



**JOINT FAO/WHO FOOD STANDARDS PROGRAMME
FAO/WHO COORDINATING COMMITTEE FOR AFRICA**

**Twenty-first Session
Yaoundé Cameroon 27 – 30 January 2015**

DISCUSSION PAPER ON THE DEVELOPMENT OF REGIONAL STANDARDS

(Prepared by Botswana)

Introduction

1. During the twentieth Session of the FAO/WHO Coordinating Committee for Africa held in Yaoundé, Cameroon from 29th January to 1st February 2013, Cameroon presented a discussion paper on the elaboration of regional standards in Africa that highlighted the fact that there were many food products produced in Africa that were likely to be traded intra-regionally or internationally and for which regional or international standards could be developed.
2. The paper proposed the establishment of an electronic Working Group (eWG) to identify products from the region suitable for Codex international or regional standards and to rank the identified products in order of priority.
3. The CCAFRICA agreed to establish an electronic Working Group led by **Botswana** and **Côte d'Ivoire** and working in English and French to identify and rank regional products suitable for a Codex standard (regional or international) for discussion at the next session of the Committee.

Electronic Working Group (eWG)

4. The following CCAFRICA member countries registered for the eWG: South Africa, Lesotho, Malawi, Kenya, Burkina Faso, Mozambique, Tanzania, Zambia, Sierra Leone, Sao Tome and Principe, Guinea, Congo, Burundi, Gambia, Mauritius, Senegal, Cameroon, Comoros, Côte d'Ivoire, Botswana, Mali, Madagascar, Togo, Seychelles, Uganda, Guinea Bissau, Angola, Central Africa Republic, Gabon, Ethiopia, Zimbabwe, Swaziland, Cape Verde, Benin and DRC.
5. The eWG was divided into 6 subgroups, each subgroup come up with its priority list of food items as follows:
 - a) **Foods identified by Subgroup One:** Fortification standards of wheat flour, maize meal, edible oils and sugar, cassava leaves and dried meat.
 - b) **Foods identified by Subgroup two:** moringa, silvercyprienie, sheanuts, baobab fruits, coffee beans, table eggs, fresh tamarinds.
 - c) **Foods identified by subgroup three:** Peanut paste, sweet potato, dried beef dried spices, dried kale, chicken sausage, individual quick frozen poultry, mechanically deboned meat, caffeine beverages (sport and energy drinks).
 - d) **Foods identified by Subgroup four:** Banana plantae, beurre de karate, feuilles de baobab, viande sechee, soumbala, feuilles de gnetum africano, batons de manioc, fruits de baobab and bisaplosei.
 - e) **Foods identified by subgroup five:** Beurre de karate, huile de palme, huile de palmist, batons de manioc and feuilles de gnetum.
 - f) **Foods identified by subgroup six:** Batons de manioc, safou, graines de ricinodendron, beurre de karate, feuilles de baobab, feuilles de manioc, atieke, pates de grains de courges, jus de bisap, jus de tamarinde, feuilles de gnetum, graines de soumbala, poudre de gombo, viande sechee and amandes mangues sauvages.

Priority commodities

6. From the commodities identified by the 6 subgroups above, the eWG identified 5 commodities that were common in at least two subgroups and ranked them in order of priority as follows:
 - 1) Dried meat, Kilichi

- 2) Baobab (fruits)
- 3) Leaves from GnetumAfricanum (Eru)
- 4) Karite Butter
- 5) Manioc(batons)

7. The following countries offered to prepare project documents (attached as Appendices to this report) in respect of the five identified areas above:

- 1) Botswana – Dried meat ;
- 6) Burkina Faso – Baobab (fruits)¹;
- 2) Cameroon - Manioc(batons);
- 3) Mali - Karite Butter and
- 4) Cameroon - Leaves from GnetumAfricanum (Eru).

Recommendations

8. The Committee is invited to consider the five (5) prioritized commodities along with the project proposals.

9. In relation to other identified commodities that were identified by the eWG, but not prioritised, the Committee could consider maintaining a list of the commodities for review at future sessions of CCAFRICA.

