Resource use Efficiency in Sweet Potato Production in Odeda Local Government Area, Ogun State, Nigeria

*M.M. Sanusi and A.O. Adesogan
Department of Agricultural Economics and Farm Management, Federal University of Agriculture, Abeokuta, Nigeria
[Corresponding author: Email sanusi.muinatm@pg.funaab.edu.ng; ogunbo1@gmail.com, phone: +234 703-3046-336]

ABSTRACT: This study estimated the resource use efficiency in sweet potato production in Odeda Local Government Area, Ogun State. The study was based on primary data collected from 82 sweet potato farmers through multistage sampling procedure; analyzed using descriptive statistics and multiple regression analysis. The result reveal that 90.2% male, with 21.7 years of sweet potato farming experience, 87.8% were married, 64.6% have a household size of 8 persons on average, 81.7% have no formal education, 96.4% acquired land through leasehold. Only 13.4% are members of farmers’ cooperative society. Multiple regression analysis show that the quantity of fertilizer used and the age of farmers were significantly related to quantity of output produced at (p<0.01) and (p<0.1) respectively. The coefficient of elasticity of Cobb Douglas function was 0.91. The efficiency estimates reveal that fertilizer was over utilized and should be reduced to ensure optimum production while vines, labour and farm size were sparingly used and these should be increased to ensure optimum production. Conclusively, sweet potato farmers in the study area were technically inefficient. It is recommended that farmers should utilize inputs, most especially fertilizer at optimum rate to bring about an increase in quantity of sweet potato produced.

Keywords: Sweet potato, Farmers, Resource use efficiency, Production, Utilization

INTRODUCTION
Sweet Potato (*Ipomea batatas* L.), belongs to the family of *Convolvulaceae* and it is originated from South America where it was introduced to Europe between 1565 and 1573 AD (Adekoya *et al*, 2010). It is one of the world’s most important food crops due to its high yield and nutritive value (Raemaekers, 2001). It is a short duration (3 - 4 months) crop that could be cultivated more than once in the year (Nwauzor *et al*, 2005; Adekoya *et al*, 2010). It is extensively cultivated in the tropical zones (e.g. North-central and Southwest) in Nigeria. The crop requires low inputs, less management and does well on marginal soils, thereby giving a reasonable yield than most other root crops (Raemaekers, 2001). However, according to FAO, (2008) and Adekoya *et al*, (2010), Nigeria is the largest producer of sweet potato in Africa.

Spent fields of sweet potato have been widely noted as supplementary pig forage (Yen, 1991). The leaves are also consumed as vegetables because its leaf contains (on dry matter basis) about 8% starch, 4% sugar, 27% protein and 10% ash (Adekoya *et al*, 2010). The leaves are much richer (than the root) in protein, minerals and vitamins and therefore are more nutritious (Adewunmi and Adebayo, 2008).

Sweet potato has also been used in Africa to fight vitamin A deficiency that result in blindness and even death of about 25,000 - 500,000 African children per year (CIP, 2009). The leaves contain vitamin A with sufficient quantities of *beta-carotene*. Vitamin A deficiency is a particular problem with children under five and for pregnant and lactating women.

In view of the above points, any boost in (market) supply of sweet potato through improved production as well as consequent utilization in Nigeria because of its potentials will not only assist in achieving Nigerians’ household food security but also health security from proper nutrition (Odebode *et al*, 2008).

Improved varieties were developed by National Root Crops Research Institute (NRCRI) Umudike; and International Institute for Tropical Agriculture (IITA),
Ibadan. In spite of these improved varieties that were
developed with desirable traits such as high yielding
potential, most rural farmers in Nigeria are conservative
and still cultivate the local varieties (Woolfe, 1992;
Ogbonna et al, 2009).

Resources can be organised into a farm-farm or
producing unit whose ultimate objectives may be profit
maximization, output maximization, cost minimization or
utility maximization or a combination of the four. In
production process, the manager, entrepreneur or the
firm as the case may be is concerned with efficiency in
the use of inputs to achieve his aim i.e. the
technological versus economic efficiency. Economic
efficiency occurs when the cost of producing a given
output is as low as possible. The theory of production
presents the theoretical and empirical framework that
facilitates a proper selection among alternatives so that
anyone or a combination of the farmer’s objectives can
be attained.

