Journal of Community & Communication Research
ISSN: 2635-3318
Volume 5, Number 2, June 2020
Pp. 184-189

Resources Use Efficiency of Garden Egg (*salanum melongena*) Production in Ringim Local Government Area of Jigawa State, Nigeria

Accessible at: https://jccr.sccdr.org.ng

Lawal A.T.
Department of Agricultural Economics and Extension, Kano University of Science & Technology, Wudil, Nigeria
Corresponding Author's Email: altaofeeq2000@yahoo.com

Barau, S.S
Department of Agricultural Economics and Extension, Federal University, Dutsinma, Katsina State, Nigeria

Umoru, G.I.
Department of Agricultural Economics and Extension, Federal University, Dutsinma, Katsina State, Nigeria

ABSTRACT
The study determined Resources use Efficiency of Garden egg production in Ringim Local Government Area of Jigawa state. Data were collected through structured questionnaire, oral interview and observation method. The analytical tools used were; descriptive statistic and regression models. The findings show that farm size, fertilizer, and chemical were positively significant. These results imply that the farmers were technically efficient in the use of fertilizer, chemical and farm size. The results also show that seed use was not significant and the negative value indicated that increasing the seed would not have any positive impact on the output. The garden egg farmers identified constraints such as lack of government support, inadequate capital, lack of improved varieties, high cost of input, pest and diseases incidences, lack of market and lack of storage facilities. Conclusively, garden egg production was found to be profitable, with positive relationship between farm size, seed and fertilizer. It is recommended that garden egg farmers should dedicate more land to garden egg production, as a means of saving cost, and also government should provide garden egg farmers with modern irrigation facilities so as to overcome irrigation problem faces by the farmers.
Keywords: Resources use, Efficiency, Garden egg, Production and Jigawa state

INTRODUCTION

Garden egg (*SolanumMélongena*) is an economic flowering plant, belongs to the family Solanaceae. Whose members are mostly herbaceous plant, the fruit is berry: the seeds have large endosperm and are grown mainly for food and medicinal purposes. Nutritionally garden egg contains water (92.5%) protein (1%) fat (0.3%) and carbohydrates (6%). Medically a meal of garden egg is proven to be of benefits to patients suffering from raised intraocular pressure (Gloucoma) and convergence insufficiency, as well as in heart diseases and arteriosclerosis (Akinpelu and Ogbonna (2005).

African eggplant or garden egg (*Solanum gilo)* is among the oldest vegetables. It is an indigenous tropical African crop grown in Nigeria for its nutritional, medicinal and economic values of the leaves and fruits, with various varieties of economic importance commonly produced in Southeastern Nigeria. Onuoha, (2005); Okafor (1993) and Maraizu (2007) stated that garden egg contains a lot of mineral, vitamins, carbohydrate and water substances which are important and highly beneficial for the maintenance of health and prevention of diseases. Chadha and Oluocha (2003), reported that garden egg as a vegetable, has been affirmed to be recommended to tackle malnutrition problem in Africa, especially among women of childbearing age and children under 5 years old.

African eggplant fruits could be consumed raw as snacks by both adult and children. In Southeastern Nigeria, the fruits of garden egg (*Solanum gilo*) are served alongside with kola nuts (*Cola accumilata)* in both big and small ceremonies such as marriages, festivals, traditional title taking, meeting and others (Okafor, 1993). In most Igboland, garden egg or Ańara as popularly called, is sliced and mixed with Tapioca in the preparation of special native salad or dishes such as "Nsisa" or "Ugba" (Nwaorie and Agbaravoh, 2002). The fruits of some biter species like *Solanum melengena* are cooked and used in the preparation of sauces for cocoyam and yam porridge (Onwuka, 2005). It also offers gainful employment among the rural households and its cultivation is not limited to any age or sex (Anuebunwa, 2007). The crop is widely cultivated across most of the Africa continent, and more intensively in west and east Africa. It is consumed at almost on daily basis by urban families and also represents the main sources of income for producing households in the forest zones of West Africa (Danquah Jones 2000).