¹ The project document will be submitted separately to CCAFRICA21

APPENDIX I

DRAFT PROJECT DOCUMENT FOR DRIED MEAT STANDARD

1. Background

Meat is a food item which spoils easily unless kept at low temperatures. Drying of meat with or without the addition of salt is the oldest traditional method of meat preservation in sub-tropical and tropical countries. Processes for a number of traditional local methods have been developed over hundreds of years, but there is no consistent technique which would ensure that the product will always be safe and of an acceptable quality. The preparation of dried meat products differ from one region to another. The following are a few examples of dried meat products:

- a) **Biltong** is a variety of dried, cured meat that originated in Southern Africa. Various types of meat are used to produce it, ranging from beef and game meats to fillets of ostrich from commercial farms. It is typically made from raw fillets of meat cut into strips spiced, dried meats.
- b) **Kilishi** is a version of biltong. It is a delicacy in Hausaland in Nigeria, made from beef, sheep or goat meat after the removal of bone.
- c) **Odka** is sun-dried meat product made of lean beef and is of major importance to nomads in Somalia. In the face of perennial incidence of drought in the Horn of Africa, odka has become important since it is often prepared from drought-stricken livestock.
- d) **Qwanta** is produced in Ethiopia and other East African countries from lean muscles of beef which are further sliced into long strips hung in the kitchen to dry. Prior to drying, the strips are coated with a sauce containing a mixture of salt and spices.
- e) **Pastirma** is produced in Turkey, Egypt and Armenia. It is a salted and dried beef from not too young animals. In some areas camel meat is also used.
- f) **Charque** is produced in Brazil and other South American Countries from flat pieces of beef preserved by salting and drying. Before initiating drying, the meat pieces are subjected to rapid washing to remove excess salt adhering to the surface.
- g) **Jerky**: jerky was first produced in North America by native Indians who smoked meat over fires and sun dried it to give a characteristic smoky flavor.

2. The purpose and scope of the standard

The purpose of this work is to establish a worldwide standard for dried products with the aim of protecting the consumers' health and promoting regional and international trade of dried meat. The scope of the standard is dried meat products. Dried meat can be defined as strips from drying meat (e.g. beef) free from bones, cartilage and tendons as well as free from fat as far as possible and packed in a suitable container.

3. Its relevance and timeliness

4. Despite the recent advances in refrigeration and packaging technology, more traditional methods of meat preservation, such as salting and drying, continue to play an important role in the meat marketing structure of many countries worldwide. Dried meat products are prepared in many areas of the world. They are globally traded under different names as shown above and not limited to any particular region and therefore justifies elaboration of an international standard. Surveys of commercial dried meat products have shown the presence of pathogens such as *Enterobacteriaceae*, *Staphylococci* and *Salmonella* in some export consignments.
5. Most nations have regulations pertaining to the production of dried meat products. There are strict requirements to ensure safe and wholesome production of dried meat products. Factories are required to have inspectors and sanitation plans. In the United States for instance, the U.S. Department of Agriculture is responsible for that oversight. Many European Union countries presently prohibit the importation of meat products, including dried meat, without additional and extensive customs documentation, and further inspections.
6. It is therefore critical to establish a Codex standard covering the safety, quality, hygiene and labelling of dried meat products in order to have a reference that has been internationally agreed by consensus between the trading countries.

4. Main aspects to be covered

The most relevant provisions which may be considered are related to:

- a) Definitions

b) Requirements:

- Raw Material specifications
- Processing procedures
- Products specifications including categories to classify meat products
- Establish the tolerance limits for contaminants and micro-organisms

c) Methods of sampling, inspection and testing

d) Packaging, labelling, transportation and storage.

7. Assessment against the Criteria for the Establishment of Work Priorities

General criterion: The elaboration of the standard for dried meat products would protect the health of the consumers and would be beneficial for developing countries in particular, because developing countries are the major producers, exporters and consumers of dried meat products. It is necessary that the quality of products meets consumer needs and minimum requirements of food safety.

(a) Volume of production and consumption in individual countries and volume and pattern of trade between countries: According to FAO data, the production and trade at a world-wide level has been variable.

(b) Diversification of national legislation and apparent resultant or potential impediments to international trade: Due to lack of international standard for dried meat products, international trade has been widely affected. Importers prefer to import food products based on Codex standards. Therefore, the new work would provide internationally recognized specific standards in order to enhance international trade and to accommodate the importer's requirements.

(c) International or regional market potential: The import of dried meat products by most countries is increasing. Dried meat products come from different animal species, with different textures and flavours and packaging to meet different markets. Therefore, development of standards for dried meat products will not only enhance trade, but also quality and safety.

(d) Amenability of commodity to standardization: The availability of national standards for different types of dried meat products will lead to adequate parameters for the Codex standard of the product. A single standard for dried meat products may cover all available products in the market traded worldwide.

