The Impact of the Urban Environment on Plantain and Banana Production in Akwa Ibom State

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ABSTRACT

Plantains and bananas are important tropical food crops. Eight (8) cultivars of banana and four(4) cultivars of plantain were observed in Abak, Oron and Uyo urban areas based on the following parameters: Plant height, ,susceptibility to wind damage, estimated total yield, fruit weight, average length, girth of fruit, pulp and peel ratio. Estimated cultivated hectarage, consumer's preference and market prices were used to determine the production and consumption level. Urbanization was found to delimit banana and plantain production but increased their consumption.

Key words : Banana, plantain, urban, environment

RÉSUMÉ

Les plantains et les bananes sont des récoltes de nourritures tropicales importantes. Huit (8) variétés de banane et quatre (4) variétés de plantain ont été observés dans Abak, Oron et Uyo les secteurs urbains sur les paramètres suivants : la hauteur de Plante, la susceptibilité pour remonter des dommages, l'estimés rendement totaux, le poids de fruit, la longueur moyenne, la circonférence de fruit, la proportion de la pulpe et pèle. Hectarage cultivé estimé, la préférence de consommateurs et les prix du marché ont été utilisés pour déterminer le niveau de production et consommation. L'urbanisation a été revlé comme facteur qui reduit la production de banane et plantain mais a augmenté leur consommation.

Les mots clés : la Banane, le plantain, urbaine, l'environnement

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INTRODUCTION

Akwa Ibom State is located within the tropical rainforest zone between latitude 4°-30° and 5°-30° N and longitude 7°-05° and 8°-20° E. The state is a lowland area with a relief of about 52m above sea level and a temperature range that lies between 21°C and 29. 4° C. It has a wet and dry season with annual rainfalls of about 2500mm. The mean relative humidity is about 2.5ml/day and mean annual sunshine hours of about 3.31 hours per day. The state has acidic soil classified as Alfisol and it is well drained. The soils have low cation exchange capacity (CEC) usually experiencing multiple nutrients deficiencies (Enwezor, et al 1981). Plantains and bananas are important tropical food crops. Banana is the most important tropical fruit when compared with the production of other fruits (Rodomiro and Dirk, 1997). These crops provide more than 25% of the carbohydrates and 10% of the calorie intake of approximately 70 million people (Rodomiro and Dirk 1997). The gross value of their annual production in Sub Saharan Africa exceeds that of several other food crops such as maize, rice, cassava and sweet potatoes. Simmonds (1966) reported that bananas form one of the biggest single items in the international fruit trade with consumption level in Western Europe and the United States reaching, 25g per head per day. World banana and plantain production is around 70 million tons per annum of which about 35% is produced in Sub Saharan Africa. Consumption level in some African countries can be high. In parts of Cameroon, annual per capita consumption is estimated at 150kg while in Burundi, Rwanda and Uganda; it is between 220- 460kg (Rodomiro and Dirk 1997).

Although plantains and bananas are produced all year round, the main harvest in southern Nigeria (Akwa Ibom State) occurs in the dry season (December-February) when most other starchy foodstuffs are in short supply and hunger is at its peak. (Philips and Lordbanjou, 1989).

Urban environments, which harbour most of the Nigerian population, are the main consumers of plantains and bananas. Plantains and bananas are usually cultivated at subsistence level in Akwa Ibom State under shifting cultivation and bush fallow especially in the rural areas. In urban areas, they are produced in intensively managed home gardens with the aid of household refuse. These production systems in the rural and urban areas have various influences on plantain and banana production. Until a few decades ago, most third world countries had relatively few cities and majority of population lived in the rural areas. Recently there has been massive rural-urban exodus, which has resulted to population explosion in our cities. This population increase has caused a high demand for food than could be supplied. This, in turn, has brought hunger and poverty. In an attempt to combat hunger, most of the urban dwellers depend on bananas or snacks (plantain chips) for their lunch. Plantain and banana thus becomes important foodstuff in our urban environments.

The purpose of this work is to evaluate the production and consumption level of plantain and banana in our urban settlements in three Local government Areas of Akwa Ibom State. Also to identify the various cultivars grown in the area.

