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Factors Influencing Sesame (*Sesamun Indicum* L) Marketing in Jigawa State, Nigeria

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Abstract

Factors influencing Sesame marketing in Jigawa state of Nigeria were examined. The sampling procedure involved the use of purposive and simple random sampling technique. A total of 156 middlemen consisting of 40 wholesalers, 77 rural assemblers and 39 buying agents were selected using simple random sampling technique. Interview schedule was used to collect information from sesame wholesalers, rural assemblers and buying agents in Suletankarkar, Gumel, Maigatari and Kalgo markets. Data were analyzed using multiple regression analysis, The result shows that the estimated coefficients of multiple determination (R^2) indicates that the postulated regressors explained 21%, 54 % and 98% in the variation of the quantity of sesame traded for rural assemblers, wholesalers and buying agents respectively. Results imply that income and experience were major factors that influence the marketing of sesame in the study area. Formation of cooperative societies by marketers of sesame will make them benefit from economies of scale in marketing of sesame and have much access to credit facilities.

Key Words: Sesame marketing, Sesame agents, Sesame in Jigawa State.

Introduction

Sesame (*Sesamum indicum*,L) is an oilseed crop grown mainly for its seeds that contain approximately 50% oil and 25% protein (Rheenen, 1973). The presence of antioxidants (sesamum, sesiamolin and sesamol) makes the oil to be one of the most stable vegetable oil in the world.

Annual exports of sesame from Nigeria are valued at about US$35 million from an estimated world trade of $600 million in 2005. In value terms therefore, the crop is second to cocoa as an agricultural export. Sesame has a large potential

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to enhance agribusiness development and generate employment opportunities that will lead to significant impact in the rural sector, particularly for households in Northern Nigeria. The knowledge of the role of the principal market participants such as middlemen for sesame is yet to be fully investigated and documented. Poor marketing structure among others has been identified to be one of the major issues limiting agricultural productivity in Nigeria (CBN, 2010). For sesame, commercial marketing from rural areas to urban markets is principally carried out by buyers or middlemen. The sesame is transported to the larger towns, bulked in store and sold to the agents of major exporters (Chemonics, 2002). The knowledge of the role of the principal market participants such as farmers, middlemen (including exporters) and consumers for sesame is yet to be fully investigated and documented. For farmers to produce more and remain in production, the availability of farm inputs and improved technologies must be accompanied with good and long term marketing arrangements.

Therefore, to satisfy the rising demand for sesame in Nigeria for export, the marketing system has to expand both in coverage and capacity as well as its efficiency. Hence a study that will explore the functioning of sesame markets in Nigeria in terms of efficiency will remain a worthy effort. The specific objectives of the study are to:

(i) identify the socio-economic characteristics of sesame traders
(ii) examine their influence on the traders' output
(iii) ascertain the major constraints experienced by sesame traders.

Methodology

Jigawa state is located between latitudes 10^0 57' and 13^0 03' North and longitudes 8^0 08' and 10^0 27' East and it covers an area of about 22, 2110 km or about 2.2 million hectares. About 70% of the land mass is cultivable during the rainy season. It shares a common boundary with Katsina state, Niger Republic and Yobe state to the North. To the East and South, the state is bounded by Bauchi state and to the West by Kano state (Kabiru, 1998).

The mean daily maximum temperatures are 19^0 C and 35^0 C (respectively for the coldest and hottest days). The hottest period is witnessed in April and October while the lowest temperature are recorded during the months of December and January and it can fall as low as 10^0 C or lower at night, (Kabiru,1998).

The mean annual rainfall varies from 600mm to 1000 mm. Rainfall is higher in the southern part of the state. The state has an average of about 700 mm annual rainfall. Most part of the state lies within the Sudan vegetation zone. The vegetation and climate of the state are influenced by the Equatorial Maritime and tropical continental air masses. The former is characterized by South-westerly winds coming from the Gulf of Guinea while the later represents

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the dry North-easterly winds coming from the Sahara Desert (NAERLS and NFRA, 2009).

