CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 1 **CAC48/CRD22**

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION

Forty-eighth Session

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NEW WORK PROPOSALS FROM NIGERIA

DEVELOPMENT OF CODEX STANDARDS FOR HIGH QUALITY CASSAVA FLOUR (HQCF)

1. Background

Cassava (Manihot esculenta Crantz) is a major staple crop in many tropical and subtropical countries, serving as a key source of carbohydrates and industrial raw material. High Quality Cassava Flour (HQCF) refers to minimally processed cassava flour obtained from freshly harvested, wholesome cassava roots, produced under hygienic conditions and with minimal fermentation. Unlike traditional fermented flours, HQCF retains its neutral flavor, bright color, and functional properties suitable for both food and industrial applications.

Given the increasing global demand for gluten-free and alternative carbohydrate sources, as well as the rise in cassava-based food and non-food products, there is a growing need for internationally recognized quality and safety parameters for HQCF to facilitate fair trade, protect consumers, and enhance market access.

2. Rationale for New Work Standards for High Quality Cassava Flour (HQCF)

2.1 Global Trade and Market Expansion:

Cassava and its derived products are increasingly traded across regions, particularly in Africa, Asia, and Latin America. However, the absence of a Codex standard for HQCF limits harmonization, impedes international trade, and increases the risk of unfair practices.

2.1.1 Major Exporters (2023 Data)

Based on recent trade data for cassava flour (HS Code 110620):

S/N	Country	Export Value (USD)	Key Trend
1.	**Thailand**	$31.3 Million	Historically a major player, but recent year-over-year value change was negative.
2.	**Peru**	$25.2 Million	Showing strong growth in export value over recent years.
3.	**United States**	$11.7 Million	Acts as an exporter, likely including re-export and value-added product export.
4.	**Honduras**	$8.1 Million	Exhibiting substantial recent growth.
5.	**Brazil**	$7.9 Million	A major global cassava producer and consistent exporter.
6.	**Ivory Coast (Côte d'Ivoire)**	$6.6 Million	Strong recent growth in export value

2.1.2 Major Importers (2023 Data)

The top importing countries for cassava flour (HS Code 110620) by value:

S/N	**Country**	**Import Value (USD)**	**Key Trend**
1.	**Nigeria**	$38.1 Million	Experienced a dramatic increase in imports in recent years
2.	**United States**	$30.1 Million	Driven by high consumer demand for gluten-free and clean-label alternatives.
3.	**Canada**	$12.3 Million	Consistent growth in demand.
4.	**Malaysia**	$10.6 Million	Significant importer, likely for both food and industrial applications.
5.	**United Kingdom**	$4.1 Million	Demand driven by European gluten-free market trends

2.2 Food Safety Concerns:

Cassava naturally contains cyanogenic glycosides, which can release hydrogen cyanide if not properly processed. Standardizing production and quality criteria will help ensure consumer safety.

2.3 Industrial and Nutritional Importance:

HQCF is used in baked products, snacks, pasta, confectionery, and as a substitute for wheat flour, supporting gluten-free diets. It also contributes to import substitution and food security in developing economies.

2.4 Alignment with SDGs and Codex Mandate:

This work supports the Codex mandate to protect consumer health and ensure fair practices in food trade, and aligns with the UN Sustainable Development Goals (SDGs 2, 3, 8, and 12).

3. Scope of the Proposed Standard

The standard will applicale to High Quality Cassava Flour obtained from fresh, healthy cassava roots, processed under hygienic conditions, intended for human consumption.

It will not cover fermented cassava products such as gari, fufu, or lafun.

The standard will specify:

- Product definition and description
- Essential composition and quality factors
- Food additives and processing aids
- Contaminants (including cyanogenic glycosides, heavy metals, mycotoxins)
- Hygiene and handling requirements
- Labelling provisions
- Methods of analysis and sampling

4. Relevance and Impacts of the new work

- **For Consumers:** Protection from substandard and unsafe cassava flours containing excessive cyanide or impurities.
- **For Producers and Traders:** Harmonized parameters to facilitate fair international trade.
- **For Governments:** Strengthened regulatory oversight and food control systems.
- **For Smallholders and SMEs:** Access to export markets and improved livelihoods.

5. Relationship to Existing Codex Texts

While Codex has standards for flours and starches, no specific standard addresses HQCF.