MATERIALS AND METHOD

The survey was carried out in 1998 in three local government areas of Akwa Ibom State namely: Abak, Oron, and Uyo during the slack/peak season i.e June and December. Photographs of the various varieties of plantain and banana were taken. The following parameters were used to delimit the various varieties: susceptibility to wind damage by counting the number of stands pulled down by wind; height by measuring with a meter rule the aerial stem up to the scape (inflorescence); estimated total yield by correlating the number of bunches harvested in a year with the bunch size/weight; fruit weight by measuring with a weighing balance; average length and girth of fruit by measuring with a meter rule; pulp and peel weight by measuring with a measuring balance; pulp/peel ratio by dividing the pulp weight by the peel weight because pulp and peel data are normally presented as a ratio; pulp and peel percentage by dividing pulp or peel weight by the fruit weight and multiplying by 100.Fruit weight. The average length and girth of fruit were determined using the second hand of each harvested bunch.

The following parameters were used to determine the production and consumption level of the various cultivars: estimated cultivated hectarage by measuring ten randomly selected farms in each locality and multiplying the sizes relative to the entire land mass of the farms to the landmass of the entire area; estimated total yield by correlating the number of bunches harvested in a year with the bunch size/weight; consumers' preference by interviewing the consumers and examining the market stores from which cultivar is bought most; market prices by comparing the prices of the various cultivars.

RESULTS AND DISCUSSIONS

The popular banana varieties identified in the localities included:

Valery (Ata mboro);
Gros Michel (Ata mboro);
1C2 (mboro pania);
Kinkala (Attire)
Silk (Adia Okpon Ekporo);
Pome prata (Adia Okpon Ekporo);
Green Red (Ndaidat mboro); and
Dwarf Cavendish (Ndak itiat).

The popular plantain varieties identified included:
False Horn plantain (Agbagba);
French plantain (Eba aboikpa);
Horn plantain (ubok iba); and
Twin false horn plantain (itu iba).

The results obtained are summarized in table 1,2,3 and 4. In the study, silk banana (plate 5) was realized to be the least among the most popular varieties in terms of estimated hectarage planted. It was least cultivated in Uyo and Abak (0.5 ha) compared to Oron (0.8ha). In terms of estimated total yield in tons, Abak and Uyo have higher yields (1.4 tons) than Oron (1ton). Consumer preference was average in Oron but it was low in Abak and Uyo. The market prices were better in Uyo than Abak and Oron.

Valery banana (plate 1) was realized to be the most popular variety with a high consumer preference in all the three local government areas. Oron had the highest estimated yield (6 ton) followed by Abak (5.5 ton) and Uyo (3 ton). In terms of estimated hectarage planted, Oron had the highest of 2.5 ha followed by Abak (2 ha) and Uyo (1 ha). This variety sells best than the other varieties in the 3 local government areas with Uyo having as high as N 30,000.00 per ton during slack season.

Dwarf Cavendish (plate 8) is averagely preferred by consumers in all the local government areas. The highest yield is recorded in Abak with 3 tons followed by Oron (2 tons) and Uyo (1 ton). Oron has the highest cultivated hectarage of 1 ha while Abak and Uyo have 0.5 ha respectively. The market price is higher in Uyo (N15, 000.00) per ton and Oron (N12, 000.00) per ton.

For the plantain varieties French Plantain (plate 10) was realized to be least cultivated among the 3 most popular varieties as a result of low consumer preference in all the local government areas. Oron has the highest cultivated hectarage (1ha) followed by Abak and Uyo (0.5ha) respectively.

The yield was also high in Oron (2.5 ton) while the others had 1.4 ton each. The price at Uyo and Abak was N30, 000.00 per ton as against N25,000.00 per ton in Oron.

False Horn plantain (plate 9) is the most preferred variety among the 3 varieties by consumers. It has the highest cultivated hectarage, with 5,4 and 3 ha for Abak, Oron and Uyo respectively. It also has high estimated total yield of 7.5, 6 and 4.5 ton for Abak, Oron and Uyo respectively. The market price is highest in Uyo at N35, 000.00 per ton and lowest in Oron at N 25,000.00 per ton.

