Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol 3, No.8, 2012

Analysis of the Factors affecting Sugarcane (*Saccharum officinarum*) Production under the Out growers Scheme in Numan Local Government Area Adamawa State, Nigeria

*A.A. Girei and D.Y. Giroh**
*Adamawa State Community and Social Development Agency, PMB2110, Yola, Nigeria

**Rubber Research Institute of Nigeria, PMB 1049, Benin City, Nigeria
Email:agirejo@yahoo.com, girohdengleyuniyus@yahoo.com

Abstract
The study was conducted to analyze productivity and resource use efficiency in sugarcane production by random selection of 120 out grower farmers. Data collected were analyzed using descriptive statistics and the production function analysis. Results of the analysis revealed that majority of the respondents (60%) were males and 40% were females engaged in sugarcane production, a mean age of 42 years with majority (69%) falling into the productive age group of 31 – 40 years and majority 62.5% acquiring one form of formal education or the other. Majority of the sugarcane farmers (90%) were married, majority (52.6%) having family size in the range of 6 - 10 persons with a mean family size of 8 people. Also, 40 percent of the respondents had fanning experience of between16-20 years with an average farming experience of 10 years and cultivated a mean farm size of 1.5ha. The study identified inadequate and late allocation of farms and inadequate credit as the major constraints of sugarcane production and possible suggestions to overcome the identified constraints were made in the study.
Keywords: Sugar cane, outgrower, Numan, Nigeria

1. Introduction

Sugarcane (*Saccharum sp.*) is one of the most important crops in the world because of its strategic position and immense uses in the daily life of any nation as well as for industrial uses aimed at nutritional and economic sustenance. Sugarcane contributes about 60% of the total world sugar requirement while the remaining 40% came from sugar beet, (Onwueme and Sinha, 1999). It is a tropical crop that usually takes between 8 – 12 months to reach its maturity. Matured cane may be green, yellow, purplish or reddish considered ripe when sugar content is at its maximum (Onwueme and Sinha, 1993).

The total world area and production of sugarcane as estimated in 1989 were 16.7 million hectares and 1,007 million metric tons, respectively. Brazil, china, Cuba, Mexico, Pakistan, Thailand, the USA, Colombia, Australia and Indonesia are the leading countries in sugarcane production. Brazil, India and Cuba are the leading countries in sugarcane production, producing over half of the total world sugarcane production. Africa in the same reporting period has 1.2 million hectares with 72.1 million metric tons, respectively (Onwueme, 1978). The important sugar-producing countries in the tropical Africa are Mauritius, Kenya, Sudan, Zimbabwe, Madagascar, Cote d'Ivoire, Ethiopia, Malawi, Zambia, Tanzania, Nigeria, Cameroon and Zaire. Nigeria is one of the most important producers of the crop with a land potential of over 500,000 hectares of suitable cane field capable of producing over 3.0 million metric tons of sugarcane. If processed, it will yield about 3.0 million metric tons of sugar (NSDC, 2003).

Nigeria is noted to be abundantly blessed with human, water and environmental potentials for the production of sugarcane. Areas with high potentials for commercial sugarcane /sugar production have been identified through studies sponsored by the Federal Ministry Of Industry and conducted by Dutch consultants HVA in the early eighties (80s).

It should be pointed out that most of the areas in the Northern States where water for irrigation is available; sugarcane cultivation in large quantities is feasible. The crop can be rotated or even inter-planted with other crops where land with adequate sources of water abounds like in the various River Basin Development Authority Areas. The long hours of sun shine and its intensity in the north is one of the major determinants of the high yield potentials of sugarcane and other similar crops. However, the conditions as they cannot be explored effectively without setting investments in the form of development of water resources with irrigation, infrastructure and the building of factories, which are beyond the capabilities of local farmers/entrepreneurs. This fact is the main reason for the country's inability to develop the

sugar industry despite its potentials. Generally, sugarcane for domestic consumption is produced more than that produced for industrial use for obvious reason. Thus, chewing cane account for between 55 – 65 percent of the total cane production.