Relevant texts include:

- Codex Stan 152-1985 (Maize Flour and Maize Meal)
- Codex Stan 173-1989 (Wheat Flour)

- Codex Stan 145-1985 (Edible Cassava Flour – Fermented Products)

This proposal complements these by establishing parameters for non-fermented cassava flour.

6. Assessment against Codex Criteria for New Work

Criteria	Remarks
Relevance	Global importance of cassava; need for harmonized safety and quality standards.
Scope	Well defined, limited to HQCF for human consumption.
Impact	Positive trade and public health implications.
Timeliness	High; increasing demand for gluten-free alternatives and industrial applications.
Availability of Information	Data available from FAO, IITA, IFAD, and national standard bodies.
Support	Strong interest expressed by African, Asian, and Latin American member states.

7. Work Plan and Timetable

Phase	Activity	Responsible	Timeline
1	Establishment of Electronic Working Group (EWG)	Codex Committee on Cereals, Pulses and Legumes (CCCPL) / Codex Secretariat	Year 1
2	Drafting of standard	EWG (Nigeria lead, with support from IITA, Ghana, Brazil, and Thailand)	Year 1–2
3	Circulation of draft for member comments	Codex Secretariat	Year 2
4	Consideration and endorsement by relevant committees	CCCPL, CCFA, CCFL, CCFH	Year 2–3
5	Adoption by CAC	Codex Alimentarius Commission	Year 3

8. Resource Implications

The new work on standards for HQCF will be carried out primarily through existing Codex structures and electronic means. Technical support may be sought from FAO/WHO, IITA, and regional standardization organizations (ARSO, SMIIC, etc.). Member countries may voluntarily contribute scientific data and laboratory analyses.

9. Potential Challenges

Potential challenges that the new work might encounter includes:

- Existence of diverse cassava species and varieties requiring flexible specifications
- Variations in traditional processing methods
- Need to accommodate small-scale producers
- Limited laboratory capacity in some producing countries
- Ensuring specifications on the new standard is practical and achievable

10. Recommendation

The CAC48 is requested to:

(i) Approve new work: Recommend that Codex approve the development of a standard for Standard for High Quality Cassava Flour (HQCF)

(ii) Establish Electronic Working Group: Designate lead country and co-chairs with expertise in Sweet Potato production and processing

(iii) Committee assignment: Assign to Committee on Processed Fruits and Vegetables (CCPFV).

DEVELOPMENT OF CODEX STANDARDS FOR SWEET POTATO FLOUR

Executive summary

This discussion paper proposes the development of a new Codex standard for sweet potato flour. Development of Codex standards for this commodity is a vital process driven by the crop's growing importance as a nutritious and versatile food ingredient worldwide. As sweet potato is increasingly processed into a stable flour for use in products like bread, biscuits, and complementary foods, particularly in developing nations, a need for consistency and quality assurance has emerged. These standards are essential for promoting fair trade, ensuring the product's market acceptance, and guaranteeing its reliable performance in both industrial and household applications.

1. Background

Sweet potato flour is a specialty ingredient derived from the dehydrated and pulverized tubers of the sweet potato plant (*Ipomoea batatas*). It is rapidly gaining recognition in global markets primarily as an **all-natural, gluten-free** replacement for traditional wheat flour. The production process is straightforward and involves washing, slicing, and thoroughly drying the whole sweet potatoes before they are ground into a fine powder. This minimal processing ensures that the flour retains the beneficial qualities of the root, offering a more nutrient-dense profile than many refined grain flours.

Establishing Codex standard for sweet potato flour is necessary to achieve product uniformity and consistency worldwide. Since the final flour's characteristics are highly dependent on the diverse sweet potato **varieties** used and the variable **processing methods** (including, but not limited to, pre-treatment and drying temperature), these standards are essential for defining crucial quality parameters. These parameters include acceptable ranges for **functional properties** (like water absorption capacity and swelling power, which determine how the flour performs in baking), and maximum limits for **moisture content** to prevent spoilage and extend shelf life. Without such a framework, variations in quality can lead to unpredictable results in manufactured food products, severely hindering its adoption by large-scale food industries.