The Horn plantain (plate 11) is also highly preferred by consumers but not as much as the false horn. Oron has the highest cultivated hectarage of 1.5 ha and highest yield of 3 tons compared to Abak and Uyo. The price of the variety is also better than the price of the French plantain.

The high consumption level of plantains and bananas in urban environments than the rural areas is certainly due to the nutritive content, stress free preparation methods, high caloric value and medicinal importance as reported by Ihekoronye and Ngoddy (1985). From the estimated cultivated hectarage and estimated total yield of plantain and banana varieties, it is realized that urbanization has an adverse effect on the production of plantain and banana. Uyo, which is highly populated, compared to Abak and Oron has the least cultivated hectarage and least estimated yield. This confirms the report of Rony (1990) that plantain production at subsistence level and small scale is detrimental to production output.

In the rural areas, bunch weight is considered an important market factor while in the urban areas, the fruit size is more important in determining the desirability (consumer preference). Urban dwellers prefer bunches with large fruits and consequently the demand for large fruits is high and thus the price. Among the plantain cultivars, Horn plantain with the highest fruit size and weight, attracted the highest price followed by false horn, and the French plantain in this order. For the banana cultivars, Valery and Gros Michel have the highest fruit size and weight while Pome prata had the lowest fruit size and weight.

The peels determine the ripening time of the fruit and assist in the water retention and protection of the fruit (Rodomiro and Dirk 1997). Among the banana cultivars, Valery and Gros michel had the highest pulp percentage (about 71%) and least peel percentage (about 29%), while Kinkala, Green red, and Dwarf Cavendish cultivars had the least pulp percentage (about 66%) and highest peel percentage (about 34%). For the plantain cultivars, the pulp percentage was about 70% while the peel percentage was about 30%. There was no real difference in pulp and peel percentage among the plantain cultivars.

Table 1: A Survey Table of the most popular varieties of banana in Abak, Oron and Uyo L.G.A showing their popularity, estimated yield (tonnes) and market price/tonnes.

VARIETIES	AGRONOMIC PRACTICES	ABAK		ORON		UYO		MEAN	
		JUNE	DEC	JUNE	DEC	JUNE	DEC	JUNE	DEC
SILK	- Estimated hectarage planted	0.5	0.5	0.8	0.8	1.0	1.0	0.77	0.77
	- Estimated total yield (tonne)	1.4	1.6	1.0	1.2	3.0	3.1	1.8	1.97
	- Consumers preference	Low	Low	Average	Average	High	High	Average	Average
	- Market price, per tonne at Peak/slack season (₦)	10 000	15 000	8 000	12 000	15 000	30 000	11 000	19 000
VALERY	- Estimated hectarage planted	2.0	2.0	2.5	2.5	1.0	1.0	1.83	1.83
	- Estimated total yield (tonnes)	5.5	5.8	6.0	6.4	3.0	3.1	4.83	5.1
	- Consumers preference	High	High	High	High	High	High	High	High
	- Market price, per tonne at Peak/slack season (₦)	12 000	18 000	10 000	12 000	15 000	30 000	12,333.3	20 000
DWARF CAVENDISH	- Estimated hectarage planted	0.5	0.5	1.0	1.0	0.5	0.5	0.67	0.67
	- Estimated total yield (tonne)	3.0	3.1	2.0	2.2	1.0	1.2	2.0	2.17
	- Consumers preference	Average	Average	Average	Average	Average	Average	Average	Average
	- Market price, per tonne at Peak/slack season (₦)	10 000	15 000	10 000	12 000	10 000	15 000	10 000	14 000
GROS MICHEL	- Estimated hectarage planted	2.0	2.0	2.6	2.6	1.0	1.0	1.86	1.86
	- Estimated total yield (tonne)	5.0	5.5	6.0	6.4	3.5	3.8	4.83	5.23
	- Consumers preference	High	High	High	High	High	High	High	High
	- Market price, per tonne at Peak/slack season (₦)	12 000	18 000	10 000	12 000	15 000	30 000	12,333.3	20 000
IC2	- Estimated hectarage planted	0.5	0.5	1.0	1.0	0.5	0.5	0.67	0.67
	- Estimated total yield (tonne)	2.0	2.1	2.5	2.7	1.0	1.1	1.83	1.97
	- Consumers preference	Average	Average	Average	Average	Average	Average	Average	Average
	- Market price, per tonne at Peak/slack season (₦)	10 000	15 000	10 000	12 000	10 000	15 000	10 000	14 000
KINKALA	- Estimated hectarage planted	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	- Estimated total yield (tonne)	1.5	1.7	2.0	2.1 Low	1.0	1.2	1.5	1.67
	- Consumers preference	Average	Average	Low	10 000	Low	Low	Low	Low
	- Market price, per tonne at Peak/slack season (₦)	10 000	12 000	8 000		10 000	12 000	9,333.3	11,333.3