(g) Work already undertaken by other international or regional organizations: There is no other international organization that has undertaken an international standard for dried meat products. However, the regional standard for dried meat was developed in 2008 by the Gulf Cooperation Council (a regional standardization organization for Gulf states). National standards, guidelines and regulations have been developed by USA, Australia, etc. FAO Animal Production and Health Technical Papers have covered some aspects of safety and quality of dried meat products. The existing regional and national standards and guidelines may be considered while developing a Codex standard for dried meat products.

5. Relevance to the Codex Strategic Objectives

The elaboration of a Codex standard for dried meat products is in line with the Codex Strategic Plan 2014-2019 to promote the application of Codex standards by countries in their national legislation and to facilitate international trade.

6. Information on the relation between the proposal and other existing Codex documents

The proposal for elaboration of a Codex Standard for dried meat products is part of the terms of reference of the CCAFRICA.

APPENDIX II

PROJECT DOCUMENT: PROPOSED NEW ACTIVITY RELATING TO A CODEX STANDARD FOR PRODUCTS BASED ON FERMENTED CASSAVA**1. Scope of the standard**

This document recommends a regional standard for products based on fermented cassava converted into a paste and cooked in a special wrapping.

2- Purpose

The purpose of this standard is to define the identity and quality characteristics of products based on fermented cassava in regional and international trade.

3- Description of the products

The products take the form of cassava bread called “[chikwangu](#)” in the Democratic Republic of the Congo, “[ébobolo](#) and [miondo](#)” in [Cameroon](#), and “[mangbère](#)” in the [Central African Republic](#).

These products are obtained from fresh cassava that has been peeled, diced,, soaked in water to ferment then pressed and dehydrated before wrapping and cooking.

However, to improve keeping, products based on fermented cassava can be stored and transported fresh, at deep freezing or quick freezing temperatures, and can be cooked where they will be consumed.

4- Taxonomy

Two main varieties of cassava are grown:

- bitter cassava, unsuitable for human consumption unless it has been previously detoxified and its tubers have been dried and conerted into tapioca,
- sweet cassava, the roots of which can be consumed directly.

5-Chemical composition of cassava sticks

- ‡ Energy: 259 Kcal
- ‡ Carbohydrate: 59.1 g out of 100
- ‡ Fat: 1.2 g out of 100
- ‡ Protein: 3.9 g out of 100

6- Main aspects to be covered

The standard will cover the identity and quality characteristics of a product based on fermented cassava which must depend on control of processing. For consumers, quality is primarily determined throughthe smell and elasticity of the product and its organoleptic properties.

The manufacturing process of the fermented cassava-based product must ensure the desired organoleptic properties.

This standard should therefore:

- Establish the minimum requirements for technological, food safety, nutritional and organoleptic aspects from the raw material to the final product.
- Define traceability provisions in identifying the final product according to its origins.
- Define standardization parameters to ensure product quality.
- Include compliance provisions for presentation of the packaged product and type of packaging employed..
- Include compliance provisions for labelling and product designation, according to the Codex General Standard for the labelling of pre-packaged foods.
- Include provisions for contaminants with reference to the Codex General Standard for contaminants and toxins in food and feed.
- Include provisions with reference to the Recommended International Code of Practice: General Principles of Food Hygiene.

7- Provisions concerning quality

The quality of products based on fermented cassava is defined as follows:

- ✦ For safety, by: the hydrogen cyanide content and the level of biological, chemical and physical contamination,
- ✦ For organoleptics, by: colour, purity, smell, taste and texture,
- ✦ For presentation, by: length and cross-section, regularity of shape, environmental impact of packaging.

Products based on fermented cassava can be divided into three categories with regard to these various parameters: "Extra", category I and category II.

8- Provisions concerning sizing

Sizing provides for three levels defined by the length and cross-section of the final product. These will be called size A, size B and size C.

9 – Tolerance provisions

Quality and size tolerances are permitted in all packaging for products that do not comply with the requirements of the indicated category.

10- Provisions concerning presentation

10.1 Presentation of ebobolo

10.2 Presentation of chikwange

10.3 Presentation of mangbèré

10.4 Presentation of miondo

10.5 Packaging provisions

11- Contaminants

- ✓ Biological contaminants: mycotoxin-releasing fungi,
- ✓ Chemical contaminants: fertilizer and pesticide residues, bisphenols, pollution, etc.
- ✓ Physical contaminants: fragments of metal, plastic and roots,
- ✓ Natural toxins: HCN (hydrogen cyanide) residues.

12 Assessment against the criteria for the establishment of work priorities

12.1 -General criterion

Consumer protection regarding implementation of health protection measures and prevention of fraudulent practices. The required quality of the product to meet consumer' needs and minimum quality and food safety requirements. The elaboration of a standard in preparing a paste based on fermented cassava will be very useful for developing countries because they are major producers and exporters, as well as consumers of the commodity.

