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August 2009

Online at <https://mpra.ub.uni-muenchen.de/17440/>  
MPRA Paper No. 17440, posted 25 Nov 2018 09:25 UTC

## **SOCIO-ECONOMIC DETERMINANTS OF LIVINGSTONE POTATO (*PLECTHRANTHUS ESCULENTUS*) PRODUCTION AT FARMERS FIELDS IN JOS, PLATEAU STATE, NIGERIA.**

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### **Abstract**

The study examined the problems of Livingstone Potato (*Plecthranthus esculentus*) production at farmers fields in Jos, Plateau State, Nigeria. Two Local Government Areas (BarkinLadi and Shendam) were purposively sampled. Three communities each were randomly selected from the two Local Government Areas. Data were analyzed using descriptive statistics (frequency and percentages), and multiple regression analysis.

**Keywords:** Socio-Economic, Livingstone Potato, Production and Jos Plateau

### **Introduction**

The significance of major root and tuber crops such as cassava, sweetpotato, potato, yam and cocoyam in the diet of people of sub-Saharan Africa can not be overemphasized. However, the contribution of other minor root and tuber crops should not be under estimated. Livingstone Potato (*Plecthranthus esculentus*) also known as *Rizga*, *Nvat*, *Vu*, *Sima* or *Rungwabi* is one of the edible indigenous tuber crops commonly grown in some states in the middle belt of Nigeria (Olojede *et al.*, 2005).

It plays a significant role in the food systems of the people in this region. The tuber is either eaten raw as snack after peeling and washing or boiled and eaten with rice, while the leaves are also consumed as vegetables (Demissie, 1997; Olojede *et al.*, 2005). The tuber pieces are principally obtained from previous harvest and through farmer-to-farmer exchange. Planting of seed tubers takes place as early as April at the onset of the rainy season. Harvesting is done 6-7 months after planting. Despite its acceptance, and nutritional value (Alleman, 1996), the Livingstone Potato has received little or no attention from researchers in Nigeria, and consequently its potential is being underexploited.

Farmers growing this crop follow indigenous methods which resulted in relatively low yield. The reason behind such low yield is due to lack of high yielding variety and method of production practices adopted by local farmers. Although, it has the potential of contributing to food security and diversification of the local food base, its production has not been standardized from scientific point of view. The Livingstone Potato (*Plecthranthus esculentus*) could become

one of the important tuber crops of the people in these states if its production is expanded.

Therefore, research needs to bring improvement in production technologies as well as considering economic returns for a crop that provides income-generation opportunities for rural people of the middle belt of Nigeria, especially women who are actively involved in the cultivation and marketing of this crop (Olojede *et al.*, 2005). The objective of this study was to ascertain the determinants of Livingstone Potato production at farmers fields in Plateau State.

### **Methodology**

The study was conducted in Jos, Plateau State. The State is in the middle belt region and in the guinea savannah agro ecological zone of the country. It is located at Latitude 09° 11' and Longitude 08°44' with an elevation of 1340m above sea level (Danbaba and Amadi, 2008). Two Local Government Areas (BarkinLadi and Shendam) were purposively sampled. These areas are known for the cultivation and production of this underexploited crop. Twenty one farmers from each Local Government Area were randomly sampled for the study. Three communities each were randomly selected from the two Local Government Areas. The communities were Kwi, Loh-Tiu, Turu, Longvel, Kwapkilik and Shendam. A total sampling frame of forty two respondents was used. Structured interview schedules were used for data collection from respondents. Additional information was gathered through informal discussions with the farmers and by personal observations of the crop in some of the farmers' fields. Data were analyzed using descriptive statistics (frequency and percentages), and multiple regression analysis. The log-linear model derived from the

Cobb Douglas functional form was the econometric model specified for explaining determinants of productivity of Livingstone potato following Ukoha (2000) and Okoye *et al* (2008). It is only when satisfactory results are not obtained from this model that other forms will be tried out.

The model is described thus:

$$Y/N=f(X_1, X_2, X_3, X_4, X_5, X_6, X_7) + e$$

Where Y = yield of Livingstone potato (kg/ha)

X<sub>1</sub>= age (years)

X<sub>2</sub>= household size (number of persons)

X<sub>3</sub>= sex (dummy variable; male=1, female=0)

X<sub>4</sub>= marital status (1=single, 2=married, 3=divorced, 4=widowed)

X<sub>5</sub>= farm size (hectares)

X<sub>6</sub>= educational background (number of years)