The sampling procedure involved the use of purposive and simple random sampling techniques. Maigatari, Gumel, (regional-urban markets); Suletankarkar and Kalgo (non-isolated rural markets) which are the main growing areas of sesame and the main market of the commodity were purposively selected in Jigawa state. A random sample of 156 middlemen consisting of 40 wholesalers, 77 rural assemblers and 39 buying agents from each of the markets were selected from a sampling frame of 300 sesame traders prepared with the assistance of “Sarkin kasuwa” who serves as market leader.

The collection of data was carried out with the help of extension agents under the supervision of the researcher. The study used both primary and secondary data. The primary data source comprised of questionnaire and interview schedule, while secondary information were collected from Jigawa ADP. The questionnaires for data collection were pre-tested and contained both close and open ended questions. Interview schedule was used to obtain information from sesame wholesalers, rural assemblers and buying agents for each of the markets. The survey was conducted to collect information from the actors in the market viz: wholesalers, retailers and buying agents. Questionnaires were administered to these categories of respondents so as to obtain a reliable data that will enable the researcher to interpret the functioning of the sesame market in the study area. The information sought from the respondents include: buying and selling behaviour, mode and cost of transportation, quantity handled, prices bought and sold, sources of capital, marketing cost and constraints as well as sources of information on prices. The questions to buying agents were centered towards knowing their role in sesame marketing, information status as well as on sources and quantity of sesame handled. Data was collected for the period May 2011 to May 2012.

Multiple regression analysis was used to archive the specific objective of the study. Multiple regression analysis is an extension of simple regression analysis to cover cases in which the dependent variable depends on more than one explanatory variable (Gujarati, 2003). The regression coefficient of each independent variable provides an estimate of its influence on the dependent variable, controlling for the effects of all the other independent variables.

The multiple regression equation is given by:

$$y = a + b_1 x_1 + b_2 x_2 - bnxn + \varepsilon$$

Where y =dependent variable

$x_1 - x_n$ =independent variables

$b_1 - b_n$ =coefficients

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a =constant term

ε =error term

Results and Discussions

Factors that influence the quantity of sesame traded by rural assemblers

Results of the regression analysis of the factors that influence the quantity of sesame handled by rural assemblers were presented in Table 1. In computing factors that determine the volume of food grains marketed, regression analysis is mostly used and equation of best fit used is based on magnitude of coefficients, standard error, signs and significance of coefficient of multiple determination F and t ratios (Onu and Iliyasu, 2005). The Double log function gave the best fit based on the magnitude of the coefficients, R^2 and t-ratios. The result shows that the estimated coefficient of multiple determinations (R^2) indicates that the postulated regressors (i.e. included variables in the model) explained 14 % of the variation of the regressand (i.e quantity traded from sesame). Experience gave positive and significant coefficient, indicating that increase in years of experience will result in increase in the volume of sesame marketed by the rural assemblers. The result agrees with similar findings by Adeleke and Afolabi (2012) that marketing experience is a significant factor in increasing sales revenue. Household size was negatively significant implying that increase in household size reduces the quantity of sesame traded by the rural assemblers.

Table 1: Influence of socio-economic variables on quantity of sesame traded by rural assemblers

	Function			
Variable	Inverse Regression coefficient	Linear Regression coefficient	Double-log Regression coefficient	Semi-log Regression coefficient
Constant	4.577983(1.59994)	208.7349(238.1878)	-3.065739(13.21011)	-429.9991(1996.125)
Household Size	-0.29430(0.022004)	-4.664872(3.275740)	-0.351941(0.204255)*	-47.81954(30.77141)
Age	-0.006872(0.015669)	-0.557205(2.332673)	0.021015(0.615143)	13.89732(92.67228)
Marketing Experience	0.056665(0.018781)*	6.104084(2.795944)	0.683223(0.210014)*	73.61499(31.63895)*
Formal Education	-058020(0.093357)	6.104084(2.795944)	-0.153139(0.182340)	-15.74625(2746987)
Cost of Transportation	0.001401(0.001656)	0.147443(0.246502)	0.439574(0.406193)	53.97555(61.19367)
Capital	0.0000157(0.000139)	-0.002874(0.020715)	0.529213((1.3999979)	-429.9991(1996.125)
R^2	-0.17	0.11	0.22	0.14
R^2Adj	0.10	0.04	0.10	0.06
F-value	2.55	1.56	2.553366	1.947246