The bulk of these is of course consumed raw for its sweetness of the juice but some of it also is processed into a variety of products such as sugar, molasses, baggasse "Jaggery" (Mazarkwaila), sweets (Alewa) and left – over leaves/stalks,(Misari, 1997).

Although there are vast potentials for the commercial production of this crop, its processing industry did not come into existence in Nigeria until the early 1960's (Abdullahi, 2000). Commercial cultivation of sugarcane did not start until 1950 while industrial production of refined sugar stated in the early 1960's with the establishment of the Nigeria Sugar Company (NISUCO), at Bacita, Kwara State in 1964, Savannah Sugar Company (SSCL) Numan, Adamawa State in 1980 and Lafiagi in 1983. Similarly National Sugar Development Council, Abuja, is installing a medium-sized 250 ton-cane-day mini sugar plant at Sunti, Niger State. The combined installed capacities of these mills are about 120,000 metric tons of processed granulated white sugar per annum. However, total domestic production has fluctuated between 16,000 and 50,000 tonnes annually, which are able to satisfy only about 5 percent of the total national demand for sugar (Busari and Misari, 1997).The sugar industry is the major user of the sugarcane as its raw material source their requirement from local producers through the concept of out growers scheme of cane delivery. This is the major practice in Nigeria. Under this concept, sugarcane farmers are organized to grow and supply sugarcane for processing by the existing sugar plants. The purpose here is to encourage the production of sugarcane to feed sugar mills through the activities of smallholder and corporate out-growers. This approach tends to minimize the overhead cost of sugarcane processors and enable them to concentrate on processing rather than growing of sugarcane (NSDC, 1996).

In order to be able to continue production with reduction in overhead costs of any investment, many agricultural production enterprises resorted to contracting out the production of its raw materials to the farmers that lives within and around their respective companies so as to concentrate only on processing. This arrangement will ensure steady supply of raw material, employment generation and economic empowerment of the rural communities as well as reduction in rural-urban migration.

Savannah Sugar Company Limited, Numan (SSCL) was incorporated in 1971 and an in-depth feasibility study was carried out in 1973 which ended up with a proposal for the integrated development of irrigated sugar estate and a mill with capacity to produce 100,000 tonnes of refined sugar annually. The total project area covers approximately 27,000 hectares. At the onset of the company, it was estimated that 12, 000 hectares of land would be developed by 1985 for the cultivation of irrigated sugarcane. However production did not start until 1980/81 and only 2,500 hectares of land was developed by 1982. The main focus of this study therefore, is to economically assess the sugarcane production amongst the out grower farmers of Savannah Sugar Company Limited, Numan. The study was conducted to examine the socio economic characteristics of respondents and to ascertain constraints of sugarcane production in the study area.

2. Methodology

2.1The Study Area

The study was conducted in Numan, Numan Local Government Area of Adamawa States of Nigeria. It lies between Latitudes 9^{o} 10´´ and 9^{o} 39´´ N of the equator and between Longitudes 10^{o} 24´´ and 12^{o} 55´´ E of the Greenwich Meridian. Numan covers a land area of 2,193 km^2 and shares boundary in the north with Balanga Local Government Area of Gombe State, Shelleng and Guyuk Local Government Areas of Adamawa State, while Lamurde Local Government Area of Adamawa State, Karim Lamido Local Government Area of Taraba State in south east and Demsa Local Government Area to the South. The climate of Numan is that of Guinea Savannah region ranging from 28 ^{0}C to 32^{0} C with a mean rainfall of 676 mm. It has a tropical climate marked by dry and rainy seasons. The rainy season starts in April and ends by October. The out grower farms of Savannah Sugar Company are located in six out grower zones each and managed by estate mangers. They include Zekun, Gyawana, Lafia, Danto and Opallo estates. Irrigation is done by the use of irrigation water from Kiri Dam which commences two or three weeks after the rain stops. The land has good and favourable soil made up of alluvial and vertisol soils(Adebayo and Tukur, 1997).

2.2 Sources of Data, Sampling Technique and Analysis

Data for this study was obtained mainly from primary source collected using structured questionnaires in a random sampling technique. Forty (40) farmers each were selected from the six out grower zones giving total of 240 farmers out of which 120 were retrieved and used for the study. The data collected were subjected to descriptive statistics such as table, frequency, percentages.

