in hiring labour to augment household labour in yam production.

It was further revealed that the farm households in the study area provided an average of 336 man-days used in yam production activities, with 36.66% using hired labour while family labour, share croppers, and exchange labour provided the balance required (63.34%). This implies that the farmers appreciably used hired labour in yam farming but, also depended heavily on other sources of farm labour. This result goes to emphasize on labour-use of specific crops like yam and management of other crops in line with Ajibefun *et. al.,* (2000) that hired labour contributes more than three-quarter (88.0%) of the total labour used for other crops on farms. The educational status of the farmers revealed that 90.0% of them were literate, possessing diverse formal educational levels ranging from primary education to tertiary education. These indices have implications on farm decision-making in use of resources, supply of products and technology adoption (Obibuaku, 1983; Ojoko, 2001).

The table also shows that 36.66% of the yam farmers had farming experience of between 11 and 20 years indicating a relatively high farming experience with implication in management of labour in the study area. This therefore tallies with the findings of Njoku and Odi (1991) that farming experience promote efficient use of scarce resources. The farm size distribution of the yam farmers revealed that 49.17 % of them cultivated less than 1.0 hectare of farmland per season. None of the sampled yam farmers in the study area had land size of above 4.0 hectares. This further confirms the fact that agricultural production in the area was at small scale on small fragmented farmlands. This result is in consonance with Olawepo (2010) that Agriculture in Nigeria is, however, characterized by large number of these small-scale farmers, scattered over wide expanses of land, with holdings ranging between 0.05 to 3.0 hectares, but not more than 10 hectares per farmer, with low capital use and low yield per hectare.

3.2. Labour-use pattern by Specific Farm Activities in yam production

Allocation of labour varied with farming activities. Some tasks required some skill and hired labour while household/family labour was sufficient for some farm activities. The cost and availability may preclude the use of hired labour of different classes for activities such as land clearing, agrochemical spraying, harvesting, planting, staking, transport to market and fertilizer application which are the most labour intensive operations in yam production. Table 2 showed that yam farmers in the study area provided an average of 336 man days in yam production activities. Labour was engaged more on land clearing, mound making (land preparation) and weeding in the following average annual proportions, 33.33 percent, 17.26 percent and 14.29 percent respectively.

Table 2. Distribution of annual labour-use (mandays) by specific farm activities in Yam production in Abia State, Nigeria

Farm activity	Number (mandays)	Percentages
Staking	20	5.95
Weeding	48	14.29
Planting	26	7.74
Transport to market	14	4.17
Fertilizer	22	6.55
Harvesting	24	7.14
Land clearing	112	33.33
Land cultivation	58	17.26
Agro chemical spraying	12	3.57
Total	**336**	**100.00**

Source: Field Survey Data, 2012.

The use of labour was very minimal in all the households for fertilizer application (6.55 percent), planting (7.74%), staking (5.95%), harvesting (7.14%), agro chemical spraying (3.57) and transport to market (4.16%). This was due to seasonal demand for labour in these production activities. Gocowski & Oduwole (2003) observed that slashing of vegetative under storey growth and weeding in yam farms was done twice a year prior to harvesting season while fertilizers were applied once throughout a productive season.

Table 3. Estimated Labour-use requirement frontier Production Function for Yam production in Abia State, Nigeria.

Variable	**Parameter**	**Coefficient**	**Standard error**	**T-value**
Constant term	β_0	6.7018	0.4421	15.1574***
Qty of harvested yam	β_1	0.3506	0.0913	6.1142***
Qty of fertilizer	β_2	0.4943	0.2480	1.9930**
Farm Size	β3	2.158	1.1426	1.8892*
Qty of agrochemical sprayed	β_4	-0.112	0.154	0.728