X<sub>7</sub>= membership of cooperative society (1= yes, 0= no)

e= error term

### Results and Discussion

Table 1 shows the socio-economic characteristics of Livingstone potato farmers. The table reveals that majority (92.90%) of the farmers were women. This is in consonance with Olojede *et al.*, (2005) which shows that the crop is mostly cultivated by women. Majority (78.60%) of the farmers did not belong to any cooperative society which may account for their low yield because membership of cooperative society increases farmers' awareness of improved methods of farming. About 41% of the farmers were between the age range of 41- 50 years which is an indication that majority of the farmers cultivating the crops are ageing and this have a direct relationship on the productivity of Livingstone potato in the study area as revealed by the negative coefficients of the regression analysis which is significant at 1 per cent level of probability (Table 2). Also 57.10% of the respondents had between 6-10 persons in their households and a positive coefficient which is significant at 1 per cent level of probability as shown in tables 1 and 2. Moreover, 45.20% of the respondents had between 3.5 - 4.0hectares of farm land. The regression analysis showed that farm size had a negative coefficient and is significant at 5 per cent level of probability. This is expected as the farmers allocated few portions

of their land to the production of Livingstone potato. About 43% of the respondents had between 7-12 years of Education and majority (85.72%) had farming as major occupation but these were not significant.

### Conclusion

The study assessed the determinants of Livingstone potato production at farmers' fields in Jos, Plateau. Sex, membership of cooperative society, age, household size and farm size constituted major problems to Livingstone potato production in the study area. Policies targeted at both gender participating in the production of the crop, encouraging youths to stay in agriculture, economics of production, germplasm collection, characterization, and evaluation and farm mechanization to increase farm size would largely promote Livingstone potato production in the study area.

### References

- Alleman, J. (1996). Two Indigenous Tuber Species being Evaluated as Possible Food Crops. ARC Roodeplaat Vegetable and Ornamental Plant Institute. Pretoria, South Africa.
- Danbaba, A.K. and Amadi, C.O. (2008). Effect of Different Sources of NPK -15:15:15 on the Growth and Yield of Potato (*Solanum tuberosum*.L.) on the Jos Plateau. In: *Proceedings of the 42<sup>nd</sup> Annual Conference of Agricultural Society of Nigeria (ASN) held at Ebonyi State University, Abakiliki, Nigeria. October 19<sup>th</sup>-23<sup>rd</sup> :203-207.*
- Demissie, A. (1997). Potentially Valuable Crop Plants in a Vavilovian Center of Diversity, Ethiopia. In: *Proceedings of a Conference on Crop Genetic Resources of Africa*, Nairobi, August 1995. Guirano, L. (Ed). Rome: IPGRI.
- Okoye, B.C., Onyenweaku, C.E, Ukoha, O.O, Asumugha, G.N. and Aniedu, O.C (2008). Determinants of Labour Productivity on Small-Holder Cocoyam Farms in Anambra State, Nigeria. *Scientific Research and Essay 3 (ISSN11):559-561.*
- Olojede, A.O., Iluebbey, P. and Dixon A.G.O. (2005). IITA/NRCRI Collaborative Germplasm and Data Collection on Minor Root and Tuber Crops in Nigeria. In: *Annual Report 2005 National Root Crops Research Institute, Umudike: 77*

**Table 1: Socio Economic Characteristics of Livingstone Potato Farmers in Plateau State**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Sex</b>		
Male	3	7.10
Female	39	92.90
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Age (Years)</b>		
10 - 20	2	4.80
21- 30	4	9.50
31- 40	11	26.20
41-50	17	40.50
Above 50	8	19.00
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Marital Status</b>		
Single	10	23.80
Married	23	54.80
Divorced	4	9.50
Widowed/Widower	5	11.90
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Education (No of years)</b>		
No Education	13	30.95
1-6	18	42.85
7-12	11	26.20
Above 12	0	00.00
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Household Size(No of persons)</b>		
1-5	11	26.20
6-10	24	57.10
11-15	5	11.90
Above 15	2	4.80
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Occupation</b>		
Full Time	36	85.72
Part time	6	14.28
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Membership of Cooperative Society</b>		
Yes	9	21.40
No	33	78.60
<b>Total</b>	<b>42</b>	<b>100.00</b>
<b>Farm size (Hectares)</b>		
0.5 - 1.0	11	26.20
1.5 - 2.0	7	16.70
2.5 - 3.0	5	11.90
3.5 - 4.0	19	45.20
<b>Total</b>	<b>42</b>	<b>100.00</b>

Source: Field Survey 2008

**Table 2: Regression Results of Determinants of Livingstone Potato Production in Jos, Plateau State**

<b>Variables</b>	<b>Coefficients</b>	<b>T - values</b>
<b>Intercept</b>	<b>7.739</b>	<b>7.450 ***</b>
Sex	0.182	0.675 **
Membership of cooperative society	0.229	1.037*
Age	-0.044	-0.187 ***
Household size	0.922	2.192 ***
Farm size	-0.280	-0.907 **
Educational Level	-0.170	-1.269
Occupation	0.818	0.816
<b>R<sup>2</sup></b>	<b>0.552</b>	
<b>F - ratio</b>	<b>1.054</b>	
<b>Number of observations</b>	<b>42</b>	

Source: Field Survey 2008

\*\*\*, \*\*, \* = significant at 1%, 5%, and 10% levels respectively