12.2- Criteria applicable to products

a) **Volume of production and consumption in individual countries and volume and pattern of trade between countries:**

Cassava (*Manihot Esculenta crantz*) and its products have a significant role in the diet of the Cameroonian population. IFAD and the National Program of Roots and Tubers' Development (PNDRT) have indicated that they account for 43% of financial exchange volumes in the roots and tubers market (IFAD, 2002) and 10% of total consumption expenditure (PNDRT, 2006). However, traditional processing and storage methods are still widely employed. Cassava has 5 main products intended for human consumption with significant market demand, including:

- 286,000 tonnes for cassava sticks;
- 102,141.6 tonnes for Fufu;
- 49,028 tonnes for Gari;
- 20,020 tonnes for Waterfufu.

b) National and sub-regional production and consumption volume

The domestic supply of cassava sticks is **90,494 tonnes** for a value of **33,935,230,046 XAF**. Survey data on exports of cassava sticks obtained from plant protection stations at Douala and Yaoundé airports, Douala port and the border market at Kyé-osi (sub-regional trade for Central Africa) indicated that approximately **2,800 tonnes** of cassava sticks were exported in 2012. Overall Cameroonian market demand for cassava sticks is estimated at **280,000 tonnes** for a value of **107,248,758,750 XAF**.

Fermented cassava paste is by far the most widely available on the market and is consumed by (53%) of households in Pointe Noire, while chikwangué is consumed by 64% of households in Brazzaville (*Study on the commercialization of Agriculture and domestic private sector investment: cassava in the Republic of Congo Final Report 1999*).

c) Diversification of legislation

There is no regional harmonized legislation for foods in general, or for fermented cassava paste in particular.

d) – International market potential

Cassava is one of the principal amylose root and tuber plants grown in Cameroon and around the world. Africa is the leading world cassava producer, with an annual production of 110 million tonnes, followed by Asia (55 million tonnes) and Latin American and the Caribbean (37 million tonnes). Cassava farming employs approximately 583,926 producers with an average production of 4,204,988 tonnes and 349 billion XAF in revenue (FAO-MINADER [Ministries of Agriculture and Rural Development], 2014). Cassava is also industrially processed into various cassava products. Outside the African Region, particularly the Central African Sub-region where fermented cassava-based products are traded, cassava sticks, chikwangué and mangbéré are in great demand in niche markets in African communities throughout Europe, Asia and America.

e) – Amenability of commodity regarding standardization

The cultivars employed, the manufacturing process of fermented cassava-based products, the presentations and provisions concerning quality and tolerances lend themselves well to standardization of the commodity.

The standard should include definitions and descriptions of the commodity and the following quality parameters: category, smell, taste, colour, acidity, fibre content, foreign matter, contaminants and presentation.

f) Existence of current or draft general standards covering the main issues of food safety and fair trading

- ✓ Standard for sweet cassava (CODEX STAN 238-2003)
- ✓ Standard for bitter cassava (CODEX STAN 300-2010)
- ✓ General standards for the labelling of prepackaged foods (CODEX STAN 1 -1985)
- ✓ General principles of food hygiene (CAC/RCP 1- 1969)

g) Number of commodities for which standards would need to be elaborated.

- The fermented cassava-based product

13- Relevance to the Codex Strategic Objectives

The work undertaken to elaborate this regional standard is in line with Strategic Goals 1 and 3 of the Codex Strategic Plan.

Strategic Goal 1: Establish international food standards that address current and emerging food issues

Strategic Goal 3: Facilitate the effective participation of all Codex members

14- Information on the relation between the proposal and other existing Codex documents

Provisions concerning quality, size, tolerance and the presentation of Codex standards for sweet and bitter cassava will assist in defining similar provisions for fermented cassava-based products.

15- Determination of the need for and availability of scientific opinions

The JECFA would need to determine the ADI for the hydrogen cyanide content.

16 - Identification of any need for technical contributions to a standard from external organizations for programming purposes

No requirement identified to date.

APPENDIX III

PROJECT DOCUMENT FOR ELABORATING A REGIONAL/AFRICA STANDARD FOR SHEA BUTTER

This project document was prepared according to the Procedural Manual of the Codex Alimentarius Commission (twenty-first edition, section II: Procedure for the elaboration of Codex standards and related texts, Part 2: Critical Review – Proposals to undertake new work or to revise a standard) (1).

1. Purpose and scope of the standard

The purpose of the proposal is to establish a regional standard for shea butter, taking into account composition and quality factors.