N/B: NAIRA – CFA FRANCS, EXCHANGE RATE AS AT 1998 N1.00 = 6.25 Frs.

Table 2: A Survey Table of the most popular varieties of plantain in Abak, Oron and Uyo L.G.A showing their popularity, estimated yield (tonnes) and market price/tonnes.

VARIETIES	AGRONOMIC PRACTICES	ABAK		ORON		UYO		MEAN	
		JUNE	DEC	JUNE	DEC	JUNE	DEC	JUNE	DEC
FRENCH PLANTAIN	- Estimated hectarage planted	0.5	0.5	1	1	0.5	0.5	0.67	0.67
	- Estimated total yield (tonne)	1.4	1.6	2.5	2.8	1.4	1.5	1.77	1.97
	- Consumers preference	Low	Low	Low	Low	Low	Low	Low	Low
	- Market price, per tonne at Peak/slack season (₦)	20 000	30 000	16 000	25 000	20 000	30 000	18,666.7	28,333.3
FALSE HORN PLANTAIN	- Estimated hectarage planted	5	5	4	4	3	3	4	4
	- Estimated total yield (tonne)	7.5	8.1	6	6.8	4.5	5.0	6	6.63
	- Consumers preference	V.high	V.high	V.high	V.high	V.high	V.high	V.high	V.high
	- Market price, per tonne at Peak/slack season (₦)	20 000	30 000	18 000	25 000	22 000	35 000	20 000	30 000
HORN PLANTAIN	- Estimated hectarage planted	1.0	1.0	1.5	1.5	0.5	0.5	1	1
	- Estimated total yield (tonne)	1.4	1.6	3.0	3.3	1.4	1.5	1.93	2.13
	- Consumers preference	High	High	High	High	High	High	High	High
	- Market price, per ton at Peak/slack season (₦)	20 000	30 000	16 000	25 000	22 000	35 000	19,333.3	30,000
TWIN FALSE HORN PLANTAIN	- Estimated hectarage planted	4	4	3	3	3	3	3.3	3.3
	- Estimated total yield (tonne)	6.0	6.8	5	5.4	4.0	4.1	5	5.43
	- Consumers preference	Averag	Average	Average	Average	Average	Average	Average	Average
	- Market price, per tonne at Peak/slack season (₦)	e 20 000	30 000	18 000	25 000	22 000	35 000	20 000	30 000

N/B : NAIRA – CFA FRANCS, EXCHANGE RATE AS AT 1998 N1.00 = 6.25 Frs.

Table 3: Physical Characteristics of Banana Fruit

Banana cultivar	Fruit weight (g)	Average. Length Fruit (cm)	Average Girth Fruit (cm)	Pulp Weight (g)	Peel Weight (g)	Pulp/ Peel Ratio	Pulp (%)	Peel (%)
Valery	180.0	15.5	4.5	127.5	52.5	2.4	70.6	29.2
Gros Michel	181.5	16.0	4.3	129.0	52.5	2.5	71.3	28.9
IC2	163.0	13.0	3.8	113.1	49.9	2.3	69.4	30.6
Kinkala	145.5	13.2	3.8	95.8	49.7	1.9	65.8	34.2
Silk	142.5	11.0	3.8	95.2	47.3	2.0	66.8	33.2
Pome prata	141.3	11.1	3.9	94.2	47.1	2.0	66.7	33.3
Green red	146.5	12.0	3.8	96.4	50.1	1.9	65.8	34.2
Dwarf Cavendish	144.0	13.5	3.9	94.4	49.6	1.9	65.6	34.4

