

Socio-Economic Factors Influencing the Adoption of Ginger (*Zingiber Fficinale*) Farming Technologies in Samaru Zone of the Kaduna State Agricultural Development Project (Kadp).

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ABSTRACT: *The study examined the socio-economic factors that influence the adoption of ginger (*Zingiber ffcinale*) farming Technologies in Samaru Zone of Kaduna State Agricultural Development Project (KADP). 150 farmers were purposefully selected at random for this study. Data were collected by means of questionnaires and analyzed using descriptive and inferential statistics. The result revealed that the average age of the respondents was 35.5 years, household size was 10 persons, farm size was 2.55 hectares and years of farming experience constituted 15.5 years. The result also revealed that educational level and scale of farming influenced the adoption of ginger farming innovations at $P \leq 0.05$. The major constraints to adoption of ginger farming innovations identified were inadequate credit/capital (43.30%) and poor prices (37.30%). It was concluded that the level of education attained by a farmer and his/her scale of farming ease the farmers' ability to adopt improved ginger farming innovation hence a higher productivity level. It was recommended that Extension agents should gear their efforts towards adequate technology transfer to farmers and adequate provision of agricultural credit facilities and farm inputs to farmers at low interest rates and prices to enhance the adoption of farming technologies to boost their production capacities.*

1. INTRODUCTION

It is an established fact that agricultural production as currently practiced under traditional methods has not been able to sustain Nigeria. According to the National Population Commission (NPC, 2006), Nigeria has a population of 140,033,542 and a total land area of 924,00Km². It is a pointer for an increased demand for food. This situation according to Banwo (1989) has generated a lot of prepositions each aimed at arresting these problems which border on transformation from the present small holder farming system to increase efficiency of input use and output performance in the farm sector. Others believe that the present farming is inadequate but only requires the introduction of modern farm inputs such as fertilizers, herbicides, insecticides, crop processing/storage measures and good farm management to introduce dynamism into the system. Ginger (*Zingiber officinale*) is a rhizome, which consist of numerous short finger-like structures or branches born horizontally near the surface of the soil. Two commercial varieties are commonly cultivated in Nigeria. The yellow ginger variety (UG 1) locally called "Tafin Giwa" with a bold yellow rhizome flesh is stout with short internodes. The black ginger variety (UG 2) locally called "Yatsun Biri" with a dull-grey colour rhizome. The yellow variety is more popular than the black variety apparently due to its high yielding capacity and pungency (Kure,2007).

Ginger is produced in several parts of Nigeria particularly in the Guinea Savanna Zone (southern part of Kaduna State) and to a little extent in Keffi and Akwanga Local Government Areas of Nasarawa State (Dauda and Waziri, 2006). Ginger is an important and widely grown spice of the over 90 species of perennial rhizomatous herbs. The dried rhizomes which may be scrapped or peeled before drying constitute the spice that is esteemed for its flower, pungency and aroma. It is a strengthening food that has long been used to maintain health with a long history of both culinary and medicinal use in Chinese, Japanese and Indian medicines. In ancient China, ginger was regarded as a healing gift from God as was commonly used to cleansed and warmed the body (Lawal,2007). Ginger offers a substantial protection from stroke and heart attack because of its ability to prevent blood clotting and also a multifaceted herb, crucial in the battle against cardiovascular diseases such as bowels and kidney diseases, respiratory system, colds and flue, headache, pains, stomach upsets and as well helps to clear sore throats. It is a plant rich in many phonetic compounds hence the spicy aroma, taste, fragrance and therapeutic effects as all the roots, rhizomes and barks are naturally high plant based chemicals believed to