Source: Field Survey Data, 2012.
*** Significant at 1.0%; * Significant at 10.0%

3.3 Labour Requirement Frontier

Table 3. showed estimated labour-use requirement frontier production function for Yam production in Abia State, Nigeria. The estimated coefficient (0.3506) for quantity of yam harvested was positive and statistically significant at 99.0% confidence level. This implies that for every one percent increase in yam quantity harvested, there was an increase of 0.3506 percent in the amount of labour-used. This is in consonance with Akanni and Dada (2012) who obtained similar result among Small-holder Cocoa Farmers

in South Western Nigeria. The estimated coefficient (2.158) for size of cleared farm land was positive and significant at 10.0% alpha level, suggesting that every one percent increase in farm size, would lead to 2.158 percent increase in the amount of labour used. These results are in consonance with Effiong (2005); Nwachukwu and Onyenweaku, (2007) that the larger the farm size and quantity of produce harvested, the higher the level of labour use.

As for the quantity of fertilizer used, as more fertilizers were been used in yam production, much labour was employed. In line with classical production theory, the table showed that quantity of fertilizer used had a positive coefficient and was statistically significant at 5.0% probability level. With an elasticity of 0.4943, it implies that every one percent increase in fertilizer quantity used, resulted to 0.4943 percent increase in the amount of labour used in yam production.

3.4 Determinants of labour use Efficiency:

The determinants of labour use efficiency in yam production in Abia state is presented in Table 4. The Table showed that age, education, farm size, gender, labour wage and household size were statistically significant at some risk levels.

Farmers age showed a negative relationship (-0.1267) with labour use efficiency. This implies that increasing age would lead to decrease in labour use efficiency. This result supports the argument that farmers become less efficient as they get older. This could result not only from efficiency loss as farmers get old but also because younger farmers tend to be more open and likely to be exposed to new farm methods and techniques. This result was significant at 5.0% alpha level of significance and agrees with Akanni and Dada. (2012); Oluyole *et. al., (2011);* Ayibefun and Daramola (2003) and disagrees with those of Belbase and Grabowski (1985), Kalirajan and Shand (1985); Bravo-Ureta and Pinheiro (1997) whose results showed age to be positively related to labour-use efficiency.

The coefficient for Education (-0.6551) was negative and had significant (1.0% alpha level) relationship with labour use efficiency. This implies that increase in level of education leads to decrease in labour use efficiency. This is contrary to *a prori* expectation and (Sofoluwe *et al*, 2011) that education increases the ability of farmers to use their resources efficiently. Yam farmers in the study area make more use of unskilled labour. Increase in education level did not imply increase in acquisition of skill in yam production. Acquisition of higher education simply produced labour for white collar jobs hence, the prevalent rural to urban drift and loss of farm hands leading to increase in costs and decrease to labour use efficiency in yam farming.

The positive coefficient of farm size (0.6551) was significant at 1.0% probability level and implies that increase in farm size led to increase in labour use efficiency. This confirms the smallness of their farm sizes as farmers are more resource conscious when deploying labour in their small plots.

Household size was found to be positive (2.7903) and significant at 1.0% probability level. This suggests that larger households may utilize family labour and reduce cost incurred in hiring labour (Mubmik & Flinn, 1998). However, this result disagrees with the findings of Bravo-Ureta and Pinheiro, 1997; Nwachukwu and Onyenweaku, 2007; Onyenweaku *et al.,* (2004) which showed household size to be negatively and significantly related to labour use efficiency.

Table 4. Determinant of Labour use Efficiency in Yam Production

Variable	Parameter	Coefficient	Standard error	T-value
labour wage	Z_1	3.116	1.138	2.734***
Age	Z_2	-0.1267	0.615	-2.061**
Education	Z_3	-0.6551	0.0466	3.188***
Membership of co-op society	Z_4	-0.0625	0.187	-0.332
Farm size	Z_5	0.6551	0.4421	14.051***
Gender	Z_6	6.701	0.442	15.157***
Farm distance	Z_7	0.490	0.340	1.440
Farming Experience	Z_8	0.226	0.345	0.654
Household size	Z_9	2.7903	1.069	2.608***
Occupation	Z_{10}	0.302	0.217	0.138
Farm income	Z_{11}	0.536	0.634	0.858
Diagnostic statistics				
Total variance	σ^2	0.155	0.068	2.227*
Variance Ratio	Y	0.999	0.170	5.879
L R Test		0.16669		
Log likelihood function		-5.9798		

Source: Field Survey Data, 2012.
*** Significant at 1.0%; ** Significant at 5.0%; * Significant at 10.0%.

