

Costs And Returns Analysis Of Gum Arabic And Some Selected Tree Crops Production In Adamawa And Yobe States, Nigeria: An Implication For Poverty Alleviation.

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ABSTRACT: The study compared the economic benefits derived from gum arabic production and some selected tree crops in Adamawa and Yobe States, Nigeria in order to assess their impact of poverty alleviation on the respondents. Primary data were collected through the use of structured questionnaire administered on 150 farmers, out of which 104 were retrieved and used for the study. The data were analysed using descriptive and inferential statistics. The result indicated that majority of the respondents (48.08%) were between the ages of 41 – 50 years and all the respondents had one form of education or the order with majority (44.23%) obtained either HND or Degree. Most of them (42.3%) and (38.46%) operated on small scale (1- 5 ha) for gum arabic and the other tree crops respectively. Only 3.85% and 1.92% of the respondents operated on large scale (26 ha and above) for gum arabic and other tree crops respectively. Also, 63.46% of respondents practiced intercropping gum arabic with some other crops. The profitability analyses show that 2, 725,000.00 and 2, 263,700.00 were realised as total revenue from gum arabic and the other tree crops respectively. This gave gross margins/kg of 27.65 and N 18. 87 respectively for gum arabic and the other tree crops. Their marketing efficiencies (ME) calculated were 57.87% and 48.80% respectively for gum arabic and the other tree crops. This implies that gum arabic was more profitable than the other tree crops, hence promoting gum arabic production will aids in poverty alleviation in the study area.

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INTRODUCTION

Nigeria is geographically divided in to three main zones – the Sahellian, Guinea Savannah and Rain forest. The Sahellian and Guinea Savannah zones which characterized the Northern Nigeria is known for many economic tree crops such as gum arabic, date palm, guava, mango and orange among other crops. This is due to the weather and climatic factors that favour the production of these crops. The average rain fall in the region is about 180 mm, temperature fluctuate between 18 ° C and 44 ° C and low humidity. These factors influence production of fruits and gum arabic; as low humidity and much sun shine encourage flowering in plants while high temperature, harmattan and other harsh environmental conditions promote oozing out of gum arabic from the plant (Umar, 2006).

Agricultural sector's contribution to the Gross Domestic Product (GDP) in Nigeria has declined over the years. It dropped from 62.5% in 1960 – 1964 periods to 40.79% in 2000 – 2008 with only 6% annual growth rate (Sayyad, 2008). Agriculture represents the primary livelihood source for more than 70% Nigerians and provides over 90% of the nation's total food requirements (Sayyad, 2008). It is however reported that 60% of households in Nigeria suffer from hunger and malnutrition mainly due to lack of money to buy

the required food items (Olayemi, 2008). Although there is an increase growth rate of 6% in the agricultural production sector, the problem of food insufficiency and level of poverty seem to be on the increase especially among the rural people. This may be due to some reasons as identified by Okolona (2005), which include instability in government policies, high risk in climatic conditions which affect agricultural production and inadequate financial support. It may also be due to underutilization of the abundant agricultural resources in the country as it is reported that Nigeria has about 74 million hectares of arable land but only 34 million hectares are used because most people shun farming, and majority of the farming population are aged and engage in subsistence farming (Ogungbile, 2008). This implies that though Nigeria is a rich resources country, yet wallows in abject poverty. Under normal circumstances, Nigerian agricultural sector is capable to generate employment, food security, create wealth, provides raw materials for our industries and for export as was the case before independence when Nigeria's economy was largely sustained through agricultural commodity export trade of such as groundnut, cocoa, cotton, palm oil and palm kernel etc which accounted for over 60% of the country's income (Mafimisebe et al, 2005). Deviation from agriculture to

petroleum as the main economic bark born of the nation brought about the hardship and poverty among many Nigerians.

Poverty can be described as an endemic disease that its effects are diverse and generally very insulting and degrading to human dignity as it is characterized by lack of purchasing power, exposure to risks, insufficient access for economic and social services as well as limited opportunity for income generation (Alabi, 2005). Researches revealed that over 70% of Nigerians are poor (mostly farmers) out of which 76% live below poverty line (less than \$ 1/day) (Ogungbile, 2008).

To alleviate poverty situation in Nigeria therefore, agricultural sector is once again looked upon as the panacea for economic development since agricultural development have strong relationship with poverty alleviation as it translates into gainful employment and socio – economic improvement. This idea led Nigerian government laid down new policies and programmes to diversify the agricultural production of crops with economic potential in the country. This study therefore examined the revenue generated in gum arabic production compared with other economic tree crops like date palm, guava, orange and mango in Yobe and Adamawa States.

METHODOLOGY

The Study area:

Adamawa and Yobe States are located in the North –East of Nigeria. The states are partly Sahelian and partly Guinea Savannah. The climatic condition is harsh – high temperature fluctuating between 18 °C - 44 °C and a mean rainfall of about 150 mm per annum (Yobe State Daily, 2005). The dominant tribes are Kanuri, Hausa and Fulani in Yobe State while Fulani, Kilba, Fali, Margi and Mbachama tribes dominated Adamawa State. Their major occupations are farming and marketing. Among the popular tree crops grown in the State are gum arabic, mango, orange, date palm and guava.