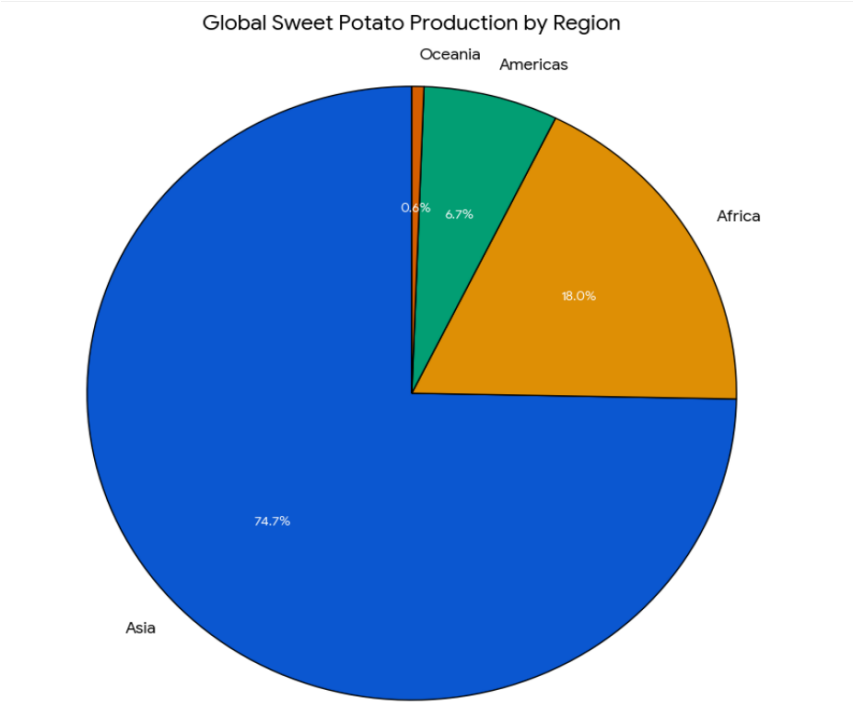
Furthermore, developing a sweet potato flour standard is a key enabler for **economic viability and international trade**. A recognized quality benchmark provides a common language for transactions, allowing both domestic and international buyers to purchase the product with confidence, thereby opening up larger commercial markets. This stability reduces risk for producers, particularly smallholder farmers and processors in developing regions, encouraging them to invest in value-addition. By harmonizing product quality, the standard facilitates fair trade practices and supports the strategic integration of sweet potato flour into the global supply chain as a reliable, high-quality, and alternative food source.

2. RELEVANCE AND TIMELINESS

2.1 Volume of Production and Consumption

Sweet potato is the seventh most important food crop globally with production exceeding 90 million tonnes annually. Major producing regions include:

- Asia: 70-75% of global production (China, Indonesia, Vietnam, India)
- Africa: 15-20% (Uganda, Tanzania, Nigeria, Madagascar)
- Americas: 5-8% (USA, Brazil, Peru)
- Oceania: <1%



The production of **sweet potato flour** is experiencing rapid growth, driven by a confluence of global trends. This surge is primarily fueled by the **increased demand for gluten-free products** as consumers seek alternatives to traditional wheat flour. Additionally, the flour's rising popularity is supported by the **recognition of its substantial nutritional benefits**, notably its high content of **vitamin A, fiber, and antioxidants**. The growth is further propelled by **food security initiatives** in developing countries that leverage the sweet potato's resilience and nutritional value, and is strongly underpinned by the **growing global health-conscious consumer base** actively seeking functional and nutrient-dense ingredients.

2.2 International Trade

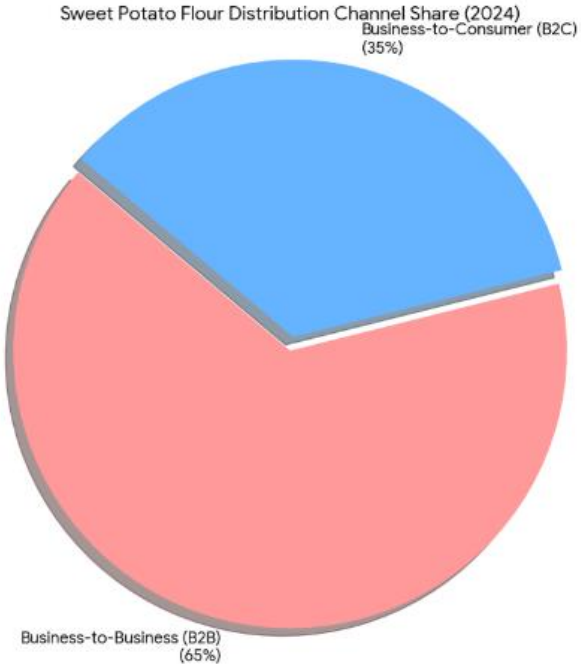
International trade in sweet potato products, including flour, has increased by approximately 8-12% annually over the past five years. Key factors driving trade:

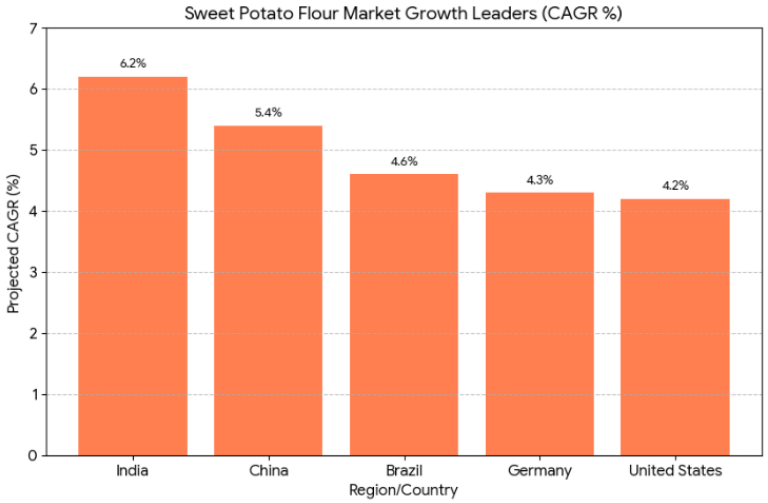
- Export from Africa and Asia to Europe and North America
- Growing demand in gluten-free and specialty food markets
- Use in bakery, snack, and infant food industries
- Value-added processing opportunities for developing countries

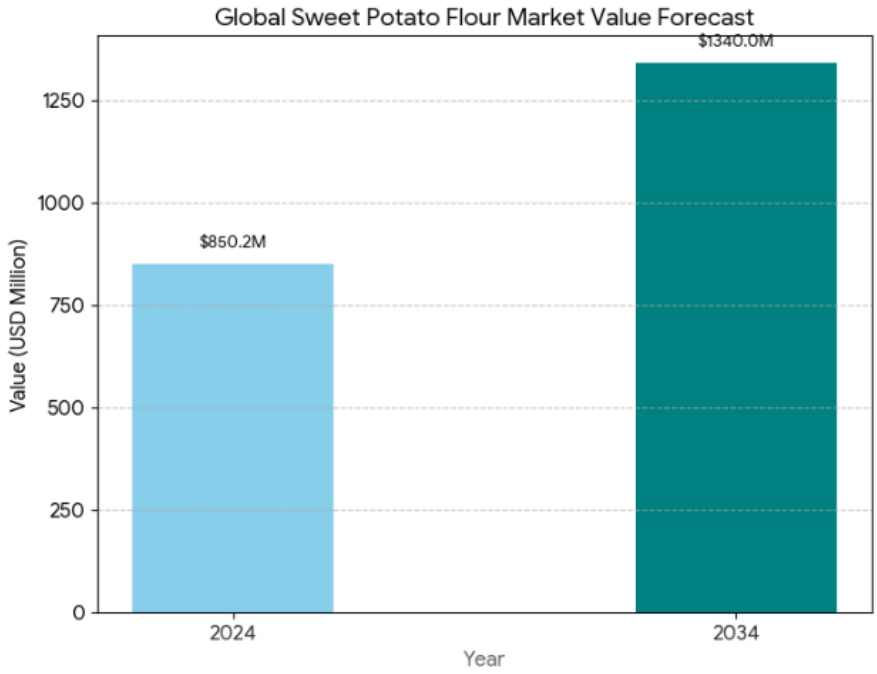
2.3 Market Potential

The global sweet potato flour market is projected to grow significantly due to:

- Expanding gluten-free food market (CAGR 9-10%)
- Increased consumer awareness of nutritional benefits
- Government programs promoting biofortified orange-fleshed sweet potato
- Diversification of food security strategies
- Growing demand in industrial food processing


Sweet Potato Flour Distribution Channel Share (2024)
Business-to-Consumer (B2C)
(35%)
Business-to-Business (B2B)
(65%)


Sweet Potato Flour Market Growth Leaders (CAGR %)
Projected CAGR (%)
0
1
2
3
4
5
6
7
6.2%
5.4%
4.6%
4.3%
4.2%
India
China
Brazil
Germany
United States
Region/Country



3. MAIN ASPECTS TO BE COVERED

Main aspect to be covered for the new standards for the Sweet potato flour shall include provisions for: Product Definition; Essential Composition and Quality Factors; Optional Ingredients; Food Additives; Contaminants; Hygiene; Labelling; Methods of Analysis and Sampling.

