

ASSESSMENT OF PRIMARY COCOA BEANS PROCESSING METHODS IN OWAN WEST LOCAL GOVERNMENT AREA OF EDO STATE, NIGERIA

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ABSTRACT

This study assessed the primary cocoa beans processing methods in Owan West Local Government Area (OWLGA) of Edo State, Nigeria. Systematic random sampling was used in selecting 125 farmers in three main cocoa producing communities of OWLGA. Data were collected with structured questionnaire and analyzed using descriptive statistics and Pearson correlation. Age range for majority (56%) of the respondents was 55-68 and 69-82 years. Many (59.2%) cultivated small farms (< 2ha) and 48% had no formal education. All (100%) of sampled farmers identified heap and sun-drying processing methods while they were not aware of the sweat-box, tray and artificial drying methods. A high proportion (98.4%) processed cocoa beans in heaps and all (100%) used sun-drying method. Farm size (0.233) and identified processing methods (0.472) were significantly related to utilization of cocoa processing methods ($p < 0.01$). With adequate Government intervention, the common method (heap) used by farmers should be improved upon while tray method is popularized.

Key words: cocoa fermentation, Cocoa farmers, Identification, Utilization.

INTRODUCTION

Cocoa is an important commodity crop second to oil in terms of foreign exchange earnings in Nigeria (Filani, 1997). Currently, cocoa accounts for less than 2 % of Nigeria's export earnings. However, it still provides employment for 300,000 households in areas of the country that grow the crop and it is usually produced in small-holdings (ICCO, 2002). In view of this, government is always conscious of measures that would improve production and income for farmers. Since the dissolution of cocoa board in 1986, Nigeria cocoa suffered serious and immeasurable deterioration in quality due to neglect of quality parameters such as proper fermentation and drying of cocoa beans by farmers and the sharp practices of emergency buyers who buy all sorts of beans regardless of its quality (Akinbola, 2003 and Toye, 2004). Elsewhere in Jakarta, Strimulato, *et al* (2003) identified similar problem that the quality of beans, especially those from small-holders cocoa is partially fermented, off chocolate flavour, acid taste and mouldy beans. The main purpose of fermentation is to ensure good flavour and aroma required by chocolate manufacturers. Wet cocoa beans could be processed in a number of methods: in heaps, baskets, boxes and trays (Opeke, 1987; wood and Lass, 1989 and Opeke, 2005). The beans are fermented after harvest and dried to moisture content of 7.5% for safe storage (Attah, 2003). Cocoa beans are used in the production of cocoa powder, chocolate products, beverages, wine, butter, bread, biscuits, soap, livestock feeds among others (Arueya, 1989; Adesuyi, 1997; Olubamiwa *et al*, 2000 and Hamzat *et al*, 2003). The general objective of the study is to investigate cocoa beans processing methods used by farmers in Owan West Local Government Area of Edo State. The specific objectives are to:

- Describe selected farmers' socio-economic characteristics.
- Determine processing methods used by cocoa farmers.
- Identify information sources on cocoa processing among farmers.

Two hypotheses stated in the null form were tested in the study.

- i There is no significant relationship between farmers' socio-economic characteristics and utilization of cocoa processing methods.
- ii There is no significant relationship between identified processing methods and utilization of cocoa processing methods.

METHODOLOGY

Study Area: The study was conducted in Owan West Local Government Area of Edo State. It has eleven political wards with the headquarters in Sabongida Ora. It has a population of 70,374 according to 1991 census figure (National Population Commission, 1991). Owan West Local Government Area is bounded in the North by Akoko Edo Local Government Area and in the South by Ujunmode Local Government Area.

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Also, it is bounded in the East by Owan East Local Government Area while in the West by Ondo State. The local Government under focus occupies a landmass of 826km². It is located between latitudes 5° 47' and 7° 07' North and Longitudes 5° 48' and 6° 03' East of the equator. Edo State has an annual rainfall of between 800-1600mm having a maximum temperature of 35°C with minimum temperature of 30°C (Edo State Ministry of Lands and Survey, 2004 and Edo ADP, 2001). Farmers in the study area grow Cocoa as main cash crop and cassava, plantain, yam, maize, pineapple, vegetables, cocoyam among others as secondary crops.

