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Seed yam marketing in Nigeria: Determinants and constraints

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Abstract. Seed yam marketing in Nigeria is gaining recognition not only as an income generating enterprise but also in replenishing the stock of planting materials among yam farmers. This study examines the seed yams marketing in Nigeria, its determinants and constraints. Data collected were analysed using descriptive techniques and ordinary least square regression framework to identity the determinants of the quantity of seed yam traded. Results showed that males and females are proportionately engaged in this business. About 55% of the marketing agents were males while 45% were females. Volume of seed yam traded is determined by literacy level, marketing experience and the manner of displaying seed yam in the market. Limited capital endowment, high cost of transportation and limited storage facilities constitute major constraints in seed yam marketing in Nigeria. Provision of cheap and easily accessible sources of credit, and improvements in market access and storage facilities will enhance marketing efficiency and provide incentive to marketing agents.

Introduction

Yam (*Dioscorea* sp.) is an important staple and income generating enterprise in Nigeria. An average yam producing household earned as much as 3200 naira/annum from seed yam (Ugwu, 1990). Seed yam in particular has recently attracted special attention not only as a cash crop but also in replenishing the stock of planting materials.

Nigeria is the largest producer of yam in the world producing an average of 26.9 million metric tonnes per annum (FAO, 2004). In 1997 alone, Nigeria accounted for 75% of world yam production (Manyong *et al.*, 2001). The annual growth rate for the same period was 6% for yield and 10% for the area planted. Although Nigeria is the largest producer of yam in the world, there is still need for increasing its production to satisfy domestic and export demand. Increased production of yam is believed to be constrained by high cost of seed yams. This is probably because a large quantity of edible yams, up to 30% (3-5 tonnes per hectare) of the previous year's harvest may be used to plant a new crop (Okoli and Akoroda, 1995). This makes seed yams account for over 40% of yam production cost (Ugwu 1990, Nweke *et al.*, 1991).

Stardard seed yams, however, vary with ecological zones and farming systems (Asumugha and Eluagu, 1999).

According to NRCRI, Umudike, the weight of seed yams ranges from 250g to 1 kg (Ezeh, 1998). These seed yams are cut into 25-gramme setts called minisetts to produce whole tubers (seed yams). The minisett technology of seed yam production is reported to be economically viable and profitable with an internal rate of return of 110% at the farm level in Nigeria, when compared with the traditional method of seed yam production (Asumugha and Obiechina, 2001).

The idea of minituber (less than 50g) instead of the miniseed yam to produce whole but small tubers has being conceived (Ikeorgu, 2001).This is in an attempt to

eliminate the problems of cut setts or minisetts (Alighewi *et al*,1995; Igwilo,1998). These problems include the non-uniform sprouting of cut setts as well as fungal attacks. To sustain future growth in yam production for domestic and export demand, the issue of seed yam production and distribution need to be properly addressed.

Seed yam marketing has assumed a business dimension as a result of the growth in production. The producers now operate in a highly competitive market. Available information on yam marketing in Nigeria is on ware yam (Eluagu *et al.*, 1990). This paper addresses seed yam marketing in Nigeria. The objectives of the paper are to assess the marketing system for seed yam in Nigeria with a view to (i) analyse the determinants of the volume of distribution; and (ii) find the major problems encountered in seed yam trade in Nigeria. The paper is based on data generated in Nigeria as part of the IFAD/WECARD/IITA poverty Alleviation and Enhanced Food Availability studies in the country.

Methodology

Sampling Procedure. The study was conducted in four major yam producing and marketing states chosen at random in 2001. These states are Benue and Nasarawa in the Northern zone, and Delta and Enugu in the southern zone (producing and marketing States). Both seed yam production and marketing information were collected from these areas so that there would be a link between production and marketing. Two urban and two rural markets in each state were studied (10 traders per market). Forty marketing agents per state were interviewed making a total of 160 for the four states.

Data Collection. Primary data were collected from the seed yam marketing agents using pre-tested questionnaires. In addition to the data collected from the marketing agents, observation of marketing activities were made. Data collected from the traders include system of marketing, quantity of seed yams purchased and sold, markets and market prices on monthly basis for the season, and marketing constraints, among other factors.