Gender had a positive coefficient (6.701) with a t- ratio of 15.157 and was highly statistically significant at 1.0% alpha level. This indicates that labour use efficiency in yam production was gender sensitive. Furthermore, it can be adduced from the result that the male gender was more efficient in the use of labour. It has been reported that males perform certain agricultural operation with greater skill than females (Anyanwu *et al*, 2009), hence promotion of the economic output and labour use efficiency in the area.

Real labour wage gave a positive coefficient (3.116) and was significant at 1.0% alpha level, indicating that real Naira increases in labour wage resulted to increase in labour use efficiency. Inflationary rate in Nigeria had remained stable and this could suggest little impact of variability in market prices for yam.

The coefficient of total variance (σ^2) was 0.155 while the variance ratio (Y) was 0.999. Variance ratio measures the ratio of the variance of farm specific amount of labour-used (man-days) to the total variance. This means that 99.9% of the variation in amount of labour-used among the yam farmers was due to the disparities in labour use requirement frontier. The total variance of 0.155 was statistically significant and as such, indicated a good fit and the correctness of the specified distributional assumption of the composite error term.

3.5 Distribution of Labour Use Efficiency:

Table 5. presents the distribution of labour use efficiency in yam production in Abia state. The Cobb-Douglas labour-use frontier estimate shows the mean labour-use requirement frontier as 0.76 for the small scale farmers. Any of such farmers employing

labour above this production frontier was technically efficient in labour usage while those who operated with labour below the frontier was considered technically inefficient. Additional man-days of labour were still technically necessary to be utilized to be on the frontier. However the result showed that about 83.34% of the yam farmers operated within labour-use efficiency range of 0.81 to 1.00. The estimates are skewed to the right, implying high level of efficiency. The minimum labour-use efficiency was 0.20 which indicated gross underutilization of labour resource while maximum labour-use efficiency was 0.97. In other words, the best labour-use efficient yam farmers operated almost on the frontier.

Table 5. Distribution of labour use Efficiency in yam production in Abia State, Nigeria

Labour use Efficiency Range	Frequency	Percentage
0.00-0.20	16	13.33
0.21-0.40	0	0.00
0.41-0.60	0	0.00
0.61-0.80	4	3.33
0.81-100	100	83.34
Total	120	100
Maximum Labour-use Efficiency	0.97	
Minimum Labour-use Efficiency	0.20	
Mean Labour-use Efficiency	0.76	

4. Conclusion and Recommendation

The study indicated that all the significant variables (quantity of harvested yam, size of cleared farm land and quantity of fertilizer) had positive influence on the amount of labour used in yam production in Abia State, Nigeria. The socio-economic determinants of labour use efficiency were age, education, farm size, gender, labour wage and household size which were statistically significant at some risk levels. Labour use efficiency of yam farmers in Abia State was relatively high. Individual levels of labour use efficiency ranged from 20.0% to 97.0% with a mean of 76.0%, suggesting that opportunities still exist for increasing labour use level of yam farmers in the area.

Based on the findings of this study, recommendations were made to improve labour use efficiency of yam farmers. We recommended that experienced yam farmers should form the focus of policies to increasing scale of operation through improved access to farm inputs. Policies should target subsidies to production inputs like fertilizer, agrochemical and capital for increasing labour use efficiency in the area.

Opportunities still exist for increasing labour use level of yam farmers in the area by increasing efficiency of labour use at the farm level up to 24.0%. Policies aimed at encouraging youths to engage in yam production should be promulgated. The farmers should be encouraged to organize themselves into cooperative societies as to be able to engage in share labour and have access to farm resources to improve labour use efficiency and productivity. Also, there should be an increase in remuneration paid to hired farm workers farm wages so as to adequately motivate them in yam production and other prospective farm operations.

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