4. ASSESSMENT AGAINST CRITERIA FOR NEW WORK

Criterion 1: Consumer Protection and Fair Trade

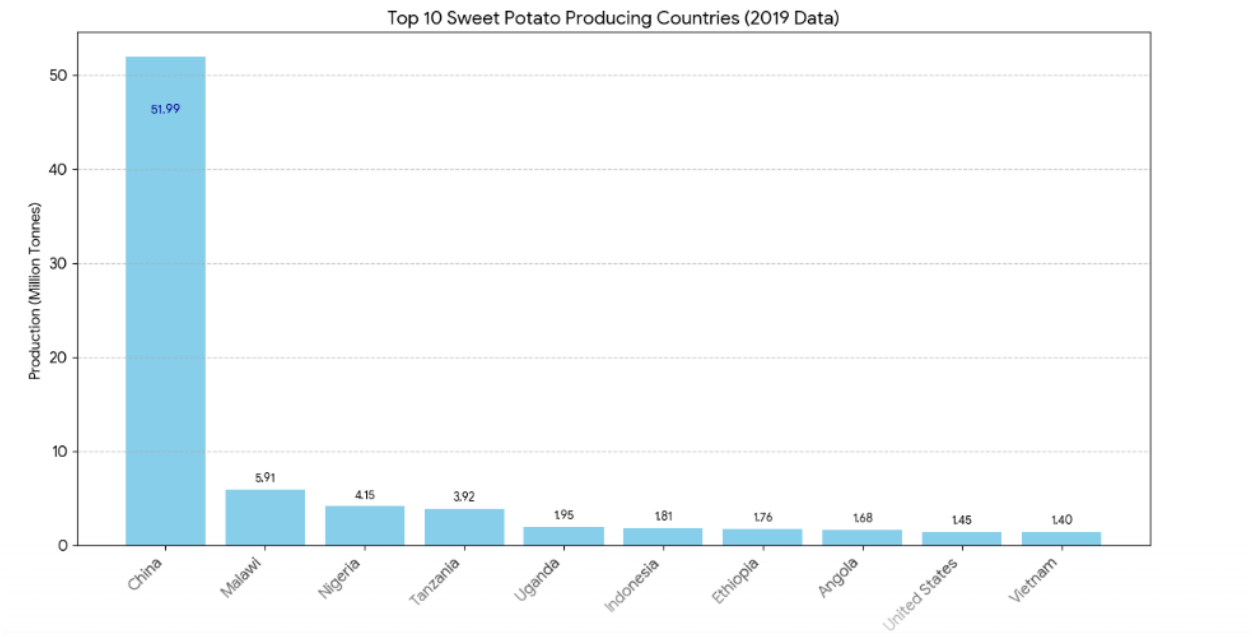
The new standard will:

- Protect consumers from fraud and misrepresentation
- Ensure minimum quality and safety standards
- Facilitate fair trade practices internationally
- Provide clear labeling requirements

Criterion 2: Volume of Production and Consumption

Sweet potato is a major global crop with:

- Production exceeding 90 million tonnes annually
- Growing processing sector for flour production
- Expanding consumer base in developed and developing markets
- Significant role in food security programs



Criterion 3: Diversification of National Legislations

At present, there are:

- No harmonized international standard for Sweet potato flour
- Different countries have varying requirements
- Trade barriers exist due to disparate regulations
- Industry stakeholders and exporter request harmonization

Criterion 4: International Trade Impact

- The new standard for Sweet potato flour will:
- Facilitate increased international trade
- Remove technical barriers to trade
- Provide common quality benchmarks
- Support developing country exports

Criterion 5: Amenability to Standardization

Sweet potato flour has:

- Measurable quality parameters
- Established processing methods
- Available analytical methods
- Clear product identity

Criterion 6: Coverage by Existing Standards

While there are Codex standards for: Wheat flour (CODEX STAN 152-1985), Sorghum flour (under development) and so on, no Codex standard currently addresses sweet potato flour specifically.