Data Collection: Data were collected from 125 farmers in three main cocoa producing communities: Uhonmora, Uzebba and Okpuje using a well-structured questionnaire. A systematic random sampling technique was used to select farmers from the communities chosen. Descriptive statistics such as percentage, chart and Pearson product moment correlation coefficient (PPMC) were used to analyze data. The probability level adopted for the study is 0.05.

RESULTS AND DISCUSSION

Tables 1 revealed that majority (56.0%) of the respondents were of old age having 55-68 and 69-82 age range. 36.8 percent were of middle age between 41-54 years while those within 27- 40 years (young adults) were 7.2 percent. It means that old farmers were more engaged in cocoa production than the active and energetic group in the study area. The bulk (59.2%) of the respondents cultivate 1-2 hectares of cocoa. This is followed by 3-4 hectares (29.6%) and above 5 hectares by 11.2 percent. It implies that more cocoa farmers cultivate less than 2 hectares. The educational level of respondents shows that 48 percent of the respondents had no formal education while the main educational status recorded was in primary school.

Table 1 Cocoa farmers' socio-economic characteristics.

Variables	Categories	Frequency	Percentage
Age (years)	27-40	9	7.2
	41-54	46	36.8
	55-68	61	48.8
	69-82	9	7.2
Farm size (Ha)	1-2	74	59.2
	3-4	37	29.6
	above 5	14	11.2
Educational status	No formal Edu.	60	48.0
	Primary	39	31.2
	Secondary	18	14.4
	Tertiary	8	6.4

Source: Field Survey, 2004.

In Table 2, all (100%) respondents were aware of heap fermentation and sun drying methods of processing cocoa beans while (100%) also do not know about sweat box, tray fermentation and artificial methods respectively. 93.6 percent of farmers claim knowledge of the basket method. By implication, farmers are mainly aware of the heap, basket and sun drying methods. Tray method that is the most efficient and fast according to (Opeke, 1989; Opeke, 2005 and Ojo, 2005) is unknown. There is thus the need to disseminate information on this to the farmers. However, small proportion (15.2%) of farmers identified a method called synthetic sack, which was found during data collection for the study.

Table 2 Identification of cocoa processing methods

Processing methods	Categories	Percentage
Heap	Yes	100
	No	0
Basket	Yes	93.6
	No	6.4
Sweat box	No	100
	Yes	0
Tray	No	100
	Yes	0
Synthetic sack	Yes	15.2
	No	84.2
Sun drying	Yes	100
	No	0
Artificial drying	No	100
	Yes	0

Source: Field Survey, 2004

The findings in figure 1 revealed that all (100%) of the respondents use sun in drying cocoa beans while majority (98.4%) used heap method for fermentation. This is followed by an unusual synthetic method in which 15.2 percent of respondents use it. Similar method like this was reported by (Suhaimi *et al*, 2000) that at experimental level, plastic sack fermentation showed slow increment in temperature from 25°C to 40°C for three days fermentation. The use of basket records a small figure of 1.6 percent. Sweat box, tray and artificial drying methods were not used by respondents since they do not know them. The results imply that majority of farmers used heap and sun drying methods in processing cocoa beans. Fermenting cocoa beans in synthetic sack by some farmers need to be subjected to laboratory analysis for its efficacy.

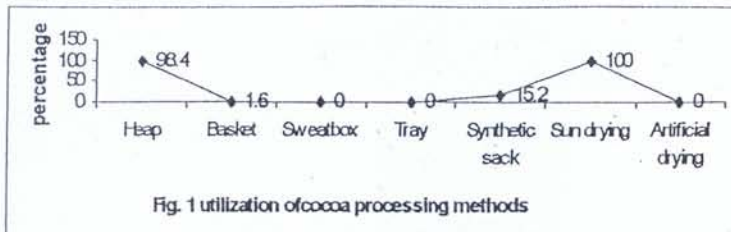


Figure 1 Utilization of cocoa processing methods

Source: Field Survey, 2004

In figure 2, the bulk (99.2%) of the respondents obtained information on cocoa beans processing from produce buyers. Radio (37.6%), CRIN (32.0%), CFAN (22.4%) and friends (8.8%) while ADP and Ministry of Agric (4.8%) recorded low sources each. Television/relatives (1.6%) each formed the minority. None of the farmers got information from newspaper sources. By implication, farmers had closer contact with the cocoa produce buyers who constitute the major source than other sources that showed inadequate information linkage on cocoa beans processing. They have also been found exploiting farmers during buying of cocoa beans (Kehinde, 1982 and Ojo, 2000).