Agricultural productivity is the measure of efficiency
with which an agricultural production system employs
land, labour, capital and other resources. Efficiency can
be considered in terms of the optimal combination of
inputs to achieve a given level of output (an input
orientation) or the optimal output that could be
produced given a set of inputs (an output orientation).
Production function analysis as a tool is used to
estimate efficiency of resources used in crop production
systems and determine the optimal resource use in
resource allocation. According to Farrell (1957), the
elasticity of production which is the percentage change
in output as a ratio of percentage change in input is
used to calculate the rate of return to scale which is a
measure of a firm’s success in producing maximum
output from a set of inputs. The elasticity of various
inputs can be determined by: $E_p = \frac{MPP}{APP}$; where:
$MPP =$ marginal physical product; $APP =$ average
physical product (Output/Input). Farrell specified two
types of efficiency: technical efficiency and allocative
efficiency. He defined technical efficiency as the ability
to extract the maximum output from a given level of
input that is, the ability to produce a given level of
output with a minimum quantity of inputs under certain
technology. Allocative efficiency refers to the ability to
choose optimum input levels for given factor prices. It is
the farmers’ ability to achieve the optimal mix, having
the right and efficient combination of inputs that gives
optimal output (Farrell, 1957).

Technical efficiency for a firm that operates below the
frontier output i.e. technically inefficient firm, may be
improved or achieved in three ways: (1) improved
production techniques, (2) improvement in production
technology and (3) improvement in both. The
measurement of firm specific technical efficiency is
based upon deviations of observed output from the best
production or efficient production frontier. If a firm’s
actual production point lies on the frontier, then it is
perfectly efficient; if it lies below the frontier, then it is
technically inefficient with the ratio of the actual to
potential production defining the level of technical
efficiency of the individual firm (Greene, 1993; Idiong,
2007). Technically efficient is just one component of
overall economic efficiency. However, in order to be
economically efficient, a firm must first be technically
efficient. Thus, the economic or total efficiency of a firm
is the product of technical and allocative efficiencies. An
economically efficient input-output combination would
be on both the frontier function and the expansion path.
Sweet potato is facing a lot of production and post-
harvest challenges (Odedode et al., 2008). For
instance, sweet potato weevil (Cylas spp) often affects
crops planted between October and December
especially during the dry season. Grasshoppers and
rats are also common pests that attack sweet potato
when it is planted late leading to a reduction in the profit
margin if proper care is not taken (Ojeniyi et al., 2003).
Transportation is demanding because of its bulkiness
leading to high cost of transportation and labour used in
transportation. Most of the farmers employ labour at
exorbitant rate even in the rural areas simply because
the few labourers that are available are expensive to
hire (Ojeniyi et al, 2003). Sweet potato farmers are also
faced with the problems of allocating the available
resources and the efficient use of these resources
which can lead to under-utilization or over-utilization of
inputs or resources if they are not efficiently used.
These factors and others can reduce efficiency. It is not
clear who current producers of sweet potato are; what
factors influence sweet potato production; or what the
resource use efficiency of sweet potato production is in
the study area.

Therefore, this study determined the resource use
efficiency of sweet potato farmers and factors affecting
its production in order to address food production
problem in Ogun State, Nigeria. The objectives were to:
describe the socio-economic characteristics of sweet
potato farmers in the study area; determine the factors
influencing sweet potato production; and estimate the
resource use efficiency of sweet potato production in the study area.

METHODOLOGY
Study Area
This study was carried out in Odeda Local Government Area (LGA) of Ogun State in the western part of Nigeria. Odeda is one of the twenty LGAs in Ogun State. Its headquarter is at Odeda town located along Abeokuta-Ibadan high way; about 20 kilometres from the State capital (Abeokuta). The LGA lies within latitude 7°13’ North and longitude of 3°31’ East with a land mass of 1,560km² (or land area of 126,341ha) and a population of 109,449 people (NBS, 2009). It shares boundary with Ido LGA of Oyo State and Abeokuta-South LGA in Ogun State and has an average temperature of 30°C but humidity could be as high as 95% and the raining season is from April to October while the dry season is between November and March (OGADEP, 2010).

The dominant tribal group in the area is the Yoruba with some Hausas and Igbo traders. In the LGA, there are 25 semi-urban settlements and 860 villages and hamlets (OGADEP, 2010). Some of the arable crops grown in the area are yam, sweet potato, maize, cassava, vegetables, and cowpea while cocoa is the major cash crop and the major livestock include goats, pigs, poultry, sheep and cattle (NBS, 2009).

