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## **Contribution of traditional food products (Oil palm) to food security and income of rural communities in Southern Benin**

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**Title: 123- Contribution of traditional food products (Oil palm) to food security and income of rural communities in Southern Benin**

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**Abstract**

Traditional food systems in Sub-Saharan Africa are changing mainly because of globalized food market integration. There is a knowledge gap about the potential value of traditional foods and diets for health. A dynamics of imported new food products substituting traditional foods rich in vitamins and micronutrients is reported in various studies. However there is opportunity to valorize traditional food products. In Benin a study has been undertaken on palm oil a traditional food product and substantial source of incomes for farmers for its contribution to local economy. The objective is to analyze a performing value chain of palm oil to increase incomes of actors involved in Benin. A total of 60 producers, 30 processors, 30 sellers and 120 consumers selected according to some criteria. Value chain approach is used to identify the actors, the type of governance of the chain and the performance indicators.

Results show that actors are diversified. Research and extension services and NGOs are support agents. Oil palm sellers yield the highest net margin among actors. Good quality nuts and oil are determinant in the demand from consumers. Contracts between sellers and customers and between sellers and processors are informal and market guide the governance of the palm oil value chain. Gender relations show that men, women and youth are key actors of the chain. Women are involved in the processing and sales. The study recommends a better access to product market and the need to increase the value added at each segment of the chain.

**Keywords:** Value Chain, Traditional Foods, Palm Oil, Market Access.

## **I. Introduction**

Traditional foods of high nutritional value are increasingly abandoned in favor of foods called "imported". Micronutrients and vitamins are important for producing enzymes and hormones essential for human growth and development. Malnutrition resulting from poor availability of micronutrients and vitamins reduces mental and physical abilities, and often echoing between generations, reduces their economic potentials. Beyond the damage to human development, malnutrition has an economic cost. It is responsible for a loss of 2 to 3% of GDP in poor countries and 22% loss of annual income adults (CE, 2009). In 2008, the surge in agricultural commodity prices has affected the entire world's population and increased the vulnerability of the poorest countries. Effective interventions that can provide solutions and prevention of malnutrition are important (Shetty, 2010). According to the 2003 IFAD report the production and consumption of food with high nutritional value contribute to the improvement of the nutritional situation and create substantial income for poor households, particularly women and children in rural areas. Gender equity considering all groups of social differentiation is crucial in the management of traditional resources (UNEP, 2004). Therefore, the understanding of gender roles, decision-making and sociocultural factors that influence sustainable use and conservation of traditional resources with market integration is important. According to the recommendations of the Commission on Sustainable Agriculture and Climate Change (CCAFC) in 2011, the means of access to agricultural products and consumer habits to ensure nutritional needs are satisfied and can promote healthy diets and sustainable . The present study aims to assess the potential market access for palm oil, a traditional food rich in vitamin A and micronutrients such as iron, zinc and calcium for better utilization and improved competitiveness of traditional foods produced locally. The study also aims to assess the role of gender and decision-making processes in the value chain of palm oil including the conservation and value adding to traditional foods in a context of market integration. Palm oil the conventional oil extracted from palm fruit oil is selected as a key traditional food product consumed in Southern Benin. It is an oil "diet and a vitamin bomb" unique in vegetable oils (beta carotenes and tocotrienols) (Baco et al, 2007). It is used by women and for preparing many sauces, or directly consumed with beans, yams, cassava and gari. It is also used during rituals ceremonies.

## **II. Objectives**

The overall objective is to assess the market access for palm oil, taking into account the role of gender equity through the value chain approach in southern Benin. Specifically:

- Map the actors in the value chain
- Identify and characterize the professional groups who use and maintain palm oil
- Identify the strengths, weaknesses, opportunities and threats at every link in the chain
- Assess the performance of the chain in terms of quality and governance;

- Identify the factors that affect the type of use and access to markets for palm oil

### **III. Location study**

The study was conducted in the districts of Toffo, Allada and Bohicon (3 out of six districts) in southern Benin. Agricultural production in the district of Toffo is quite varied. It produces cereals cassava, vegetables (tomatoes, okra) and fruits (banana, citrus, and pineapple). Two main cash crops in the district meet (pineapples and palm oil). In Allada district, fruit, vegetable and coffee are dominant. Economic activities are supported by several local markets in which producers sell their products. Small food processing units are available in towns. They process gari out of cassava, 'Sodabi' (local alcoholic drink) or palm oil. Trade is a major activity for women. Bohicon district is characterized by two rainy seasons. Agriculture is extensive and yields are low..