Figure 2 Sources of information on primary cocoa beans processing methods

Source: Field survey, 2004.

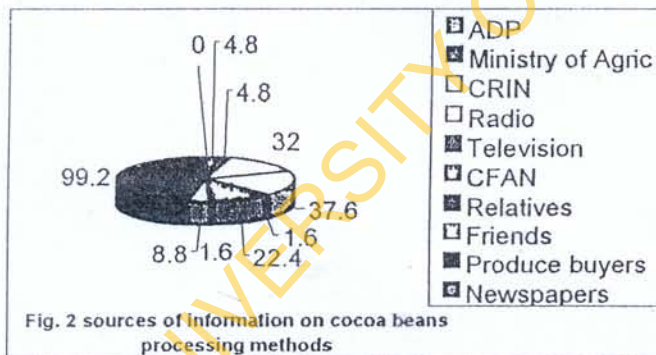


Fig. 2 sources of information on cocoa beans processing methods

The results in table 3 showed that there is significant relationship between farmers' socio-economic characteristics such as farm size and utilization of cocoa processing methods. ($r=0.233$, $p < 0.01$). It means that the null hypothesis, which states that there is no significant relationship between farmers' characteristics and utilization of cocoa processing methods, is rejected. The Implication is that the sizes of cocoa farms owned by farmers have influence on processing methods. For instance, the smaller the farm sizes the lesser the identified processing methods that are used. Also, the larger the farm size, the more the identified methods that are used in processing cocoa beans. The study agrees with that of (Ojo, 2000; Bifarin and Osundare, 2001). They found out that most cocoa farmers in Nigeria are smallholders and cultivate less than 2 hectares farm size. Other selected farmers' characteristics age and farming experience were found not significant. The null hypothesis is therefore accepted.

Table 3 Relationship Between Farmers' Socio-Economic Characteristics And Utilization Of Cocoa Processing Methods.

Variables	R	P	Decision	Remark
Farm size	0.233**	0.009	S	Reject Ho
Age	0.004	0.967	NS	Accept Ho
Farm experience	-0.011	0.903	NS	Accept Ho

Source: Field Survey, 2004.

**p< 0.01 r= Coefficient, p= probability, S= Significant NS Not Significant

The result in table 4 revealed that there is a significant relationship between identified processing methods (heap, basket, sweat-box, tray, synthetic) and utilization of cocoa processing methods used. ($r=0.472$, $p<0.01$). The null hypothesis is rejected. The correlation implies that the more the farmers identified the proper cocoa processing method, the more its use.

Table 4 Relationship between identified processing methods and utilization of cocoa processing methods.

Variable	R	P	Decision	Remark
Identified processing methods	0.472**	0.00	S	Reject Ho

Source: Field Survey, 2004.

**p< 0.01 r= Coefficient, p= probability, S= Significant, NS Not Significant

CONCLUSION

The findings showed that most cocoa farmers in the study area were aware of heap, basket, synthetic sack and sun drying methods of processing cocoa beans. They mainly use heap method in fermenting wet cocoa beans and all the farmers dry cocoa in the sun. Some ferment in synthetic sacks that could threaten quality. Tray method recommended by CRIN is not known and used by farmers. Getting high source of information from buying agents instead from extension and CRIN indicates information lag on cocoa beans processing. Majority of farmers used the cocoa processing methods known to them while those outside their knowledge; irrespective of their merits especially tray method that produces high quality beans for the local and international market is undermined. This has great implications on cocoa consumption and trade.

RECOMMENDATION

A number of measures should be put in place by CRIN through Government and National Cocoa Development Committee (NCDC) interventions to strengthen adequate extension linkage with farmers on primary processing of cocoa beans. Effort by concern stakeholders in cocoa industry should be geared towards improving the current heap method practiced by cocoa producers and popularize tray method. Also, periodic training of real farmers and not political ones on fermentation and drying should be carried out at least twice a year before harvesting season. It could be achieved via Monthly Technology Review Meetings (MTRM) and fortnightly Training (FNT) of Agricultural Development programme (ADP), Cocoa Association of Nigeria and CRIN to enhance better beans quality.

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