The elaboration of a regional standard for shea butter complies with the purposes of the Codex (Protecting the health of consumers and ensuring fair practices in the food trade by developing international and regional standards).

The scope of this Regional Standard for shea butter will include composition and quality factors.

2. Its relevance and timelines

The world production of shea butter was estimated to be 176,000 tonnes in 2010, primarily by seventeen African countries (Benin, Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Gambia, Ghana, Guinea, Mali, Niger, Nigeria, Uganda, Senegal, Sudan, Sudan, Chad, Togo). Shea butter production has increased by 154% in a forty-year timeframe (from 30,000 tonnes to 176,000 tonnes) (2).

Most of the shea butter produced in the world is traded between African countries. This production, called subsistence consumption, is not included in official statistics (2).

In addition to its traditional use in African cooking, shea butter is used to prepare numerous agri-food products (chocolate, chocolate bars, sweets, vegetable oils and margarines, etc.).

Given the increase in shea butter production in Africa and the regional and international development of shea butter trade, it has become necessary to elaborate a regional standard for this commodity.

3. Main aspects to be covered

The proposed new work to elaborate the regional standard for shea butter will be carried out according to the Strategic Plan of existing Codex standards for fats and oils. It will contain the following parts:

- Scope
- Description
- Essential composition and quality factors
- Food additives
 - Contaminants
 - Hygiene
 - Labelling
 - Methods of analysis and sampling
 - Tables indicating the fatty acid composition of the oils described.

4. Criteria for the establishment of work priorities:

The proposed new work to elaborate a standard for shea butter is in accordance with the Codex Criteria (Twenty-first Edition of the Procedural Manual) for the establishment of work priorities.

- a) **Volume of production and consumption in individual countries and volume and pattern of trade between countries.**

World shea butter production was estimated at 176,000 tonnes in 2010. Nigeria is the largest producer with 69.8% of world production, followed by Ghana (9.6%), Mali (9.2%) and Burkina Faso (7.3%). (2)

In Africa, shea butter is used as fat for cooking or frying food, primarily in rural areas, which accounts for 80 percent of total consumption.

In 2006, shea butter demand in Europe was estimated to be 60,000 tonnes (95% in the chocolate industry). This demand is expected to increase in the chocolate industry as a result of EU directive 2000/36/EC on the addition of vegetable fats other than cocoa to include up to a maximum of 5% in chocolate. (3)

b) Diversification of national legislation and apparent or potential impediments to international trade.

The quality of shea butter depends on the quality of the nuts and the production method of the butter (traditional, mechanized or semi-mechanized, or industrial). There are currently no regionally or internationally-recognized quality standards for the butter.

The absence of a regional/international shea standard has resulted in the proliferation of private standards and legislative/regulatory texts in the Africa zone which, in turn, has obstructed regional trade in shea butter.

The elaboration of the regional shea butter standard will contribute to the harmonization of regional legislative and regulatory texts, will assist in protecting consumers and will facilitate regional and international trade in the commodity.

c) International or regional market potential.

The majority of shea butters marketed for human consumption come from Africa.

World shea nut production increased significantly from 1960 to 2010 (169,000 tonnes versus 718,000 tonnes). This production increase is primarily the result of an increase in surface area from 85,000 hectares in 1961 to 516,760 hectares in 2010 (2).

Shea butter is primarily an African product.

World shea butter production has increased from 30,000 tonnes to 176,000 tonnes in a forty-year timespan..

Most of the shea butter produced in Africa is consumed within the Region.

d) Amenability of commodity regarding standardization.

A shea butter regional standard can now be elaborated by the CCFO.

e) Coverage of the main consumer protection and trade issues by existing or proposed general standards.

There is currently no regional or international shea butter standard. It has become necessary to elaborate a regional standard for shea butter in protecting consumer health and in ensuring fair international trade practices..

f) Number of commodities which would require separate standards indicating whether raw, semi-processed or processed.

This work will concern the elaboration of a regional standard for unrefined shea butter.

g) Work already undertaken by other international organizations and/or work suggested by the relevant international intergovernmental organization(s).

The absence of a regional/international standard for shea butter has led to the elaboration of the EMUWA Sstandard for Unrefined Shea Butter and the draft ECOWAS Code of Practice for Walnuts, Almonds and Unrefined Shea Butter.