The main criteria for villages selected are rural character, level of poverty, high prevalence of nutritional problems and market access.

### **IV. Methodology**

The study was conducted in three sequential phases: literature review, exploratory phase and surveys. The literature review helped to collect secondary data on palm oil and its nutritional, economic and social values from cropping practices to final consumption in Africa and Benin. The exploratory phase led to the identification of villages with three levels of market access from villages based on distance (0-6 km; 6-12 km; >12km), the gender groups and roles in palm oil value chain, the identification criteria of groups differentiation and pre – testing of questionnaires with direct and indirect actors in the palm oil value chains. Checklists are administered to key informants at the input suppliers, producers, processors, traders, consumers and stakeholders to support agriculture to have a thorough knowledge of the palm oil in the systems. Qualitative and quantitative information are collected individually from chain actors. The choice of actors is random among the target group having at least 2 years of experience in oil palm production. A sample of, 60 producers, 30 processors, 30 traders, 120 consumers are sampled in the three target districts.. Data entry is done using Excel, Access and SPSS (version 16) software. Value chain approach is used to analyze the distribution of value added along the chain, constraints and opportunities, strengths and risks, governance of stakeholders to enhance the palm oil value chain. The Harvard analytical framework was used to analyze the data on gender role and responsibilities of women and men and groups of social differentiation, access and control over the resources in the chain.

### **V. Results and discussion**

## 1. Demographic and socio-economic characteristics

A predominance of male household (97%) is observed at the production. Women (89%) are much more represented in the processing, marketing and consumption.. The age of producers varies between 31 and 51 years and the household size varies from 6 to 9 people. Majority of producers are illiterate and have not participated in any informal instruction. Very few have achieved the primary and secondary level (Table 1). However this is not a major barrier to carry out activities related to the palm oil production. The study results showed that only 2% of producers belong to production cooperatives or associations.

Table 1: Education level of oil palm actors in 3 districts

Chain actors	Level of literacy					Total %
	None	Primary	Secondary	Vocational training	Higher education ???	
Producers	65	20	8	2	5	100
Processors	93	7	0	0	0	100
Traders	72	7	7	7	7	100
Consumers	77	12	8	2	1	100

Source : Surveys September-October, 2011.

## 2. Mapping and linkages of palm oil chain actors

Four main actors are identified in the value chain of palm oil: producers with 50% of their land cropped in palm trees, processors, traders and consumers. Other actors are research, extension, seedlings and nut suppliers for production and financial agents. There are relationships between pre-financing local traders and processors but products are not sold on credit. Producers deliver the palm nuts to processors with or without pre-financing. Financial support services provide credits within the chain through local merchants. Pre-financing exists between processors and producers and between traders and processors. Associative relations are almost nonexistent for market access and bargaining power. Relations between actors of different segments of value chain are business based mainly on buying and selling with some support by indirect actors. Producers sell all their products in the village because of long distance and poor roads to urban markets. Rural traders haven't access to the urban as Cotonou and Porto Novo markets. The processors sell their products to retailers surrounding villages.

## 3. SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the palm oil value chains

The existence of market flow identified and high demand of palm oil are good opportunities for actors. However, the threats of climate change, the weaknesses through unavailability of fertilizers and lack of credit scheme are majors constraints for producers to supply products to meet the increasing demand from consumers. The ranking of constraints at the consumer

level showed that fixed sale points is a major impediment to access palm oil (Table 2). Accessibility and availability of palm oil promote the consumption.

Table 2: Ranking of constraints of oil palm consumers

Contraints	Price fluctuation	Poor quality	Distance to place of sale
Average rank	1,36	1,90	2,73
Kendall's coefficient	W = 0,48 ; Signifiant model : 1%		

Source: Survey September-October, 20.....

#### 4. Labor division of oil palm value chain activities related to gender

The labor division shows the participation of men in the palm nuts production. Women participate weakly to cleaning plots, collecting nuts after harvest, looking for clients and selling palm nuts. Over 60% of women are involved in pitting, sorting, preparation, pressing nuts and decanting oil palm in the processing activities. Girls are involved in all stages of processing. Boys participate in the pitting of palm nuts. Main activities related to oil marketing are entirely carried out by women. However, the loading and unloading of oil drums are carried-out by men (Table 3). Cooking and food preparation are done by women.