Despite the local importance of garden egg in the study area, several farm- level efficiency studies on vegetable production focused on water leaf and fluted pumpkin (Idiong et. al. (2002).There has been limited information on garden egg production in the study area. This study therefore estimated the technical efficiency and its determinates among urban garden egg farmers in the area. This it is hoped will help to enhance their efficiency and productivity and hence improve their income and reduce urban poverty. The basis of this research is to determine the resource use efficiency of Garden egg production in Ringim LGA.

METHODOLOGY

Ringim Local Government Area of Jigawa state Nigeria is located in north western part of the state. It is about 6,4949 km. The climate of Ringim is semi-arid is characterize by dry and wet season from May to September. The climate variable very considered during the total annual rainfall ranges from 600mm to 759mm, wide variation occure in the annual. The regional vegetation falls within the Sudan savanna type. Ringim Local Government is dominated by Hausa Fulani tribes who are predominantly Muslim. The Economic of Ringim, the area has a fertile land for both wet and dry seasons farming activities. The Local Government produces both subsistence and cash crop and also has great numbers of fruits tress scattered along the bank of the rivers. In addition to the farming activities majority of the people engaged in marketing.

A multistage sampling procedure was used for the study. The first stage involved a purposive selection of five (5) wards out of ten (10) in the LGA which include; Dabi, Karwai, Gabarin, Zangon Kanya, and Yanduste, the selection were based on high intensity in garden egg production in the area . At the last stage a simple random selection was done to select 50% of the total population of 126. Therefore, a total of sixty four (64) garden egg farmers were randomly selected to represent the sample size.

The data for the study were collected from the primary source and was collected using structured questionnaire. The questionnaire was structured to reflect the objectives of the study. Descriptive Statistics with the aid of mean, percentage, frequency distribution were used to analyze the data. In this context, multiple regression was adopted. Mathematically, multiple regression is represented as follows:

$$Y=f(X_1, X_2, X_3, X_4,) \quad (1)$$

The explicit form of multiple regression is represented as:

$$Y=B_o+B_1X_1+B_2X_2+B_3X_3+B_4X_4+U \quad (2)$$

Where,
Y= output of garden egg (kg)
B_o= intercept
B_1-B_n= coefficient of regression
X_1= seed (Kg/ha)
X_2= quantity of organic manure (kg)
X_3= labour (man days)
X_4= farm size (ha)
U= error term

Resource Use Efficiency

Resource use efficiency is about efficient utilization of scarce resources to satisfy the objective of the producer. Resource use efficiency encompasses both the technical efficiency; results from firm's success in producing maximum output from a given set of inputs, and the price efficiency; results as a measure of firm's success in choosing optimal set of inputs. The acquisition cost of each variable resource input used is the Marginal Factor Cost (MFC). Equating the Marginal Value Product (MVP) of the inputs to the Marginal Factor Cost (MFC) or cost of acquisition gives a ratio to determine the resource use efficiency. MVP>MFC (gives a ratio greater than one) signifies underutilization of resources, MVP<MFC (gives a ratio lesser than one) signifies over utilization of resources and when MVP=MFC (gives a ratio equals to one) signifies efficient utilization of resources.

Efficiency ratio was used; it served as a tool that guided the research to figure out the resource use efficiency in cassava production in Ringim LGA. Mathematically, the relationship is as follows:

$$R=MVP/MFC \quad (5)$$

Where,
R= efficiency ratio
MVP= marginal value product
MFC= marginal factor cost
Based on the regression coefficients that were estimated, Marginal value product of resource use was computed. The MVPs were determined using the formula:

$$MVP_{xi}=B_i*Y_i/X_i*(P_y \quad (6)$$

Where,
MVP = Marginal value product
B_i = Regression coefficient
Y_i = mean of output
X_i = mean of input
P_y = price per unit output
Decision rule:
MVP>MFC – underutilization of resources
MVP<MFC – overutilization of resources
MVP=MFC – optimal utilization of resources