Data analysis. Econometric and statistical techniques were used in data analysis. Descriptive statistics such as frequency counts, bar chart and mean scores were also employed in the analysis. The least-square multiple regression procedure was used to test the effect of a number of structural and economic variables on the quantity or volume of seed yams traded by the marketing agents.

Results and discussion

Socio-economic profile of seed yam traders. Table 1 and Figure. 1 show the characteristics of the seed yam marketing agents. The average age was about 46 years (minimum 25 years; maximum 85 years). These indicate that most of the seed yam traders were middle aged. This is the active farming and trading group.The mean number of years of schooling of the seed yam traders was about 6 years with a maximum of up to 26 years. Trading experience influences decision making in relation to risk aversion. The mean number of years in seed yam trade was about 15 years with a maximum of 55 years and a minimum of 2 years. About 55% of the marketing agents were males while 45% were females. This implies that both males and females are almost proportionately engaged in seed yam trade. The marketing agents were however mostly men in Moslem dominated areas but mostly women in non-Moslem areas.

The marketing system for seed yam is not elaborate (Fig. 2), especially with the marketing channels and environment. Seed yams are transported by village assemblers and sometimes the growers themselves to the rural and urban markets.These are then purchased by the retailers and consumers. The season for marketing seed yams is from November to July. Seed yams were sold in the open air and in covered sheds. Figure 3 shows that about 52 percent of seed yam traders displayed seed yam both in open air

Table 1: Descriptive statistics of seed yam traders.

Variable	Mean	Min	Max
Age of the trader	46.44	25	85
No. of years of schooling	6.38	0	26
No. of years in seed yam trade	14.43	2.0	55.0

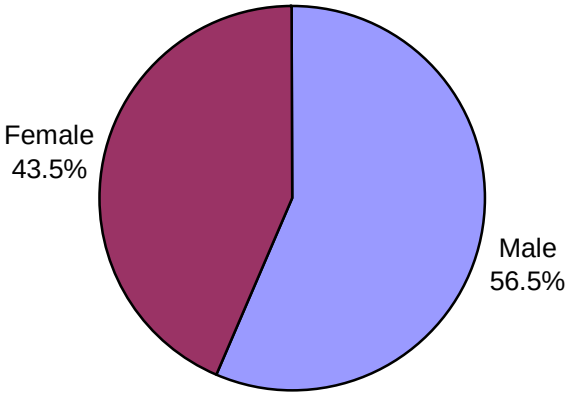

Figure 1: Percentage distribution of the Marketing Agents by Sex in Seed Yam Trade.

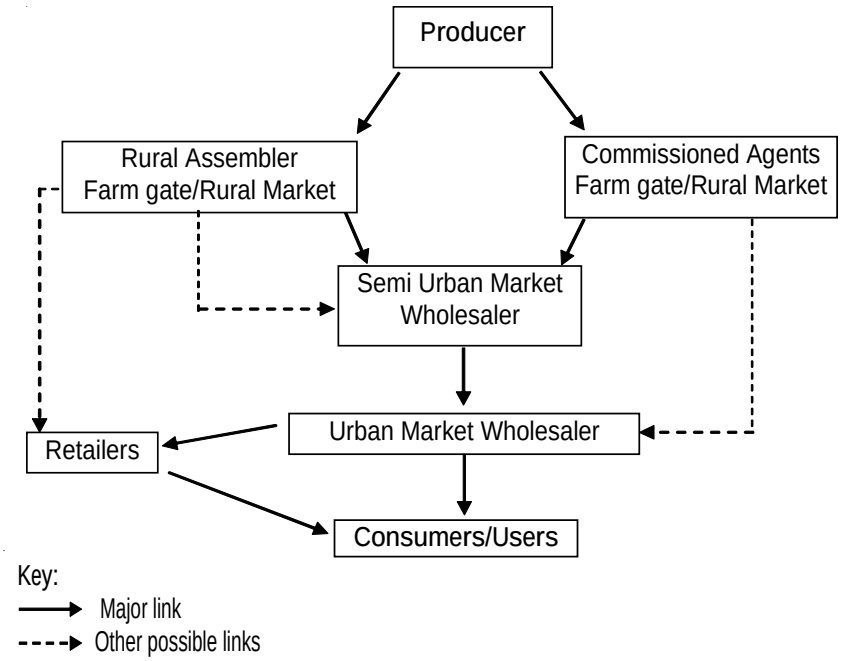

Figure 2: Marketing Channels for Seed yam in Nigeria.