5. Relevance to the Codex Strategic Objectives

The elaboration of a regional standard for shea butter is in keeping with: I) Article 1 a) the statutes of the Codex Alimentarius Commission (protecting the health of consumers and ensuring fair practices in the food trade); ii) Points (c) and (d) of Section (v) of the Procedural Manual of the CAC (Subsidiary Bodies of the CAC, mandate of CCAFRICA); iii) Strategic Goal No 1 of Strategic Plan 2014-2019 of the Codex Alimentarius Commission (Establish international food standards that address current and emerging food issues) (4).

6. Information on the relation between the proposal and other existing Codex documents

Codex reference standards:

- Standard for edible fats and oils not covered by individual standards (CODEX STAN 19-1981);
- Standard for named animal fats (CODEX STAN 211-1999);
- Code of Practice for the storage and transport of edible fats and oils in bulk (CAC/RCP 36-1987).

7. Identification of any requirement for and availability of expert scientific advice

Regional and international experts will be requested to advise on the elaboration of the draft standard.

8. Identification of any need for technical input to the standard from external bodies for programming purposes

Recognized international experts and organizations will be requested to advise on methods of analysis and sampling.

9. The proposed timeline for completion of the new work, including the starting date, the proposed date for adoption at Step 5, and the proposed date for adoption by the Commission; the timeframe for developing a standard should not normally exceed five years

The Codex Committee on Fats and Oils should examine whether the new work should be undertaken through the uniform procedure or the accelerated procedure.

Because this Committee only meets every other year, Mali proposes that the Codex Standard for Shea Butter be elaborated through the accelerated procedure.

10. Proposed timeline

Elaboration of the standard will take place according to the following timeline:

PROCEDURE	DATE
Review of new work by the FAO/WHO Coordinating Committee for Africa (CCAFRICA) at its 21st Session	2015
Review of new work by the Commission at its 38th Session	2015
Review of the Draft Standard for Shea Butter at Step 4 by the FAO/WHO Coordinating Committee for Africa (CCAFRICA) at its 22nd Session.	2017
Otherwise, review of the Draft Standard at Step 5 (or 5/8) by the FAO/WHO Coordinating Committee for Africa (CCAFRICA) at its 23rd Session.	2019
Review for adoption at Step 8 at the 39th Session of the Commission.	2019

10. Bibliography:

10.1. Codex Procedural Manual – Twenty-first Edition (1);

10.2. CNUCED - 2008, Production mondiale des noix, amandes et beurre de karité;

10.3. FAOSTAT 2008- Production et consommation du beurre de karité;

10.4. 2014-2019 Strategic Plan of the Codex Alimentarius Commission.

APPENDIX IV

**PROJECT DOCUMENT: PROPOSED NEW ACTIVITY RELATING TO A CODEX STANDARD FOR
GNETUM Spp. LEAVES**

1. Scope of the standard

This document recommends a regional standard for *Gnetum spp.* leaves, also known as “*eru*”, “*okok*”, “*fumbua*” and “*okasi*”.

2- Purpose

The purpose of this standard is to define the identity and quality characteristics of *Gnetum* leaves in regional and international trade.

3- Description of the product

Gnetum spp. is a semi-wild climber in equatorial bush fallows. The species most commonly found in Africa are *Gnetum africanum* and *Gnetum buchholzianum*. These two tropical forest species of *Gnetum* are morphologically similar, but have slight differences in leaf shape.

They are creeping or climbing vines with often knotted and branched stems, without resinous channels. They are dioecious. The leaves are opposed, with a wide, oval or elliptical blade (Flore du Congo Belge et du Ruanda-Urundi, 1948).

However, it is not easy to distinguish between the two species by their vegetative growth. They can be identified with certainty only through close examination of their reproductive organs (inflorescence) and anatomical structure. In the male inflorescence of *Gnetum africanum*, the flowers are packed together and distributed regularly, and the internode diameter of the male panicle is small and approximately the same throughout the course of its length. In the male inflorescence of *Gnetum buchholzianum*, on the other hand, the flowers are more separated on one panicle and the internode diameter differs substantially between the base and the tip (Stevels, 1990 referred to by Mialoundama, 1999). Peasants are often oblivious to these differences when picking the leaves.

4- Taxonomy

Gnetum spp. is a lianescent shrub belonging to the class Gnetophyta, subphylum Gymnosperms, where it is positioned between the Gymnosperms and the Angiosperms. *Gnetum* belongs to the *Gnetaceae* family which contains a single genus with thirty or so species. It is located essentially in the tropical and equatorial regions of Africa, America and Asia, where it basically grows as a climber, and rarely as a shrub or tree. Of the approximately thirty known species of *Gnetum*, only two (*Gnetum africanum* and *Gnetum buchholzianum*) grow wild in tropical forests from Nigeria to Angola, across Cameroon, Gabon, Central African Republic, Congo and the Democratic Republic of Congo.