posses anti-bacterial, anti viral and anti- fungal agents that protects the plant from natural flora in the land, and from the ancient times, ginger has been an important article in the middle East. Ginger is an aromatic spicy-swollen rhizome often dried and grounded to a yellow powder and widely used as a flavor in biscuits, cake, cookies or preserved in syrups. Other uses according to her include (1) culinary uses such as stems pepper soups etc. (ii) Medicinal/Therapeutic uses such as ginger/lime/honey anti-material and anti-typhoid fever potion, ginger/garlic anti-hypertension tea etc (Mefoh,2006). Ginger is used in the control of atherosclerosis in rabbits and nausea and vomiting and has confectionary and beverages uses as well used as ginger ale, ginger beer, meat flavouring and tendering, Dairy product and Livestock feeds. Ginger waste meal has also shown promise of being an alternative energy substitute for maize in the diet of growing rabbits, therefore ginger is an economic crop yet to be exploited (Verma et'al, 2004). It has been confirmed that ginger has a long standing potent tendencies that carry medicinal or therapeutic remedies as a result of its biological active components which includes: aids digestion and absorption of food components into our bodies, boost the immune system, reduce cholesterol, warms the body and liberates stagnant body fluids, reduce blood pressure, ensures easy and normal menstrual flow, helps in the control of flue and influenza, re-awakens the body system and takes away stress (Yakubu 2007).

1.1.Statement of the Problem

In Nigeria, farmers operate in a subsistence economy with use of local technology. As a result, there is little or no surpluses for export market. This entails a little change of the economic behavior of the farmer, his social relationships and local knowledge with little commercialization. Therefore improving ginger production by farmers from subsistence to commercial production is long overdue as these resource poor farmers are faced with production and post production challenges ranging from non use of improved varieties, manual land preparation, inadequate inputs, local processing techniques, inadequate credit/capital, etc which often results in low production/ha and poor ginger quality

It is against this background that, this study sought to provide answers to the following research questions:

1. What are the socio-economic characteristics of the ginger farmers?
2. How can the socio-economic characteristics of farmers influence the adoption of farming technologies on Ginger?
3. What are the constraints of farmers to adoption of Ginger farming technologies?