**P≤0.05%. Figures in parenthesis are standard errors of the coefficients. Source: Field survey, 2012*

Factors that influence the quantity of Sesame traded by wholesalers

Results of the regression analysis of the factors that influence the quantity of sesame handled by the wholesalers were presented in Table 2. The linear, semi log, inverse and the double- log (Cobb-Douglass) functional forms of marketing function were

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tried using Ordinary Least Square Technique (Table 3). The estimated functions were evaluated in term of the statistical significance of the coefficient of multiple determinations R^2, the F-value, the significance of the coefficients and the magnitude of standard errors. Based on these statistical and economic criteria, the double log (Cobb Douglass) functional form was selected as the lead equation. The result shows that the estimated coefficient of (multiple determinations (R^2) indicates that the postulated regressors (i.e. included variables in the model) explained 54 % of the variation in the regressand (i.e. quantity traded from sesame). Experience gave positive coefficients indicating that increase in years of experience will result in increase in the volume of sesame marketed by the wholesalers. Age and education gave negative coefficients, indicating increase in the level of variables will result in decrease in the quantity of sesame marketed. This agrees with a prior expectations and Nwaru (2005), who reported a negative, although insignificant, relationship between the age and gross margins in plantain marketing in Imo State, Nigeria. Nwaru (2005) indicated that entrepreneurship dwindles as the age of the entrepreneur increases. This is because the innovativeness and optimism of the entrepreneur and his mental capacity to cope with the challenges of his business activities and his mental and physical abilities to do manual work decrease with age. It also agrees with the work of Nwaru and Agommu (2011). These results are in conformity with a priori expectations.

Findings on age also agree with Adeleke and Afolabi (2012) that marketing experience is a significant factor in increasing sales revenue.

Table 2: Influence of socio-economic variables on quantity of sesame traded by wholesalers

	Function			
	Inverse	**Linear**	**Double Log**	**Semi-log**
Variable	Regression coefficient	Regression coefficient	Regression coefficient	Regression coefficient
Constant	9.001973(1.626043)	5573.525(3974.609)	29.53476(19.39274)	8601217(40533.78)
Household Size	0.024403(0.018615)	37.61464(45.50107)	0.141506(0.206953)	303.4236(432.5639)
Age	-0.010495(0.016036)	2.100275(39.19861)	-1.763441(0.698777)*	-3270729(1460.551)*
Marketing Experience	0.010665(0.023111)	0.958744(56.49226)	0.500373(0.257615)*	642.9789(538.4545)
Formal Education	-0.058250(0.037183)	-81.36449(90.88791)	-0.573886(0.316697)*	-1198.493(661.9450)*
Capital	-0.000141(0.000145)	-0.347434(0.355018)	-0.808137(2.065748)	-5505.880(4317.728)
Cost of Transportation	-0.000192(0.000892)	-1.829826(2.180395)	-1.686800(0.741948)*	-3879.171(1550.785)*
R^2	0.21	0.11	0.54	0.51
R^2 Adj.	-0.06	-0.04	0.35	0.31
F-value	1.468571	0.71	2.83	2.520689

**P≤0.05. Figures in parenthesis are standard errors of the coefficients. Source: Field survey, 2012*

Factors that influence the quantity of sesame traded by buying agents

Results of the regression analysis of the factors that influence the quantity of sesame handled by buying agents in the study area were presented in Table 3. The Double - log function gave the best fit based on the magnitude of the coefficients, R^2 and t-