Table 3: Labor division of trading activities related to gender

Activities	Mens	Women	Youth	Time spent/day
Bottling	-	+++	+++	2h
Marketing	-	+++	+++	5h
Sale	-	+++	+++	5h
Loading/unloading containers	+	+++	+++	2h

+ : 0-30% ; ++ : 31-60% ; > 60% : +++

Source : Surveys, September-October, 2011

#### 5. Access and control profiles of trading resources

Women traders have access to palm oil markets. They have access to information on the oil supply, prices and suppliers, credit and transportation. Marketing resources are controlled by both men and women. Traders are more credible with banks because the trade is not a seasonal activity like processing. Processors do not have access to information related to training on improved methods of processing, oil quality, marketing and sales, and organizations. The main channels of information used are radio, "mouth to ears" and meetings under "palaver tree ". The use of mobile phone in business is not reported by the various actors. The capacity building of stakeholders on communication tools is very important.

#### 6. Performance of oil palm value chain

#### a. Benefice/Cost of oil value chain actors

Actors in the value chain get a positive net margin of production activity palm oil. The net income (NI) is higher among traders followed by processors and producers (table 4). Among traders retailers make a higher Net Income per year.. However wholesalers make more income by selling large quantities of oil.

Table 4: Benefice and Cost Analysis

Designation	Producers	Processors	Retailers	Semi-wholesalers	Wholesalers
Total Costs/kg	84	114	767	565	494
Net Income	10	16	90	32	39

Source : Surveys. September-October, 2011.

#### b. Preferences of quality of consumers related to access to market level

Color, smell and taste are the three main criteria of choice for good quality oil (table 5). Red color is preferred by most consumers. Attributes such as texture and fluidity are less cited by consumers. Three criteria are consistent with the level of access to the market. This means that proximity to markets allows the consumer to meet their demand because they have several opportunities to exchange with suppliers through crowded markets.

Table 5: Characteristics of quality demanded by consumers

Characteristics of quality	Access to market 1	Access to market 2	Access to market 3	Total (N)
Color	13	10	6	29
Fludity	1	2	1	4
Smell	11	10	8	28
Taste	10	8	6	23
Texture	8	7	1	15
<b>Total</b>	42	36	21	100

Source : Surveys. September-October 2011.

Legend : Access to market 1= distance market 0=6 km

Access to market 2= distance market 6-12 km



Access to market 3=distance market >12km

## 7. Governance of oil palm value chain

Governance of the value chain is analyzed usually through regulatory mechanisms, monitoring standards of the oil quality through checking measurement instruments, pricing, taxes and subsidies, regulations and trust between actors of the chain. In the palm oil value chain in southern Benin there is almost no system of inspection of the oil quality sold by processors and traders. Systems of sanctions and penalties for poor quality do not exist except by the market itself through consumers who may discount the price paid for poor quality oil. There are no regulatory agencies for quality control of nuts sold.

The majority (88%) of the traders pay tax in the formal market places (table 6). The frequency of payment of taxes is linked to market days (each 5 days). These taxes are mostly for the town hall and sometimes the market committee. Customers select producers or sellers on the basis of informal contracts and compliance with certain quality attributes. .

Table 6: Governance of Palm oil value chain

Mode	Producers	Processors	Traders	Consumers
Existence of sales contract	8%	43%	25%	0%
Product control	0%	0%	0%	0%
Price bargaining	100%	100%	100%	100%

Source: Surveys. September-October, 2011.

## 8. Access to information in the chain

Key information on the production through training come from input suppliers (palm seedlings, fertilizers) and producer organizations. Producers need information about markets locations, availability and flows of nuts, prices and demand (availability of customers). However, they have limited access to information on training opportunities, bodies of producers and suppliers of palm seedlings selected. One or two approved suppliers of seedlings are available by districts. Therefore they use natural palm seedlings available locally. The types of information needed for processors are the information related to the availability of raw materials, the price of nuts, the skills of organizations and bargaining for better prices. Access to information related to the training and organization remains low for oil palm traders. Consumers have easy access to the information on the sale locations and prices of the oil (table 7).

Table 7: Access to information by consumers in the chain

Information	Access	No access
Place of purchase	99	1
Supplier	100	0
Purchasing price	100	0

Source: Surveys September-October, 2011

## VI. Conclusion

The value chain of palm oil in southern Benin is weak and need to be organized and developed. Contracts of sale are mostly informal. Access to training and credit, monitoring of price systems and information on supply and demand are key factors to support the value chain. Per unit transportation cost, oil quality and attributes of products demanded by consumers are the factors that determine market access.

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