3.Results and Discussion

3.1Socio-Economic Characteristics of the Farmers

According to Wegener (1997), socio-economic studies of any society are very vital in the understanding of the type and nature of their livelihood as well as their social life. It helps in making sure that both women and men of every socio-economic group in a community or a particular location have the opportunity to participate in a decision making process.

The socio-economic analysis and focus group helps in separating groups of people from different socio-economic categories e.g. by wealth, occupation, farming experience, age, ethnicity, education, marital status. Socio-economic studies by Wegener revealed that it is often necessary to ascertain, information about the respondent and their associated families. This is because the information will provide good understanding of the characteristic of the sugarcane farmers. The Socioeconomic characteristic of the farmers was studied with respect to their age, gender, educational background, farming experience, family size, source of income and farm size. Table 1 below shows the distribution of the respondents by gender. This revealed that majority of the respondents (60%) were males who engage in sugarcane. Production in the study area while 40% were found to be females. This could be attributed to the fact that sugarcane production is strenuous, labour intensive and hence the more males are found in production than females This high number of males could also mean that more lands are needed by the respondents and this can only be achieved based on the amount of time they put as well as performance of their field. The age distribution of respondents is as shown in Table 2. The mean age was 42.1 years with majority (69%) falling into the age group of 31 – 40 years. This could be considered as productive age bracket (Haruna and Kushwaha, 2003). This is followed by those in the age group of 41-50 years which constituted 26% of the total respondents, while the remaining 5% of the respondents fall within the age bracket of between 21-30 years. The analysis further revealed that the minimum age of the respondents was 25years while the maximum was 50 years. It was concluded that the out-grower farmers of Savannah Sugar Company Limited, Numan are mostly medium age and hence in productive age. This age group of the sugarcane farmers may have much energy to work for a longer period of time. The younger farmers are more active in the adoption of new farming techniques and always willing to change for better than the older ones who are somehow conservative, adamant to change and vu1nerable to change involving the adoption and application of modern farming implements and other technologies. The level of education of any given community or farmers has direct effect on the perception and understanding of an activity and hence the willingness to adopt any programme or change. This is because of their level of experience, association and ability to decide with minimum guidance provided that the new idea or technologies are going to impact positively on their livelihood. Analysis of the educational level of respondents revealed that majority of them had primary education followed by those who had never been school had form (37.5%), and only 4.3% of the sugarcane farmers had other forms of education such as Koranic and adult literacy that is non-formal education. From the analysis of the results, it could be deduced that most of the sugarcane farmers in the study area were not literate and hence mobilization arid sensitization on the importance of sugarcane farming would be easy. The distribution of the respondents based on family size *shows* that majority (52.6%) has a family size of between 6 - 10 persons, followed by those with the family size of 1 - *5* persons constituting 31.6%. Similarly respondents with family size of between 16 and 20 constituted only 0.8% of the total respondents. Family size in traditional Agriculture determines the availability of labour depending on the type of activity to be performed. Most of the respondents use family labour in the study area; hence majority had family size of 6 - 10 persons and hence most of the respondents may not have labour problem as much of it could be supplied within the family. This agrees with the findings of Welsh (1991) who stressed that a farmer incurs less production cost if family labour is being fully utilized for farm production. Similarly, availability of this labour had increase the number of participating farmers in the sugarcane production in the study area. This is because these persons could gain experience in sugarcane production and the cultivation pattern in the company may motivate them to participate and specialize in cane production and by implication this will help in reducing unemployment and consequently reduce the level of poverty among respondents. Also, 40 percent of the respondents had fanning experience of between16-20 years followed by those (with 11-15 years, constituting 27.5% . Only 10% had fanning experience of between 1 - 5 years, while the remaining 22.5% of the respondents had farming experience between 6-10 years. Therefore the study shows that out-growers scheme of the company started few years after the establishment of the company and the interest in sugarcane farming is gradually increasing as shown by the level of experience recorded. These percentages will