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ratios. The result shows that the estimated coefficient of multiple determinations (R^2) indicates that the postulated regressors (i.e included variables in the model) explained 98 % in the variation of the regressand (i.e quantity traded from sesame). Age gave negative coefficients indicating that increase in age will result in decrease in the volume of sesame marketed by the buying agents. This agrees with the findings of Nwaru (2005); Adeleke and Afolabi (2012) that age has a negative relationship with quantity of product traded. Income from commission gave a positive relationship with the quantity of sesame traded by the buying agents. This agrees with a priori expectation that increase in income arising from sesame sales will increase the quantity traded

Table 3: Influence of socio-economic variables on quantity of sesame traded by buying agents

Variable	Function			
	Inverse	**Linear**	**Double-log**	**Semi-log**
	Regression coefficient	Regression coefficient	Regression coefficient	Regression coefficient
Constant	6.871122(1.642360)	6252.711(4445.960)	-3.959050(0.881527)	-76682.06(58110.19)
Household Size	0.007100(0.047374)	137.4601(128.2449)	0.337159(0.123239)*	5340.545(8123.871)
Age	0.026942(0.034572)	-137.2738(93.58790)	-0.533279(0.281252)*	-10283.49(18540.13)
Experience	-0.045753(0.059382)	-138.5892(1150.7492)	-0.012588(0.141718)	7323.418(9342.046)
Formal Education	-0.025823(0.238014)	393.3230(644.3124)	0.011320(0.082738)	-4071.783(5454.065)
Income	0.000000397(0.00000 00814)**	0.006868(0.002228)**	1.012991(0.022865)**	7664.711(1507.244)**
R^2	0.45	0.96	0.98	0.49
R^2 Adj	0.37	0.96	0.98	0.42
F-value	5.5699	208.3189	434.1978	6.592713

*P≤0.05; *P≤0.01. Figures in parenthesis are standard errors of the coefficients.Source: Field survey, 2012

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Marketing constraints

The existence of marketing constraints in agriculture has been reported by Olukosi *et al,* (2005). To achieve efficient and sustainable production as well as the development of efficient marketing system, solutions to those constraints must be sought. Results of the marketing constraints of sesame traders are presented in Table 4.

Table 4: Sesame marketing constraints

Constraint	Number of Wholesalers	% of Total*	Number of Rural Assemblers	% of Total
Lack of access to formal credit	19	47.5	64	83.1
lack of standard price	16	40	19	24.6
High cost of transportation	2	5	11	14.3
Delay payment from credit sales	6	15	-	-
Adulteration of sesame	-	-	9	11.6
Under weighing	4	10	-	-

**Multiple response. Source: Field Survey, 2012*

The marketing constraints of the wholesalers and rural assemblers show that, for wholesalers, lack of access to formal credit, low price, delay payment from credit sales, under weighing and high cost of transportation constrained 47.5%,

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40%, 15%, 10%, and 5% respectively. While for rural assemblers, lack of access to formal credit, low price, high cost of transportation, and adulteration constrained 83.1%, 24.6%, 14.3%, and 11.6% respectively. They are indications that these constraints strongly affect the middlemen involved in the marketing of sesame. Lack of access to formal credit accounted for low initial investment and hence small scale of operation. Thus, benefits of economies of size must have eluded many marketers. Achike and Anzaku (2010) and Omotesho *et al,* (2012) also observed high cost of transportation and access to credit as critical factors affecting marketers. Sesame is often sold on credit to the companies and refusal to remit sales proceeds in time affects operations of sesame wholesalers. Formal credit constraint of the rural assemblers and wholesalers could be as result of the absence of financial institutions in the area and the bank collateral requirements. The constraints of adulteration, under weighing and lack of standard price abound due to the absence of regulatory bodies to monitor, fix and determine the price of sesame. Delay payments arise due to mutual trust to extend credit.

Conclusion

The study reveals that experience and credit to expand trading are critical factors in sesame marketing in the study area. The formation of cooperative will facilitate the increase in capital position and enhance the quantity of sesame handled by the traders in the study area.

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