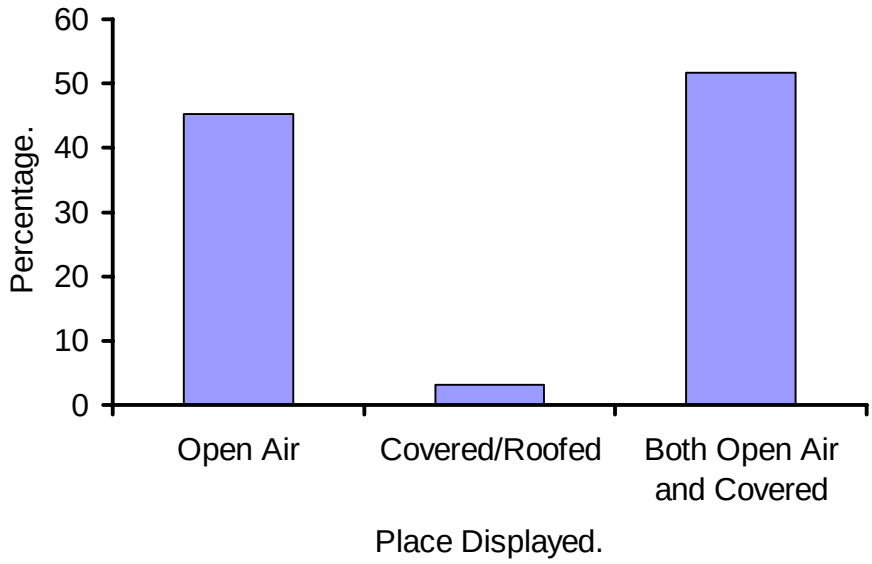

Figure 3: Percentage distribution of Seed Yam Traders according to how seed yams are displayed for sale in the Market.

and covered sheds, while 45 percent sold mainly in open air.

These traders limit their purchases to accessible rural markets. The traders have various reasons for sourcing seed yams from particular markets (Table 2). The reason for 23% of the respondents is that supply of seed yam is adequate and regular, for 20% of them the choice is governed by inadequate resources to explore other supply sources while for 19% of them the reason is the availability of high quality seed yams from such markets.

Monthly prices of seed yams during the sale season are given (Table 3). The sale period usually starts from November (at peak harvest) and lasts till June-July (period of late planting). The mean price of seed yams ranged from N10.36 to N25.24 per kilogram depending on the variety. Variety that yield large tubers surrounded with a number of seed size yams, are mostly expensive. Such varieties include *D. rundata* (white yam), *D. cayenensis* (yellow yam), and *D. bulbifera*. Price is high between March and June, the main planting period and low at harvest (October/ November).

Factors influencing the quantity/volume of seed yams traded by the marketing Agents. This section analyses the influence of specified economic variables on the volume of seed yams traded. Results of the least square multiple regression analysis is shown in Table 4. Quantity of seed yams traded per week was the dependent variable (Y).

The regression model explained 48% of the total variation. The estimated slope coefficient was significantly different from one at the 99 percent confidence level. Number of years of schooling had a positive and statistically significant effect on quantity of seed yam traded. Many school leavers and educated person are now involved in seed yam trade. The same result goes for number of years in seed yam trade ($P<0.01$).

This result is expected. Experienced seed yam traders tend to have higher bargaining power, and they are better able to assess price and other variables that make for success in seed yam trade, than new entrants in the trade. Whether seed yams were sold in the open air or covered roof also had positive relationship with the volume of seed yam traded per week.

Table 2: Percentage distribution of marketing agents by their reason for sourcing seed yams from particular markets.