Sampling Techniques and Procedure
A multistage sampling technique was used to select eighty-two (82) sweet potato farmers in the study area. The first stage involved the purposive selection of Abeokuta agricultural zone due to the extensive cultivation of arable crops particularly sweet potato and the presence of numerous farm settlements in the zone according to Ogun State Agricultural Development Programme (OGADEP). The second stage also involved the purposive selection of Ilugun out of the six blocks under this zone because this block is known for sweet potato production according to OGADEP. The third stage involved the selection of three cells (Ilugun, Kila and Osiele) out of the eight cells under this block which was also selected purposively because these three cells have the largest number of sweet potato farmers according to OGADEP. The fourth stage involved a simple random sampling of 90 sweet potato farmers from 150 members of farmers’ organizations in the selected cells who were then interviewed with the aid of the pre-tested questionnaire.

However, data from 82 sweet potato farmers were analysed while 8 others were discarded for incompleteness and non-response from the selected farmers. This represents 60% of the total data sampled.

Method of Data Collection
Primary data were used for the study. These were obtained through administration of questionnaire to sweet potato farmers in the study area. The questionnaire contained pertinent questions that border on production, farming practices, outputs and inputs as well as some socio-economic characteristics of the sweet potato producers.

Analytical Techniques
The following analytical tools were employed in the analysis.

(i) **Descriptive statistics:** the use of frequency distributions, percentages and mean distributions were adopted to describe the socio-economic characteristics of sweet potato farmers.

(ii) **Multiple Regression Analysis:** this was used to determine the factors influencing sweet potato production in the study area.

The implicit form of the multiple regression model is

\[ Y = f(X_1, X_2, X_3, X_4, X_5, X_6, \mu) \]  

where:

- \( Y \) = Sweet potato output (kg)
- \( X_1 \) = Age of the respondents (years)
- \( X_2 \) = Gender of the respondents (male = 1 and female = 2)
- \( X_3 \) = Farm size (hectares)
- \( X_4 \) = Labour (man day)
- \( X_5 \) = Quantity of planting materials (strands)
- \( X_6 \) = Quantity of fertilizer used (kg)
- \( \mu \) = Error term

The explicit form of the multiple regression model is:

\[ \ln Y = b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + \mu \]  

where:

- \( b_0 \) = Constant
- \( b_1, b_2, b_3, b_4, b_5, b_6 \) = Regression Coefficients
- \( X_i \)’s are as specified above
- \( \mu \) = Error term

(iii) **Resource Use Efficiency (r):** this was used to estimate the resource use efficiency of sweet potato production in the study area. This was obtained from estimated equation(s) by comparing the marginal value...
product (MVP) of a particular variable input with the marginal factor cost (MFC) of one unit of a particular resource input employed in production (Iheanacho et al, 2000). The marginal value product (MVP) of any resource is the product of the marginal physical product (MPP) and the unit price of output \( P_y \); while the marginal factor cost (MFC) is the opportunity cost of the input used i.e. the unit price of input \( P_x \) (Iheanacho et al, 2000). Efficiency of a resource use can be determined by the ratio of the marginal value product (MVP) to the marginal factor cost (MFC). This efficiency ratio \( r \) was used to estimate the relative efficiency of resource use. Mathematically:
\[
    r = \frac{\text{MVP}}{\text{MFC}}.
\]
\[
    \text{MVP} = \text{MPP} \times P_y
\]
\[
    \text{MFC} = P_x
\]

The marginal value product (MVP) for \( X_i \) is equal to coefficient of the variables multiplied by price of the output \( P_y \). Mathematically for:

**Double log equation:**
\[
    \text{MVP}_x = P_y b y/x, \quad \text{by/x}_{(vi)}
\]
\[
    \text{MPP}_x = P_y b y/x, \quad \text{by/x}_{(vii)}
\]
\[
    \text{MPP}_x = b y, \quad \text{by/x}_{(viii)}
\]

**Exponential equation:**
\[
    \text{MVP}_x = P_y b y, \quad \text{by/x}_{(ix)}
\]
\[
    \text{MPP}_x = P_y (b - 2b x_i), \quad \text{by/x}_{(x)}
\]
\[
    \text{MPP}_x = b y, \quad \text{by/x}_{(xi)}
\]