Criterion 7: Work Already Undertaken

Some work does exist such as:

- National standards in several countries (Uganda, Kenya, Nigeria, China)
- Regional guidelines (East African Community)
- Industry specifications (various processors)

- Research on quality parameters and processing methods

5. RELEVANCE TO CODEX STRATEGIC OBJECTIVES

Strategic Goal 1: Establish International Food Standards

The proposed standard directly supports this goal by establishing harmonized requirements for an increasingly important food commodity in global trade.

Strategic Goal 2: Ensure Application of Risk Analysis Principles

The standard will incorporate:

- Scientific risk assessment for food safety parameters
- Reference to existing risk assessments for contaminants
- Evidence-based quality criteria

Strategic Goal 3: Facilitate Effective Participation

The new work will:

- Engage developing countries where sweet potato is a major crop
- Involve FAO and WHO technical expertise
- Include input from industry and consumer organizations
- Consider capacity building needs

Strategic Goal 4: Implement Effective and Efficient Work Management

The project can be completed efficiently by:

- Using existing Codex standards as templates (wheat flour, other cereal flours)
- Leveraging available scientific data
- Following established procedures
- Targeting completion within 4-5 years

6. INFORMATION ON RELATED WORK

6.1 Other International Organizations

- FAO/WHO: Technical support, nutritional data, food safety assessments
- WTO: Technical barriers to trade considerations
- African Union: Regional standards development
- ASEAN: Food standards harmonization initiatives

6.2 Existing Codex Standards (for reference)

- CODEX STAN 152-1985: Wheat Flour
- CODEX STAN 153-1985: Maize (Corn)
- Draft standards for other alternative flours
- General Standard for Food Additives
- General Standard for Contaminants and Toxins

6.3 National/Regional Standards

- Uganda: DUS 1845:2017 (Sweet potato flour specification)
- Kenya: KS 2023:2013 (Sweet potato products)
- East African Community: Draft standard for sweet potato flour
- Nigeria: NIS ARS 827: 2021 Sweet Potato Flour-Specification
- China: National standards for sweet potato processing

7. PROPOSED TIMELINE

Step 1-2 (Year 1)

Proposal approval at Codex Alimentarius Commission

Assignment to appropriate Codex Committee (Present to relevant Codex Committee (New Subsidiary Body-Codex Committee on Roots and Tubers) or (CCPFV - Committee on Processed Fruits and Vegetables))

- Development of first draft by working group

Step 3 (Year 2)

- Review of draft at Committee level
- Circulation for comments at Step 3

Step 4-5 (Year 2-3)

- Review of comments
- Advancement to Step 5
- Further circulation for comments

Step 6-7 (Year 3-4)

- Review of comments
- Finalization of draft
- Advancement to Step 7

Step 8 (Year 4-5)

- Adoption by Codex Alimentarius Commission

Estimated total timeline: 4-5 years

8. Potential Challenges

Potential challenges that the new work might encounter includes:

- Existence of diverse Sweet Potato species and varieties requiring flexible specifications
- Variations in traditional processing methods
- Need to accommodate small-scale producers
- Limited laboratory capacity in some producing countries
- Ensuring specifications on the new standard is practical and achievable

9. Recommendations

The CAC48 is requested to:

(i) Approve new work: Recommend that Codex approve the development of a standard for Sweet Potato flour

(ii) Establish Electronic Working Group: Designate lead country and co-chairs with expertise in Sweet Potato production and processing

(iii) Committee assignment: Assign to Committee on Processed Fruits and Vegetables (CCPFV).

DEVELOPMENT OF CODEX STANDARDS FOR YAM FLOUR

Executive Summary

This discussion paper proposes the development of a new Codex standard for yam flour to facilitate international trade, ensure food safety, protect consumer health, and promote fair practices in the yam flour trade. Yam flour is an increasingly important commodity in global food markets, particularly in Africa, the Caribbean, and among diaspora communities worldwide.

Background

Fresh yam tubers are highly perishable and subject to deterioration during storage, with postharvest losses caused by physiological, biochemical, and microbial processes such as sprouting, transpiration, respiration, and rot. This perishability, combined with a huge market that exists for processed yam flour in Europe, America, and Asian countries, has created an urgent need for standardized processing methods that enable long-term storage and international trade.