increase over time as more mobilization; sensitization and incentives are provided. These incentives include those things that are presently being enjoyed by the communities living within and around the company. Such incentives include appropriate pricing policy of their produce, provision of rural infrastructure such as access to school, clinics, water supply, electricity, feeder roads for ease of movements of goods and services within and around the neighbouring communities or villages. From the survey, conducted in this study it shows that the total land holding of the 120 respondents was 314 hectares with sizes ranging from two to eight (2-8) hectares per respondent. Analysis of Table 1 reveals that most of the respondents engaged in sugarcane production had average farm size of between 1 – 2 hectares followed by those with average farm size of 3 – 4 hectares. Also those with 5 – 6 hectares constituted 4.2% with only 3.3% of them had up to between 7 – 8 hectares.

This result conforms to the assertions of Okigbo (1978) that the largest proportion of total farm holdings in Nigeria is small scale holdings below 5.0 ha.

The analysis shows that majority of the sugarcane farmers representing 90% were married and hence the high number of household size and high family 1abour. The high percentage could be attributed to their cultural values and norms. The remaining 10% of the respondents were either divorced or widowed.

3.2Problems Associated with Sugar Cane Production

The constraints to sugarcane production were identified in the study area and ranked to determine the most important of these constraints as presented in the table 2. Those ranked 1 has the least some and those ranked five (5) has the highest score. Results from table 2 revealed that there are a number of problems confronting sugarcane production in the study area. However, the most important constraint as indicated by the study was inadequate and late allocation of farms constituting 33% of the total respondents. This is followed by inadequate credit facilities as a major hindrance to sugarcane production which constitutes 25% of the respondents. The consequences of the inadequate capital is that the financial institutions and insurance schemes available to the farmers in the state and around the study area is not much felt and accessible by the sugarcane farmers which if given the required attention will help in expanding their cane fields by timely provision of their needed inputs which will definitely contribute to high yield and income. More so, problems of inadequate funds hinder the development of irrigation schemes as stressed by Von — Pischke (1991). Inadequate water supply was ranked the third (3^{rd}) most important factor militating against high yield with 20% of the total respondents. Since sugarcane production highly depend on water availability especially during growing period, if this constraints is not address, definitely the farmers output could not give the desired output and hence will result to low yield and definitely they will be operating at a lost. The water supply should not only be readily available and timely but should be subsidized by the component so as to sensitize the farmers to participate more actively and effectively. Fifteen percent (l5%) of the total respondents reported that farm inputs such as inadequate/high cost of fertilizer, sells etc. as major constraints. It is generally known that small scale farmers finds it very difficult to source for farm inputs and the limited number they could lay their hands on are extremely expensive. Therefore, this study shows why they could not afford some of the essential inputs. Consequently if the size of the land holding is to be increased so as to increase production, the constraints of high input cost need to be address through government intervention by provision of subsidy. Other factors identified as constraint shows that 7% of the respondents indicated inadequate labour for out growers as an impediment this constraint if not address will contribute to low level of sugarcane output. Agriculture is generally associated with a number of problems particularly from the production aspects. These problems as indicated by respondents in the study area resulted to low yield of cane Sugar, thereby translating to smaller earnings at the end of the day.

4. Conclusion

The study revealed that men dominated the ougrowers scheme, well experienced and is married while production was on small-scale. There should be timely provision of agro-inputs/mechanical services to the farmers as well as sufficient Irrigation Water so as to enhance farmers' operation, which could lead to higher yield. An effective system should be put in place where farmers should be linked with service providers' community money lenders. To meet the demand of the Company in terms of high quality cane supply and to generate sufficient funds for the out grower farmers, the issue of low cane yield should be addressed through provision of high yielding, disease resistant, productive and pest/disease free farms through expansion of the estate farms.

References

Abdullahi, S. (2000) , "Problems and prospects of sugar industry in Nigeria" A paper presented at a SugarDevelopmentandInvestmentForum.pp2-7

Misari, S.N. (1997), "Traditional method of processing "Mazarkwaila and Alewa" from sugarcane National Cereal Research Institute, Agricultural Information Documentation and Dissemination, 1 —21.