RESULTS AND DISCUSSION

Influence of Garden egg Production Variables to Yield of Garden egg

Table 1 shows the result of the regression analysis of garden egg production in Ringim LGA: The regression coefficient was found to be R- Square of = 0.805. The implication is that the included independent variables (Farm size, labor, fertilizer, seed, fuel and pesticide) were highly correlated

with the farmers' output. Also, the coefficient of multiple determination was found to be R- Square adjusted of = 0.788 or 78.8%, signifying that 78.8% of the total variations in the dependent variable (Total output) was explained by the explanatory variables, that is inputs (X_1-X_5) included in the model. The f value statistic of garden egg indicates that the equation model is in good fit. The result shows that the coefficient of seed was found to be negative, meaning that the use of seed is inversely related to garden egg output. This also implied that a unit increase in seed used in garden egg production will not contribute to garden egg output, because increasing seed used in garden egg production will lead to additional cost to total cost of production and as such will reduce the returns of the farmer. The results of the estimate in Table 1 show that the parameters of farm size, fertilizer, and chemical were positively significant. These results imply that the farmers were technically efficient in the use of fertilizer, chemical and farm size. The results also show that seed use was not significant and the negative value indicated that increasing the seed would not have any positive impact on the output. This suggests that the farmers may have easy access to garden egg seeds and the availability of these seeds may not affect the efficiency of production. This also suggests that since they are small-scale farmers constrained by the size of the farm and availability of labour, the availability of more seed may not have any effect on efficiency.

Table 1: Regression Analysis of Garden Egg Production in Ringim LGA

Variables	Coefficient	Standard	T-Value	Sig
Constant	3.101	0.028	28.256	.000***
Labor(man/days)	0.002	0.003	1.192	.962
Farm size (ha)	2.678	0.747	5.651	.001**
Seed (Kg)	.031	0.001	-311	0.14
Fertilizer (Kg)	0.594	0.001	1.615	0.045*
Fuel (ltr)	-0.015	0.007	-2.736	.507
Pesticide (ltr)	0.20	0.007	2.536	0.014*
R^2	0.805			
R^2 adjusted	0.788			

Source: field survey, 2019. ***Means significant at 1%, **significant at 5%, * significant at 10% and NS Not significant.

Determination of Resources Use Efficiency in Garden Egg Production

Table 2 shows the result of resource use in Ringim LGA. The result shows that the farmers were not efficient in the utilization of resources as far as garden egg production was concerned in Ringim LGA. Farm size (0.55), Seed (8.11), Fertilizer (0.000) Labour (0.224), Fuel (0.69) and Pesticide (0. 36). The result shows that farm size, labour, fuel and pesticide were over utilized, since their efficiency ratios were found to be less than 1, while seed was found to be underutilized; its efficiency ratio was found to be more than 1. Over utilization of labor might result from excessive usage of manpower, which will generate additional cost and might not be efficient, fuel, pesticide and fertilizer were also found to be over utilized. Farm size was found to be underutilized, probably because farmers were not able to exploit the available land resources due to limited access to land.

Table 2: Result of Resources use Efficiency in Garden Egg Production

Resources	MVP	MFC	Efficiency Index (MVP/MFC)
Farm size (ha)	114358.45	200,000	0.55
Seed (kg)	752.93	92.84	8.11
Ferlizer (kg)	0.900	1,000	0.000
Labour (manday)	112.057	5000	0.224
Fuel (ltr)	104.9	150	0.69
Pesticide (ltr)	1088.08	3000	0.36

Source: Field survey, 2019

Constraints to Garden Egg Production

The field of agriculture is bound to be constrained by many factors ranging from natural to manmade factors. Garden Egg production in Ringim LGA is no exception to these factors; hence, Table 3 contains the factors militating against garden egg production in Ringim LGA. The farmers were found to be constrained by: Inadequate Government support (100%), inadequate capital (88.3%), Lack of improved varieties (83.3%), and poor market. These were the major constraints to the production of garden egg in Ringim LGA. Such as inadequate capital, lack technical skills, poor government support, and poor market among others.