Table 4: Physical Characteristics of Plantain Fruit

Plantain cultivar	Fruit Weight (g)	Average. Length Fruit (cm)	Average Girth Fruit (cm)	Pulp Weight (g)	Peel Weight (g)	Pulp/ Peel Ratio	Pulp (%)	Peel (%)
French Plantain	183.5	15.5	4.4	129.5	54.0	2.4	70.6	29.4
False Horn	189.0	18.0	5.0	132.8	56.2	2.4	70.3	29.7
Horn	193.5	19.0	5.1	135.5	58.0	2.3	70.0	30.0
Twin False Horn	185.5	17.0	4.8	130.0	55.5	2.3	70.0	29.9

CONCLUSION / RECOMMENDATION

The rising population pressure in the urban areas and insufficient banana and plantain production has made the demand of these crops to be high and consequently the price. From the results obtained, it is observed that Oron produced more plantain and banana than Abak and Uyo. This is certainly due to the fact that Oron is less urbanized than the other, two. It is also observed that, Uyo, which produces less, consumes more even though the prices are higher in Uyo. Therefore, Urban environments adversely affect banana and plantain production even though they are staple foodstuffs for urban dwellers.

With the teeming population of urban dwellers and relatively smaller land for agricultural practices, how do we cope with the production of these very important crops?

It is thus recommended that:

(1) Government ought to re-visit the land use decree, and other policies relating to urban planning so that a portion of our urban lands could be reserved for agricultural practices.

(2) Outskirts of urban areas should be used to establish plantain or banana plantations as is obtained in other countries to boost production.

(3) Waste management bodies should know that degradable domestic wastes are good nutrient sources for plantains. The wastes from our cities if well managed (recycled) could help boost agricultural production several folds. This may also save us from the

adverse side effects of agrochemical (fertilizers).

(4) Professionals and other urban dwellers that know the importance agriculture should assist government in combating the indiscriminate use of reserved land for meetings, playgrounds, and waste disposal sites instead of farming.

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Plate 1: Valery (Ata mboro)

Plate 3: 1C2 (mboro pania)

Plate 2: Gros Michel (Ata mboro)

Plate 4: Kinkala (Attire)

Plate 5: Silk (Adia Okpon Ekporo)

Plate 7: Green Red (Ndaidat mboro)

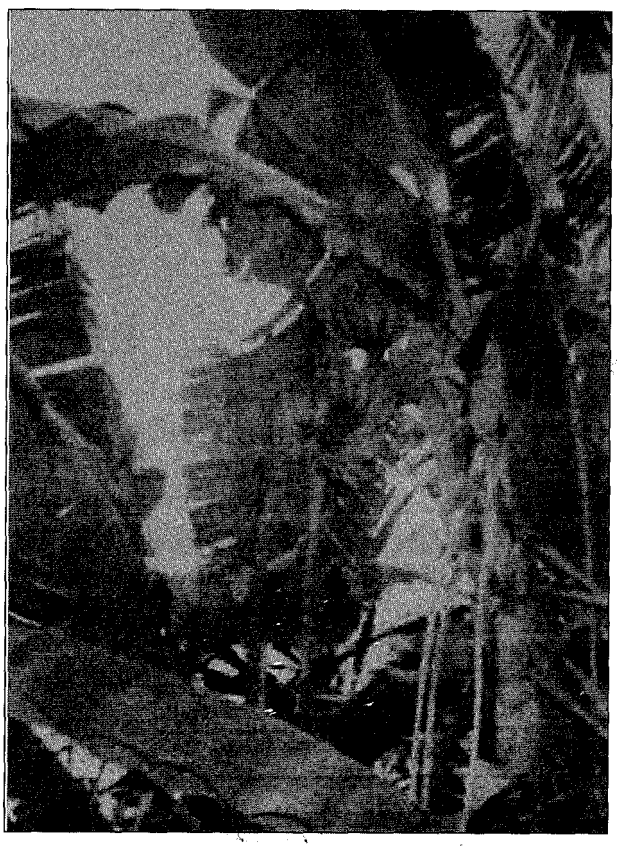

Plate 6: Pom prata (Adia Okpon Ekporo)