Reason	% of marketing agents
Supply is adequate and regular	22.53
Limited resources to explore other supply sources	20.37
Price of seed yams is relatively cheap	12.96
Nearness to market	12.96
Availability of high quality seed yams	18.83
Others	12.35
Total	100.0

Table 3: Monthly Prices of seed yams during sale season.

Month	Price (N/kg)			
	Mean	Std. Dev.	Min	Max
November	10.36	5.61	10.00	20.00
December	12.09	5.29	10.00	21.00
January	15.50	6.25	10.00	40.00
February	16.90	7.71	10.00	37.00
March	20.55	9.63	10.00	40.00
April	22.84	11.03	10.00	50.00
May	25.24	10.18	20.00	45.00
June	24.62	10.51	20.00	50.00
July	14.43	16.12	10.00	40.00

$1 = N125 at time of study.

Table 4: Parameters estimates of the regression function on determinants of the volume of seed yam traded.

Explanatory Variable	Coefficient	t
Constant	.966	
Whether seed yam is displayed for sale in open air or in covered roof	.203	1.913*
Gender of Marketing Agent	-.159	-1.397
Age of Marketing Agent (years)	-.150	-1.107
Number of years of schooling	.269	2.685***
Number of years in seed yam trade	.339	2.632***
Whether big traders come regularly with lorries to buy seed yams	-.088	-.962

Note:
*** = significant at 1% level .
* = significant at 10% level,
$R^2 = 0.48$
$R^{-2} = 0.43$

Table 5: Percentage distribution on marketing agents by problems encountered in seed yam trade.

Problem	% of marketing agents
Limited capital endowment	27.61
Poor and limited storage facilities	12.33
High cost of transportation	12.87
High cost of seed yams	8.04
High level of competition	6.70
Incidence of tax at several levels	6.17
Others	26.28
Total	100.00

Constraints to seed yam marketing in Nigeria. The marketing agents were asked to list the problems that constrain trade in seed yams. Analysis of the factors believe to militate against efficient marketing of seed yams shows that limited capital endowment is a major problem (Table 5). Seed yam is expensive and this imposes a limit on the volume of seed yams that an agent can purchase. In fact, nearly 10% of the marketing agents recognized that high cost of seed yams also constitute a problem in seed yam trade. Poor and limited storage facilities and high cost of transportation were also identified as major constraints to efficient system of seed yam marketing. It was shown above that seed yams are perishable. Poor storage facilities will tend to increase the degree of perishability, which will directly affect the volume of seed yams traded. The volume traded will tend to be small unless the marketing agent is sure of good storage facilities.

High transportation cost increases marketing costs, making seed yams relatively more expensive, and thereby limiting the volume traded.

Conclusion and Policy Recommendations

Conclusion. This paper examined the system of marketing seed yams in Nigeria. The factors that promote or hinder trade in seed yam were analysed. Literacy level, trading experience and good storage facilities had positive effects on the volume traded. Trade in seed yam was however constrained by lack of capital and poor market access, leading to high transportation cost, and poor storage facilities, among other factors.

Recommendations. Recommended policy measures were geared towards solving the identified constraints that impede efficient marketing of seed yams. The following issues need to be addressed.

(i) Provision of credit. Trade in seed yams is capital intensive and this tends to limit the volume of trade for many marketing agents who finance their business from personal savings. Incidentally, these people cannot easily obtain loans from formal credit institutions. On the other hand, interest rates at the informal sector tend to be too high. The Agricultural Credit Guarantee Scheme of the government and non-government organisations should evolve a credit delivery system that is easily accessible to the marketing agents.

(ii) Improvement in market access. The identified high transportation cost has to do with poor market access to many seed yam producing areas. Improving market access will improve market information. Government at various levels should devise ways and means of improving market access, as was once done in the days of the defunct Directorate of Food, Road and Rural

Infrastructure. This will facilitate food production and marketing.

(iii) Provision of good storage facilities. There is need for improved storage facilities. Good storage facilities will make an impact on the volume traded and also enhance the quality of seed yams. The youths should also be encouraged to take up the seed yam business as gainful employment. Results of our analysis showed that seed yam marketers are mostly middle aged.

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