Table 3: Constraints Affecting garden egg Production in Ringim LGA

Variable	Frequency	%
Poor Government support	60	100
Inadequate capital	53	88.3
Lack of improved varieties	50	83.3
Poor market	30	50

*Source: Field survey, 2019 * Multiple responses*

CONCLUSION AND RECOMMENDATIONS

From the result obtained in the study, it can be concluded that garden egg enterprise was profitable and as such more emphasis should be placed on resource utilization to sustain the stakeholders in the enterprise. Thus, a relatively appropriate and sustainable intervention packages that should substantially encourage and motivate them into improving their productivities, benefits and socioeconomic status is inevitable. In this regard, the intervention framework should be formulated by the government to further serve as a mitigating strategy to and or eradicate the myriads of constraints that hinder producers from realizing their efficiency and the full potentials of garden egg production in raising their socioeconomic status. Therefore, in the light of these conclusions, the following recommendations are necessary.

1. Government should encourage farmers towards aggressive expansion of garden egg production in the study area by giving it a role in achieving household food security and poverty alleviation.
2. Garden egg producers could as well form themselves into cooperatives where they could pull their resources together for bulk purchase of inputs and better services from change agent.
3. Provision of good and functional market system for disposal of products to increase revenue base is imperative.

REFERENCES

Akinpelu, A.O. and M.C. Ogbonna (2005). Economics of eggplant (*salanium sp*p) "Ngwa large" production in South East Agro-ecological zone of Nigeria. Proceedings of the 30th Conference of the Agricultural society of Nigeria, Benin, October 9-13, Pp. 143 – 145.

Anuebunwa, F.D. (2007). Structural Characteristics of the Marketed Fresh Okro in Ebonyi State of Nigeria. Proceedings of the 4th Conference of the Agricultural Society of Nigeria, Samaru 22-26th October. Pp. 489-492.

Chadha, M.L. and M.O. Oluocha, (2003). Home-based Vegetable Gardens and other Strategies to Overcome Micronutrient Malnutrition in Developing Countries. *Food, Nutrition and Agricultural Journal*. 32(1):17-23.

Danqua-Jones, A. (2000). Variation and correlation among agronomic traits of Garden egg (Solanium gilo Radii). Department of Crop Science, Accra, University of Ghana, Lgon 30.

Idiong, I. C., E. E. Ekpe, A.F. Charles and E. J. Udoh (2002). Socioeconomic determinants of waterleaf production in Calabar municipality and Calabar south L. G. Areas of Cross River State. Global Journal of Pure and Applied Sciences., 8: 239-243

Maraizu, J.O. (2007). The Control of Fusarium Wilt of Eggplant Caused by *Fusarium oxysporum F-sp melongena* in Parts of Isiala-Ngwa Area of Abia State. M.Sc. Thesis of Department of Plant Health Management, Michael Okpara University of Agriculture, Umudike, Umuahia, Abia State, Nigeria. Pp. 21-30.

Nwaorie, H.E. and P.C. Agbaraevoh, (2002). African Eggplant Production in South Eastern Nigeria. *Horticultural Society of Nigeria.* 12(1):254-258.

Okafor, J.C. (1993). Horticulturally Promising Indigenous Wild Plant Species of Nigeria Forest Zone. *Journal of Agriculture.* 12(7):165-176.

Onunka, B.N. (2005). A Survey on the Adoption of Sweet Potato (*Ipomoea batatas)* Production Technologies in Abia State. M.Sc. Desertation of Department of Agricultural Economics and Extension, Abia State University, Uturu, Nigeria. Pp. 10-34.