Data collection techniques:

Multi- stage sampling techniques was used in the data collection. The first stage was a purposive sampling of the two states Adamawa and Yobe because of presence of mango, guava, orange and date palm production in the zone, while gum arabic as well as date palm production is in abundance in Yobe state. Three Local Government areas in each state were randomly selected for the study. These were Hong, Numan and Forfore LGAS in Adamawa State; while Damaturu, Gashua and Gujiba LGAS in Yobe State were selected. A total of 150 copies of questionnaire were administered among farmers out of which 104

were correctly filled and used for the analysis in this study.

Data analytical technique used:

The data were analyzed using descriptive statistics; such as means, percentage and frequency tables which were used to analyse the socio – economic characteristics of the respondents; while budgetary analysis and Gini-coefficient were employed to analyse the profitability of gum arabic production and the other tree crops in the state.

Model specifications

Profitability analysis was done using the following formulae

$$ME = TR/ TC. 100 \text{ ----- } 1$$

$$NP = TV - TC \text{ ----- } 2$$

Where:

TR = total revenue; TC = total cost

NP = net profit

$$GM = TR - TVC \text{ ----- } 3$$

Where:

GM = gross margin

TVC = total variable cost

Gini – coefficient was calculated as:

$$GC = 1 - XY \text{ ----- } 4$$

Where: GC = Gini – coefficient

X = proportion of farmers category

Y = cumulative proportion on total sales

= summation sign.

RESULTS AND DISCUSSIONS

Age distribution:

The result revealed that most of the respondents were in their active productive stages (48.08%). This is contrary to the finding of Ogungbile (2008) which stated that most farmers in Nigeria are above 60 years old. In fact, the study indicated that people less than 30 year and those above 60 year participated least (Table 1). This may be due to the impatience nature of the youths who are eager for quick returns on investments while tree crops' gestation periods are usually four years and above. It may also be due to the assumption of some youths who consider farming as a dirty job (Giroh et al, 2006).

Distribution of respondents' Educational levels:

The result indicated that the respondents had one form of education or the other (Table 1). This may be due to the fact that, gum arabic farming is highly by government encouragement effort, campaigning for its domestication and production through workshops and

media; and this made most of the beneficiaries are educated; who easily comprehend the programmes and the significance of the crop.

Farm size distribution:

Table 1 depicts that most of the respondents were small scale farmers in both gum arabic and the other tree crops. On the other hand, the study indicated that there were more of other tree crops farmers under medium scale production than gum arabic; while gum arabic had more farmers under large scale farms than the other tree crops. This may be due to the fact that the other tree crops (mango, orange, date palm and guava) were not very attractive business ventures relative to gum arabic as they are more considered as food crops than cash crops. They are also found in many houses in the study area which serve the fruits need of the households. This might have made the few in the business of these fruits experience less effective demand in the market; which discouraged them to go into large scale production due fear of waste. However, gum arabic too had insignificant percentage of the respondents that have large scale of the crop which may be due to some factors as lack of technical – know how, tedious nature and inadequate capital for production of the crop Umar (2006).

Distribution of the respondents' cropping systems:

Table 1. The cropping systems of the respondents indicated that majority of them (63.46%) practiced intercropping of gum arabic with some arable crops. This may be due to the fact that that gum arabic intercropping has been adopted among the respondents as the yields is expected to give better returns especially when intercropped with cereal crops like millet or guinea corn which live symbiotically with each other. **Profitability analysis:** the profitability analysis of gum arabic production and the other tree crops is presented in Table 2. The results indicated that a total of 51,790 kg of gum arabic and 73,353 kg of other tree crops were produced among the respondents. The revenue generated were 2,725,000.00 and 2,263,700.00 from gum arabic and other tree crops respectively. This gives gross margins per kilogram as 27.65 and N 18.87 for gum arabic and the other tree crops respectively. Their net profits per kilogram were 22.17 (gum arabic) and 15.80 (other tree crops). This implies that gum arabic was a more profitable venture compared to the other tree crops under study. This may be due to the fact that much is wasted during harvest and transportation of these fruits posing higher risk in their business unlike gum arabic. This is clearly

indicated in their calculated marketing efficiencies (ME) which shows 57.87% for gum arabic and 48.80% for the other tree crops. Also, gum arabic is highly demanded worldwide with limited production regions in the world unlike the other tree crops which has much more diverse production regions (Umar, 2006). This implies that promoting gum arabic production will aids poverty alleviation in the study area.

Distribution of production constraints:

There were many production constraints as claimed by the respondents that militate against their optimum production capacities (Table 3). Lack of capital was ranked highest (50%); followed by the case of intruders, thieves and the attack by cattle herd men (11.54%). The attack by the cattle herd men may be due to the fact that gum arabic plant is an evergreen plant unlike other tree crops which shade their leaves during the dry winter period. The other factors identified were however fairly distributed equally as shown in Table 3.