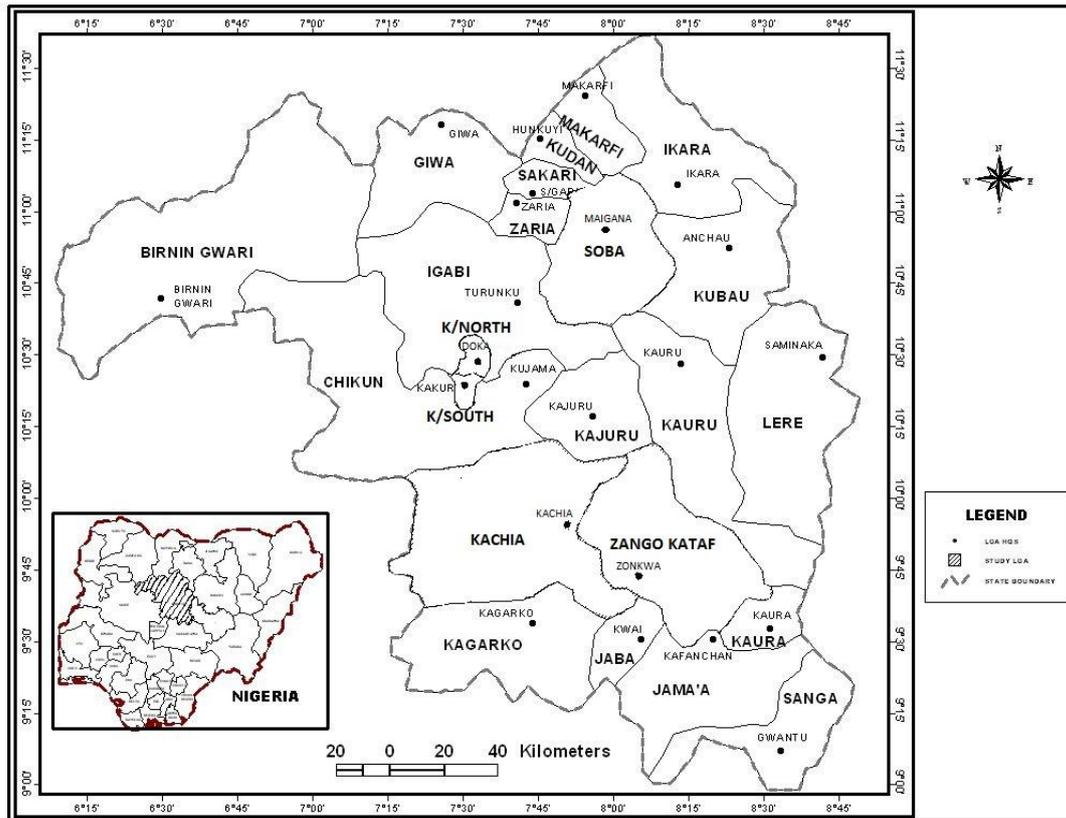
II. METHODOLOGY

2.1.Description of the Study Area

Kaduna State is one of the 36 states in the Federal Republic of Nigeria. The administrative divisions called Local Government Areas, that constitute the state rose from seven when Katsina State was carved out in 1987 to 13 in 1989, to 18 in 1991 and then 23 in 1996 (Kaduna State statistical year book, 1996). It is situated between latitude $9^{\circ} 2' N$, $11^{\circ} 35' N$ and between longitude $7^{\circ} 15' E$ and $9^{\circ} 6' E$. It is bordered by the Federal Capital Territory and Nasarawa State in the South, South East by Plateau and Bauchi State, North East by Kano State, in the North by Katsina State, North West by Zamfara State and South West by Niger State, (Kaduna State Statistical Year Book, 2001; Kaduna State Joined Local Government, Booklet, 2007). Kaduna State is located in a pen plain consisting of various kinds of rocks, such as the older granite, schist and quartzite in variable composition. The land gradually slopes down toward the west and south west and is drained by two major rivers; rivers Kaduna and Gurara (See figures 1).

The Kaduna state Agricultural Development Project (KADP) is located in the southern part of Kaduna State, spacing almost 200 Km away from the head quarters. It is made up of seven Local Government Areas: Kachia, Jaba, Kagoro, Jema'a, Zangon Kataf, Kaura and Sanga Local Government Areas with a population of 1, 0607611 people (NPC, 2006). The major ethnic groups are: Atyap, Bajju, Ham, Kagoma, Adara, Koro, Maro'a, Kagoro, Kaninkon, Ninzo, Fantsuwam, Atakad, Ikulu, Angan, amongst others.

The climate is predominantly tropical with two distinct seasons (dry and wet seasons). The rainy season starts from April to October with August and September as the wettest months having an annual average temperature of $23^{\circ}C$ - $28^{\circ}C$ (KADP 2007). The Zone is predominantly agricultural with over 75 percent of the active population engaged in farming as their primary occupation (Shamah, 2009). The major cash crop is ginger where commercial quantities(1,728.930 Metric tons) are produced annually with Kachia, Jaba, Kagarko, Jema'a and Zangon Kataf Local Government Areas as the major areas of production (Kaduna State Perspective, 2009).



2.2.Sampling Technique and Sample Size

A simple random sampling technique was employed to select five extension blocks out of the nine extension blocks in the Zone. Thirty ginger farmers were purposively selected from each block with the help of the village extension agents in the zone which brought the total sample size to 150 respondents.

2.3.Source of Data: Primary and secondary data were used for the study. The primary data were collected from selected ginger farmers with the aid of structured questionnaires. The questionnaires were designed to capture variables such as age, sex, marital status, occupation, household size, educational attainment, scale of farming, land ownership, extension contact, membership of association. The secondary data were collected from records kept by the Kaduna State Agricultural Development Programme (ADP) Samaru zone and other sources such as textbooks, journals, bulletins, magazines and other documentation for purpose of literature.