**Quadratic equation:**
\[
    \text{MVP}_x = P_y (b_i - 2b x_i), \quad \text{by/x}_{(xii)}
\]
\[
    \text{MPP}_x = P_y (b_i - 2b x_i), \quad \text{by/x}_{(xiii)}
\]
\[
    \text{MPP}_x = b_i - 2b x_i, \quad \text{by/x}_{(xiv)}
\]

where:
\[
    x_i = x_1, \ldots, x_4,
\]
\[
    y = \text{geometric mean of } Y
\]
\[
    x = \text{geometric mean of } X_1, \ldots, X_4
\]
\[
    b_i = \text{regression coefficients}
\]

RESULTS AND DISCUSSION

Socio-economic Characteristics of Sweet Potato Farmers

The study reveals that 36.5% of the sweet potato farmers were within the age range of 31 to 40 years (Table 1). This age range falls within active economic age group and the mean age of 35 years implies that majority of the sweet potato farmers were middle aged. Also, majority (90.2%) of the respondents were male while 9.8% were female. This implies that sweet potato production is male dominated in the study area and this may be because of the tedious activities involved in sweet potato production and also because majority of the women find attraction in combining home keeping with their farming activities. The study also revealed that majority (87.8%) of the respondents were married with a mean household size of 8 persons; since they believe that getting married and having children is an alternative source of labour to the usage of hired farmlands. This implied that more labour will be employed in sweet potato production.

The study also reveal that majority (54.9%) of the farmers had an average of about 22 years experience in sweet potato farming.

The farmers possess a substantial wealth of experience which could improve sweet potato production in the study area. Table 2 shows that 36.5% of the sweet potato farmers belonged to Idunu Farmers’ group, while 59.8% do not belong to any farmers’ group. This indicated that the respondents were not actively involved in cooperative societies in the study area. This may be due to high membership charges thus having implication on the revenue accruable to the farmers. Majority of the farmers (96.4%) acquired land through leasehold and 97.5% had their source of fund from own savings.

Production Estimates of Sweet Potato Cultivation in Odeda LGA

Table 3 presents the efficiency of the inputs used and the factors influencing sweet potato production in the study area. It shows that all the inputs were positively related to the output of sweet potato produced. The quantity of fertilizer was positive and significant at 1% \( (p<0.01) \). This implied that increase in the use of fertilizer will increase sweet potato output by 0.80kg. The age of farmers was also was positive and significantly affected the output of sweet potato produced at 10% \( (p<0.1) \) and this implied that increase in age of the farmers will increase sweet potato output by 0.079kg. The elasticity of production which is the sum of the coefficients of the Cobb-Douglas production function was 0.91, and this implied a decreasing return to scale; that is, the farmers were operating in the third stage of production. It is the characteristics of the stages when optimum efficiency of production or resources use is being approached, as well as the situation where there exists a misallocation of or over-utilization of inputs beyond the points of technical efficiency.

Resource Use Efficiency of Sweet Potato Production in the Study Area

Table 4 reveals that the partial elasticity \( (Ep) \) which is the summation of all the ratios of MPP values to APP
values was 0.81. This suggests that the farmers were producing in the third stage of production since the value of the partial elasticity (Ep) was less than one.

Table 1: Distribution of Sweet Potato Farmers by Personal Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>3</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>21- 30</td>
<td>19</td>
<td>23.2</td>
<td></td>
</tr>
<tr>
<td>31- 40</td>
<td>30</td>
<td>36.5</td>
<td></td>
</tr>
<tr>
<td>41- 50</td>
<td>19</td>
<td>23.2</td>
<td></td>
</tr>
<tr>
<td>≥ 51</td>
<td>11</td>
<td>13.4</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td>35.00</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>74</td>
<td>90.2</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>10</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>72</td>
<td>87.8</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Household Size (No)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 4 persons</td>
<td>16</td>
<td>19.5</td>
<td></td>
</tr>
<tr>
<td>5 - 8 persons</td>
<td>53</td>
<td>64.6</td>
<td></td>
</tr>
<tr>
<td>9 - 12 persons</td>
<td>13</td>
<td>15.9</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td>8.00</td>
</tr>
<tr>
<td><strong>Level of Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Formal Education</td>
<td>67</td>
<td>81.7</td>
<td></td>
</tr>
<tr>
<td>Primary Education</td>
<td>10</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>Secondary Education</td>
<td>2</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Technical Education</td>
<td>3</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>51</td>
<td>62.2</td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>21</td>
<td>25.6</td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>10</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Sweet Potato Farming Experience (Years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10</td>
<td>10</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>11 – 19</td>
<td>27</td>
<td>32.9</td>
<td></td>
</tr>
<tr>
<td>&gt; 20</td>
<td>45</td>
<td>54.9</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td>21.68</td>
</tr>
<tr>
<td><strong>Secondary Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>24</td>
<td>29.3</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>58</td>
<td>70.7</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Field Survey, 2013*
Table 2: Distribution of Sweet Potato Farmers by Farm Related Variables