SUMMARY AND CONCLUSION

The study compared the costs and returns in the production of gum arabic and other tree crops among respondents in Adamawa and Yobe States of Nigeria. Both were found to be profitable with gum arabic yielded higher profit and greater marketing efficiency of 57.87% compared to 48.8% for the other tree crops. This however implies that there are some marketing problems facing both the produce in the study area as 42.13% and 51.20% quantities from gum arabic and the other tree crops produced respectively yielded no economic benefit to the respondents. Inadequate capital was identified as the major obstacle facing the respondents in the study area.

RECOMMENDATIONS

The inefficiency observed in the revenue generation among the farmers could be due to waste of substantial amount of the produce in the study area. This can be minimised through provision of adequate storage facilities of the produces and the technical know – how of converting the produces into products to add value which will withstand the test of time in order to enhance revenue generation of the farmers. The problems of inadequate capital identified among the respondents may be eased through provision of soft loans to enable them enhance their production capacities and for more revenue generation which will alleviate their poverty situations.

TABLE 1: Socioeconomic Characteristics of the respondents

Variable	Frequency		Percentage	
AGE				
20 -30	8		7.69	
31 – 40	18		17.31	
41 -50	50		48.08	
51 – 60	22		21.15	
61 – 70	6		5.77	
TOTAL	104		100.00	
EDUCATIONAL LEVEL				
Primary school	22		21.15	
Secondary school	16		15.39	
OND/NCE	20		19.23	
HND/Degree	46		44.23	
TOTAL	104		100.00	
MARITAL STATUS				
Single	2		1.92	
Married	95		91.35	
Divorced	2		1.92	
Widower/Widow	7		6.73	
TOTAL	104		100.00	
Farm size (ha):				
	(a):	(b):	(a):	(b)
1 – 5	44	40	42.31	38.46
6 – 10	36	38	34.64	36.54
11 – 15	10	8	9.62	7.70
16 – 20	4	12	3.85	11.54
21 – 25	2	4	1.92	3.85
26 – 30	4	2	3.85	1.92
Above 30	4	0	3.85	0.00
TOTAL	104	104	100	100
CROPPING SYSTEMS:				
Gum arabic only	24		23.08	
Gum arabic intercropped	66		63.48	
Other crops only	14		13.48	
TOTAL	104		100.00	

Source: Field survey, (2008). **NOTE:** (a) = gum arabic; (b) = other tree crops

TABLE 2: Profitability analysis; (Costs and Returns):

ITEMS	VALUES
Total farm size of gum arabic	743 ha
Total farm size of other tree crops	446 ha
Total quantity of gum arabic produced	51,790 kg
Total quantity of other tree crops produced	73,353 kg
Total revenue generated from gum arabic (TRg)	₦2,725,000
Total revenue generated from other tree crops (TRo)	₦ 2,263,700
Total variable cost in gum arabic production (TVCg)	₦ 1,292,900
Total fixed cost for gum arabic production (TFCg)	₦ 284,000
Total cost for gum arabic production (TCg)	₦ 1, 576,900
Total variable cost of other tree crops (TVCo)	₦ 879,300
Total fixed cost for other tree crops production (TFCo)	₦ 225,400
Total cost for other tree crops production (TCo)	₦ 1,104,700
Gross margin for gum arabic production (GMg)	₦ 1,432,100
GMg/ farmer	₦ 13,770.19
Net profit for gum arabic production (NPg)	₦1,148,100
NP/kg of gum arabic production	₦ 22.17
GM/kg of gum arabic production	₦ 27.65
Net profit for other tree crops production (NPo)	₦ 1,159,000
Gross margin for other tree crops production (GMo)	₦ 1,384,400
GMo/farmer	₦ 13,311.54
NP/kg of other tree crops	₦15.80
GM/kg of other tree crops	₦ 18.87
NP/ha/year for gum arabic	₦ 1,545.22
NP/ha/year for other tree crops	₦ 2,598.66
Marketing efficiency (ME), gum arabic	57.87%
Marketing efficiency (ME), other tree crops	48.80%

Source: Field survey, (2008). **NOTE:** g = gum arabic; o = other tree crops.

TABLE 3: Distribution of constraints facing the respondents:

Constraints	Frequency	Percentage	Ranking
Lack of capital	52	50.00	1
Lack of technical know – how	8	7.69	3
Poor market price	8	7.69	3
Poor government support	4	3.85	4
High cost of labour	4	3.85	4
Poor yield	2	3.85	4
Intruders, thieves cattle herd men	2	1.92	5
Pest and diseases	12	11.54	2
Land tenure problems	8	7.69	3
Lack of good seedlings (A. senegal)	2	1.92	5
Lack of fertilizer	2	1.92	5
Total	104	104	

Source: Field survey, (2008)

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