2.4.Analytical Tools

Descriptive statistics such as frequency, percentage, mean and ranking were used to analyzed the socio-economic and constraints of respondents while the regression analysis was used to determine the relationship between ginger farmers socio-economic factors in relation to adoption and non adoption of ginger farming technologies.

The model is express implicitly as:

$$Y = f (X_1+ X_2 X_n).....(1)$$

The explicit form is thus:

$$\text{Log } y = a+b_1 X_1 +b_2 X_2+b_3 X_3+b_4 = x_4+b_5+X_5+b_6+X_6+b_7 x_4+u.....(2)$$

Where

- Y = Adoption index (number of technologies adopted).
- X₁ = Age of respondents (years)
- X₂ = Gender
- X₃ = Household size (number of people in the house)
- X₄ = Level of education(coded)
- X₅ = Extension contact (No of visit)
- X₆ = Farm size (ha)
- X₇= Yield(Kg or bag)
- X₈= Availability of labour (number of family/hired labour used)

X₉= Amount of credit(N)

X₁₀ = Cooperative Membership (Yes or No)

E = Error term.

III. RESULT AND DISCUSSION

3.1.Socio- economic and Demographic Characteristics

The socio-economic variables examined were age, gender, marital status, level of education, occupation, household size, farm size and farming experience while the institutional variables were sources of money for ginger farming, membership of ginger farmers association, extension awareness, extension agents' visit and sources of information. Table 1 shows that the mean age of the respondent was 35.5 years. More than half (53.30%) were within the age bracket of between 41 and 60 years. These categories of farmers could be considered to be the economically active population as the age of a farmer dictates and affects the type of farming he/she could positively engaged as reported by Food and Agricultural Organization (FAO,1992). This implies that farmers within this age range are less caution of undertaking new risk, thus implore and adopt new method in order to enhance their willingness and eagerness to economic position. The result also indicates that more than half (61.30%) of the respondents were males. This suggest that most of the ginger farm work are undertaken by men in the study area, as ginger production is labour demanding more so that most of the operations are manually done at this level. This agrees with the claims of Ojo and Jibowo (2008) in their study, that leadership roles visa- vise decision making are dominated by the men folk. Table 1 shows that 62.70% of the respondents were married , 23.30% widowed and 10.70% and 3.30% were single and divorced respectively. The result agrees with Ojo and Jibowo (2008) who reported that married people being responsible, their views are likely to be respected within rural communities as they take decision on the use of agricultural inputs. Table 1 revealed that about 84.00% of the respondents acquired one form of education or the other. This findings agrees with Abdullahi and Abdullahi(2011) who reported that western education facilitates the adoption of modern technologies and improved farm practices. The implication of the result is that the more educated a farmer is, the greater his/her chances of accessing the readily available modern farming technologies and improved practices. Table 1 shows that majority (67.00%) of the respondents were fully engaged in farming as their primary occupation while 52.00% of the respondents had a household size ranging from 6-10 people with a mean household size of 13 persons. The result is in line with the findings of Orojobi and Damisa (2007) that household size is crucial to traditional agriculture where the main source of labour is the family particularly in Nigeria.

Table 1 further revealed that more than half (55.30%) of the respondents had farm size ranging from 0.1-1.0ha. This finding finds relevance in the work of Sanders (1995) who reported that adoption of innovation is a function of appropriate farm size.