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farmers’ Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes Farmers’ Club</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Agbeloba</td>
<td>19</td>
<td>23.2</td>
</tr>
<tr>
<td>Idunu Farmers</td>
<td>30</td>
<td>36.5</td>
</tr>
<tr>
<td>Potatoes Cooperative Society</td>
<td>19</td>
<td>23.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Land Acquisition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lease</td>
<td>79</td>
<td>96.4</td>
</tr>
<tr>
<td>Communal land</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Purchase</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Source of Fund</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own Savings</td>
<td>80</td>
<td>97.5</td>
</tr>
<tr>
<td>Cooperatives</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2013

Table 3: Production Function Estimation of Sweet Potato Farmers in Odeda LGA

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.242***</td>
<td>0.299</td>
<td>4.147</td>
</tr>
<tr>
<td>Age</td>
<td>0.079*</td>
<td>0.050</td>
<td>1.685</td>
</tr>
<tr>
<td>Gender</td>
<td>0.003</td>
<td>0.068</td>
<td>0.050</td>
</tr>
<tr>
<td>Farm size (Land)</td>
<td>0.005</td>
<td>0.019</td>
<td>0.275</td>
</tr>
<tr>
<td>Labour</td>
<td>0.007</td>
<td>0.013</td>
<td>0.578</td>
</tr>
<tr>
<td>Vines</td>
<td>0.018</td>
<td>0.026</td>
<td>0.685</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>0.803***</td>
<td>0.044</td>
<td>18.131</td>
</tr>
<tr>
<td>R²</td>
<td>0.873</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ř²</td>
<td>0.860</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>F-value</td>
<td>67.385***</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

NB: ***Significant at 1 percent, *Significant at 10 percent
Source: Computed from Field Survey.

Table 4: The Average Unit and Average Price of the coefficient

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Average Inputs</th>
<th>Unit Price (NGN)</th>
<th>Price (US$)</th>
<th>MPP</th>
<th>APP</th>
<th>Partial MPP/APP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Land</td>
<td>0.2 hectare</td>
<td>6,700.00</td>
<td>43.23</td>
<td>10.40</td>
<td>2,080.00</td>
<td>0.005</td>
</tr>
<tr>
<td>Labour</td>
<td>6 man days</td>
<td>700.00</td>
<td>6.45</td>
<td>0.48</td>
<td>69.33</td>
<td>0.007</td>
</tr>
<tr>
<td>Vines</td>
<td>300 strands</td>
<td>5.00</td>
<td>0.03</td>
<td>0.02</td>
<td>1.39</td>
<td>0.014</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>655kg</td>
<td>5,000.00</td>
<td>32.36</td>
<td>0.50</td>
<td>0.64</td>
<td>0.781</td>
</tr>
<tr>
<td>Output</td>
<td>416kg</td>
<td>1,500.00</td>
<td>9.68</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*N = Naira, Nigerian currency; $ = Dollar, US currency; US$1 = NGN155.
Source: Field Survey, 2013
CONCLUSION AND RECOMMENDATION
The study reveals that sweet potato farming is a profitable agricultural business in the study area whose output was significantly dependent on fertilizer used. The resource use efficiency ratio shows that farmers over-utilize fertilizer during the production of sweet potato and that farmers were technically inefficient in the use of the resource (fertilizer). The study recommends that policies should be devised and implemented by the Government (Ogun State) to encourage the farmers to utilize fertilizer at an optimum rate since the quantity of fertilizer used brought about an increase in the sweet potato produced and training in their cultivation could improve sweet potato production efficiency.

REFERENCES