Haruna, U. and Kushwaha, S. (1999), "Concepts and Strategies of Agricultural Development in Nigeria: A Study of hectarage response of sorghum to selected economic parameters in Bauchi State". In: Kushwaha, S. Adegbola, T. A, Oseni, T. O, Auwalu, B. M. and Butswat, I. S. (eds). *Agricultural Development in the 2l Century: Concepts and Strategies*. pp 166-169.

Haruna, U. and Kushwaha, S. (2003), "Fadama Farmers Characteristics and Adoption of Agricultural Technology in Bauchi State",*Nigerian Journal of Agricultural Technology* 11, 99 -104.

National Sugar Development Council NSDC,1995b), " Towards a Self-Sufficiency in Sugar Production in Nigeria"NSDCPublicationP20

National Sugar Development Council (NSDC,1996), "Annual Report for the year ended 1996".,NSDC Publication, 1-28.

NationalSugarDevelopmentCouncil,NSDC(2003),"InformationBrochuretowards Self-Sufficiency in Sugar",Abuja.Ppl-26

Okigbo, B. N. (1978), "Cropping systems and related research in Africa". Special Issue on the occasion of the 10th anniversary of the Association for the Advancement of Agricultural ScienceinAfrica(AAASA,177p.

Onwueme, I. C. (1978), " *Crop Science:* Tropical Agricultural Series"**.** Cessel, London, pp89-90

Onwueme, 1.C (1979). " *Crop Science,* " Cassell Limited. pp182-l87

Onwueme, LC. and Sinha T. D. (1993), "CTA — Field Crop Production in Tropical Africa". CTA,Wageningen,Netherlands.Pp401-411

Onwueme, 1. C.and Sinha, T.D. (1999), "CTA — Field Crop Production in Tropical Africa". CTA,Wageningen,Netheflands,pp401411

Tukur, A. L. and Adebayo A. A. (1997), " Variation in Environmental Resources and Food Crop Production in Adamawa State" In Daura M. M. (eds) lssues in Environmental Monitoring in Nigeria,p20.

Umar, M.B. and Haruna, U. (2005) : Impact of non-government Agricultural Extension projects on the farm income of farmers: A case study of ADP zone iii, Jigawa State, Nigeria. *Journal of League of Researchers in Nigeria 6(1), 89-95.*

Von — Pischke, J. D. (1991) , "Finance at the frontier: Debt capacity and the role of credit in the private economy". A World Bank Publication. World Bank, Washington D. C. USA. pp 429

Wegener, M.K (1997), " Opportunity to Improve Economic Performance on Sugarcane Farms" : Paper presented at the department of agriculture and

CRC for sustainable• sugar production. The University of Queensland. Old 4072. Australia

Welsh, D, E. (1991), "Response to Economic Incentives by Abakaliki Farmers in Nigeria".*Journal of Farm Economics,* 47(4) 15 — l8.

Table 1: Distribution based on socio- economic characteristics (n= 120)

Variable	Frequency	Percentage
Gender		
Male	72	60.00
Female	48	40.00
Age range (years)		
Less than 30	6	5.00
31 – 40	82	69.00
41 – 50	32	26.00
Education		
No education	45	37.50
Primary	50	41.60
Secondary	20	16.60
Non formal education	5	4.30
Marital status		
Married	108	90.00
Widowed/divorced	12	10.00
Household size		
≤ 5	38	31.60
6 – 10	63	52.60
> 11	19	15.80
Farm size(hectares)		
1-2	89	74.20
3-4	22	18.30
5-6	5	4.20
> 7	4	3.30
Experience (years)		
≤ 5	12	10.00
6 – 10	27	22.50
> 11	81	67.50

Source: Field Survey, 2002

Table 2: Problems associated with Sugar cane Production

Constraints	Frequency	Percentage	Rank order
Inadequate and late allocation of farms	40	33.33	1
Inadequate credit facility	30	25.00	2
Inadequate irrigation water supply	24	20.00	3
Inadequate fertilizer and setts	18	15.00	4
Inadequate labour and inappropriate pricing of cane	8	6.67	5
Total	120	100.00	

Source: Field Survey, 2002