Table 1: Distribution of Respondents according to their Socio-Economic Characteristics (N=150)

Variables	Frequency	Percentage
Age (years)		
Below 20	6	4.00
21-30	38	25.30
31-40	80	53.30
41-50	14	9.30
51 and above	12	8.10
Gender (male/female)		
Male	92	61.30
Female	58	38.70
Marital Status		
Married	94	62.70
Single	16	10.70
Widowed	35	23.30
Divorced	5	3.30
Educational Level		
Never been to school	24	16.00
Qurranic/Adult Edu	15	10.00
Primary Education	8	5.30
Secondary Education	55	36.70
Tertiary Education	48	32.00
Occupation		
Farming	101	67.00
Civil Servant	30	20.00
Others	19	13.00
House Hold Size		
1-5	20	13.00
6-10	78	52.00

11-15	40	27.00
16-20	7	5.00
21 and above	5	3.00
Farm Size (Ha)		
0.1-1.0	83	55.30
1.1-2.0	35	23.30
2.1-3.0	15	10.00
3.1-4.0	10	6.70
4.1 and above	7	4.70
Farming Exp (years)		
1-10	38	25.30
11-20	61	40.70
21-30	29	19.30
31-40	12	8.00
41 and above	10	6.70
Total	150	100.00

3.2. Relationship between Socio-economic and Demographic Characteristics

Results of regression analysis on the relationship between the socio-economic characteristics of ginger farmers and adoption of ginger farming technologies as shown on table 2 revealed that age, marital status, sex, occupation, land size and years of farming reveal no significant relationship at 0.05 with the adoption of ginger farming techniques while educational level and scale of farming indicated positive relationships thereby rejecting the Null hypothesis. This findings agreed with Voh (1984), who observed a positive relationship between level of education and adoption of farming technologies.

Table 2: Test for Relationship using Regression Between Socio-economic Variables and Adoption of Ginger Farming Technologies (N=150)

Predictor	Unstandardized coefficient	Standard err	Standardized coefficient	T-ratio	Significant level
Adoption index	2.578	.476		5.481	.000
Age	-.091	.131	-.082	-.695	.489NS
Sex	.122	.149	.091	.821	.414NS
Marital status	-.080	.089	-.101	-.928	.356NS
Level of edu.	.050	.044	.015	1.136	.010*
Occupation	-.042	.072	-.067	-.587	.559NS
Farming exp.	.000	.078	.000	.003	.999NS
Household size	.089	.072	.138	1.230	.222NS
Farm size	-.380	.180	-.248	-2.113	.038*

*Significant @ $P \leq 0.05$

3.3. Constraints to Ginger Production

Table 3 shows that the respondents reported production constraints such as inadequate credit/capital (43.30% 1st), poor ginger prices (37.30% 2nd) and farmers conservatism (23.30% 3rd). This finding is supported by Ajakaiye (1998) who observed that the Nigerian farmer needs credit especially for their farm product because of the vicious circle of poverty, low productivity and low farm income levels with virtually no savings to invest in the capital required in the transformation of their production technology and Onazi (1973) who reported that the reasons for farmers non – adoption of agricultural practices are reluctance to let go their old ways and unfavorable product prices in the market.

Table 3: Constraints to Adoption of Ginger farming technologies (N=150)

Constraints	Frequency	Percentage(%)	Rank
Inadequate credit/capital	65	43.30	1 st
Poor ginger prices	56	37.30	2 nd
Farmers conservatism	35	23.30	3 rd
Inadequate farm input	28	18.70	4 th
Poor extension service	24	16.00	5 th
Inadequate labour	22	14.70	6 th
Inadequate information	20	13.30	7 th
High level of illiteracy	15	10.00	8 th
Farm size(ha)	12	8.00	9 th
Others	8	5.30	10 th

Source: Field Survey (2010).

IV. CONCLUSION AND RECOMMENDATION

It was obvious in the findings that the level of education attained by a farmer eases the ability to adopt improved ginger farming innovation hence greater output and farmers strict adherence to traditional farming practices result in low output. The varieties planted by the farmers need to be improved. If all ginger farmers in the study area adopt new farming technologies and all farming constraints identified are addressed squarely, there will be remarkable increase ginger output per head, which resultantly, will improve the living standard of the rural people greatly. It was recommended that all constraints identified be tackled to enhance greater output in yield and farmers be enlightened to move away from traditional practices that impair adoption of modern technologies.

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