These plants are dioecious: the male flowers produce catkins composed of stamens, and the female flowers produce catkins composed of ovules barely protected by an envelope (Letouzey 1986).

5-Chemical composition of *Gnetum* leaves (on 100 g DM)

According to Mialoundama (2000), *Gnetum africanum* leaves from Congo have the following composition **per 100 g of dry matter**: 70 g of carbohydrates including 40 g of cellulose, **16.5 g of proteins**, 6 g of fats and 7 g of ash.

Elements	<i>Gnetum Africanum</i>	<i>Gnetum Buchholzianum</i>
Manganese (Mn)	243.1	231.4
Iron (Fe)	162.6	168.6
Aluminium (Al)	133.5	106.5
Boron (B)	24.4	22.9
Copper (Cu)	12.5	3.4
Zinc (Zn)	24.1	12.1
Potassium (K)	0.978	0.544

Phosphorus (P)	0.167	0.544
Calcium (Ca)	0.830	0.108
Magnesium (Mg)	0.395	0.334
Sodium (Na)	0.157	0.184
Chlorine (Cl)	0.384	0.016
Sulphur (S)	0.381	0.030
Silicon dioxide (SiO ₂)	0.169	0.131

Okok contains all eight essential amino acids. The essential amino acid content per 100 g of dry matter is: 0.7 g of isoleucine, 1.4 g of leucine, 0.8 g of lysine, 0.2 g of methionine, 1.0 g of phenylalanine, 0.8 g of threonine, 0.2 g of tryptophan and 0.9 g of valine.

6- Main aspects to be covered

The standard will cover the identity and quality characteristics from the food safety, water content, colour, ash, foreign matter and labelling perspectives in obtaining a product with the desired characteristics and in protecting consumer health.

This standard should therefore:

- Establish the minimum requirements applying to *Gnetum spp.* leaves, including the quality parameters and other requirements;
- Determine quality tolerances;
- Include compliance provisions regarding packing and the type of packaging used;
- Include compliance provisions regarding labelling and product designation according to the *General Standard for the labelling of prepackaged foods*;
- Include provisions for contaminants in keeping with the *General Standard for contaminants and toxins in food and feed*;
- Include provisions in keeping with the *General Principles of Food Hygiene*.

7- Provisions concerning quality

The quality of *Gnetum spp.* leaves is defined by:

- Colour;
- Taste;
- Presence of foreign matter;
- Biological and chemical contaminants;
- Water content.

In countries in the Congo basin, *Gnetum* is distinguished through its provenance. Thus *Gnetum* (Fumbwa) from Mbandaka (Equateur) and Bandundu is highly valued by DRC consumers, whereas *Gnetum* from Kananga and Kisangani are considered to have a bitter taste.

In connection with the above-noted parameters, *Gnetum spp.* leaves can be classified in three categories:

- "Extra";
- Category I; and
- Category II.

8- Provisions concerning presentation

8.1- The age of the leaves

According to the desired culinary preparation or technological use, market demand for *Gnetum spp.* leaves affects either young or mature leaves.

8.2- Sales units

Gnetum leaves are presented either as a leaf bundle or as chopped leaves. In Congo, harvested *Gnetum* is packaged in small packs of about 260 g. These packs are stored in a damp place, notably a hut with an earth floor and a straw roof, or kept under a tree.

The leaves, cut into thin strips, are sold in all European cities surveyed under various trade names. In France, Belgium and Portugal, they are sold under the name of fumbua, while in London and Madrid, they are sold under the name of okasi or eru.

Fumbua, okasi or eru is imported from four countries (Ghana, Nigeria, Cameroon and DRC) and is sold in three forms: fresh fumbua, dried fumbua and frozen fumbua. The first of these are sold in all cities, while those with more “commercial” packaging are only sold in London and Madrid.

8.3 Provisions concerning packaging

The fresh product is sold loose, while the dried and frozen product is sold packaged. Two types of packaging are used for the dried product: unlabelled bags tied manually and cellophane bags sealed with a label and marketing information (manufacturer’s name, weight, product composition).

Improvement in packaging has allowed okasi or fumbua to reach supermarket shelves in India and Pakistan.

9- Provisions concerning quality tolerances

Quality tolerances are permitted in all packaging for products not complying with the requirements of the category stated.