Plate 8: Dwarf Cavendish (Ndak itiat)

Plate 9: False Horn Plantain (Agbagba)

Plate 11: VHorn Plantain (Ubok iba)

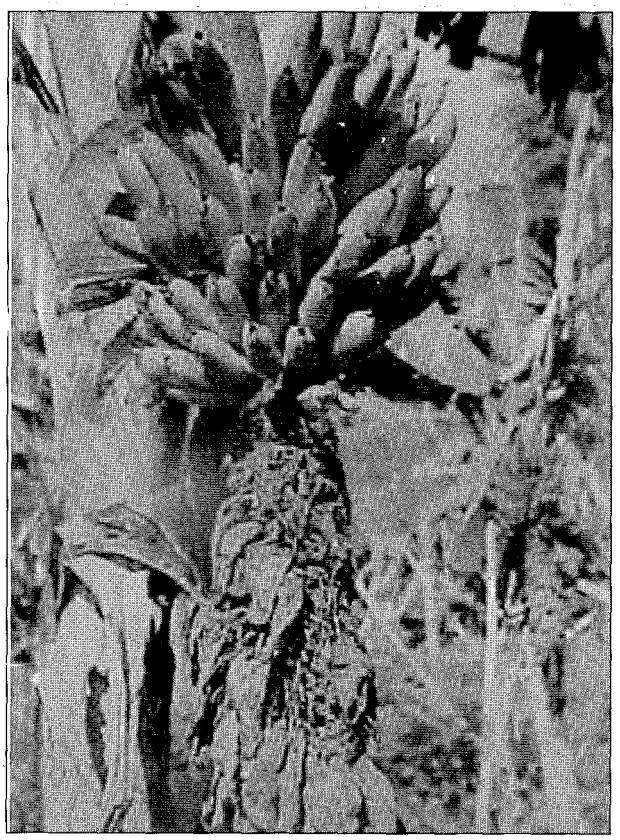

Plate 10: French Plantain (Eba aboikpa)

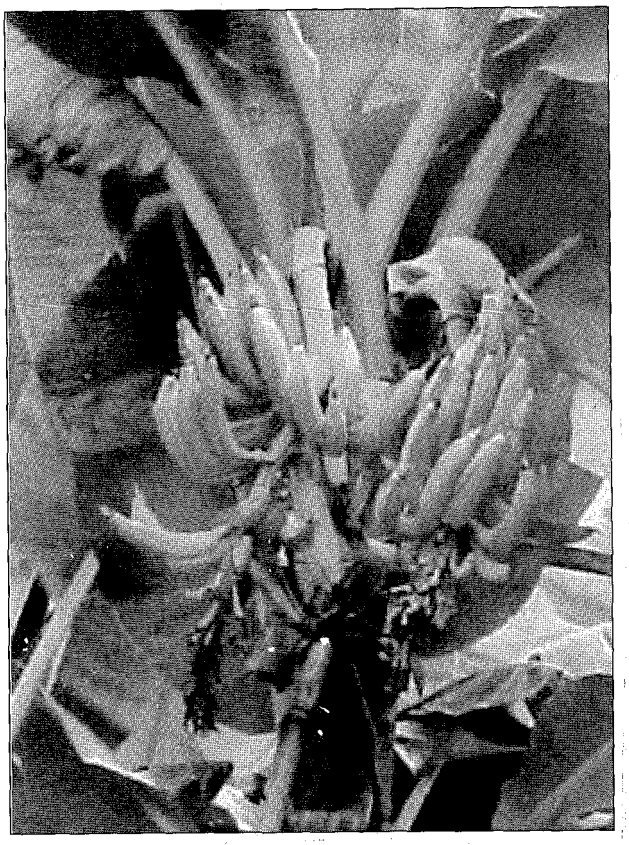

Plate 12: Twin False Horn Plantain (Itu iba)