10- Contaminants

- ✓ Biological contaminants: mycotoxin-releasing fungi and other micro-organisms;
- ✓ Chemical contaminants: fertilizer and pesticide residues, bisphenols, pollution, etc.
- ✓ Physical contaminants: fragments of metal, plastic and roots, dead leaves, and insect and mollusc fragments.

11- Assessment against criteria in establishing work priorities

11.1- General criterion

Consumer protection regarding health protection measures and prevention of fraudulent practices. The required quality of the product in order to meet consumer needs and minimum quality and food safety requirements. Elaboration of a standard for *Gnetum spp.* will be very useful for producer countries because of its trade potential in the food, agrifood, pharmaceutical and energy sectors.

11.2- Criteria applicable to products

h) Volume of production and consumption in individual countries and volume and pattern of trade between countries

Gnetum spp. leaves are highly prized in Nigeria and Central Africa. In Congo, **fumbua** is the second most consumed leaf vegetable after **saka saka** (Toreilles, 1991). Discovered by Welwitsh, the climber still grows wild although it was first domesticated in Cameroon and Nigeria. Domestication of *Gnetum* was made possible, *inter alia*, through the work of researchers at ICRAF, IRAD and Limbe botanical gardens in Cameroon. This work was originally begun on experimental field crops in Kumba, Limbe and Batchenga in south-east and central Cameroon. Subsequent extension of results achieved to peasants should assist in reducing the anthropogenic pressure on this resource, as observed in Congo (Profizi *et al.*, 1993).

Depending on the retailers and importers, imported products are primarily marketed to Nigerians, Central Africa nationals (Central African Republic, Republic of Congo, DRC, and Cameroon),), as well as Ghana and Angola.

The potential market for **fumbua**, **eru**, **okok** and **okasi** is estimated at more than 156,341 consumers (Eurostat data, 1994), 15,868 of whom are in Belgium, 64,286 in France, 73,000 in the United Kingdom, 2,986 in Spain and 216 in Portugal.

i) National and sub-regional production and consumption volume

In Congo, *Gnetum* leaves generally come from natural forests, fallow areas and agro-forestry systems. It should, however be noted that *Gnetum africanum* and *bulchholzianum* leaves are classified according to a decreasing order of provenance: natural forest; agro-forestry system; agricultural production system; domestication.

Export data for the department of Fako, in the south-west region of Cameroon bordering Nigeria, registers 1030 tonnes from January to June. In Cameroon, *Gnetum* trade generates approximately 5.1 billion XFA, or 0.3% of domestic exports.

j) Diversification of legislation

There is no regional harmonized legislation for foods in general, and for fermented cassava paste in particular.

k) – International or regional market potential

In the Republic of Congo, as in all Congo basin countries, non-wood forest products (NWFP), particularly *Gnetum spp.*, are generally gathered by local communities and sold initially to wholesales or directly to consumers. The quantity of *Gnetum* harvested depends on orders from large town traders. When traders arrive in a given village in the Republic of Congo, they offer money to the village chief or a third party to distribute it to the best harvesters. However, some products from Nigeria often re-enter the marketing chain through wholesalers who either deliver directly and exceptionally to consumers, or to foreign markets or retailers working as vendors in urban markets who, in turn, re-sell them to consumers.

l) Amenability of commodity regarding standardization

All *Gnetum* species cultivated/domesticated in Africa lend themselves well to standardization on the basis of the quality criteria indicated under section 7. The standard should include definitions and descriptions of the products and the following quality parameters: category, taste, colour, fibre content, foreign matter, contaminants and presentation.

m) Existence of current or draft general standards covering the main issues of food safety and fair trading

- ✓ General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1 -1985);
- ✓ General Principles of Food Hygiene (CAC/RCP 1- 1969);
- ✓ *General Standard for Contaminants and Toxins in Food and Feed* (CODEX STAN 193-1995).

n) Number of commodities for which standards would need to be elaborated.

For sales units available in markets, consideration should be given to elaborating two standards, one for the leaf bundle and one for leaves cut into thin strips.

12- Relevance to the Codex Strategic Objectives

The work undertaken to elaborate this regional standard is in keeping with **Strategic Goals 1 and 3** of the Codex Alimentarius Commission Strategic Plan.

Strategic Goal 1: Establish international food standards that address current and emerging food issues.

Strategic Goal 3: Facilitate the effective participation of all Codex members

13- Information on the relation between the proposal and other existing Codex documents

There is no relation between this proposal and existing CODEX documents.

14- Determination of the need for and availability of scientific opinions

It would be desirable to undertake further analysis of bitterness of some *Gnetum* varieties.

15- Identification of any need for technical contributions to a standard from external organizations for programming purposes

No requirement identified to date.