Quality attributes that consumers look for in yam flour products include color, texture, and taste, but yam is still being processed through traditional methods with quality attributes that differ from one processor or location to another**Error! Hyperlink reference not valid.**. The moisture content of yam flour should be less than 15%, consistent with the safety requirement of the Codex Alimentarius Commission for wheat flour, as low moisture content is necessary to avoid microbial contamination and prolong shelf life**Error! Hyperlink reference not valid.**. These inconsistencies in quality and the need for food safety assurance have made standardization critical for both domestic consumption and export markets.

The Standards Organisation of Nigeria (SON) has coordinated the development of standards for yam flour and other agricultural products in the agro and allied sector, with the aim of achieving uniformity with CODEX standards to boost food export and stop rejections of local agro products overseas due to quality and integrity concerns. This standardization effort represents a strategic response to both technical challenges in yam processing and the economic imperative of accessing international markets while ensuring consumer safety.

2. Rationale for the Proposed New Standard for Yam flour

2.1 Purpose of the Standard

The development of a Codex standard for yam flour would:

- Establish internationally recognized quality and safety parameters
- Facilitate international trade by harmonizing requirements across countries
- Protect consumers from adulteration and misbranding
- Provide guidance to producers and processors
- Support food security initiatives in yam-producing regions

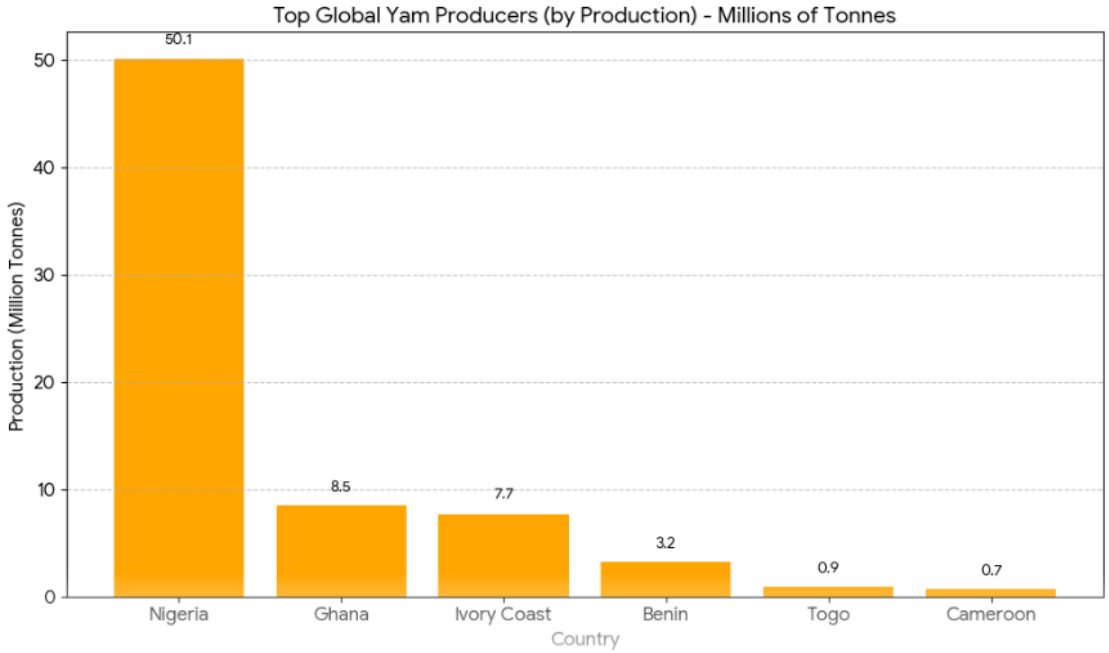
2.2 Scope and Product Description

Yam flour is a dried, milled product obtained from yam tubers (primarily Dioscorea species) that have been processed through peeling, slicing, drying, and milling. The product may be produced from various yam species including:

Dioscorea rotundata (White yam), Dioscorea alata (Water yam), Dioscorea cayenensis (Yellow yam), Dioscorea esculenta (Lesser yam), Other edible Dioscorea species.

2.3 Market Significance

Global yam production exceeds 70 million tonnes annually, serving as a staple food for over 300 million people primarily in West Africa, the Caribbean, and Pacific regions. There is growing demand in international markets driven by diaspora populations and health-conscious consumers. Nigeria, Ghana, Ivory Coast, and Benin are the major producers, and there is increasing export potential for value-added yam products.

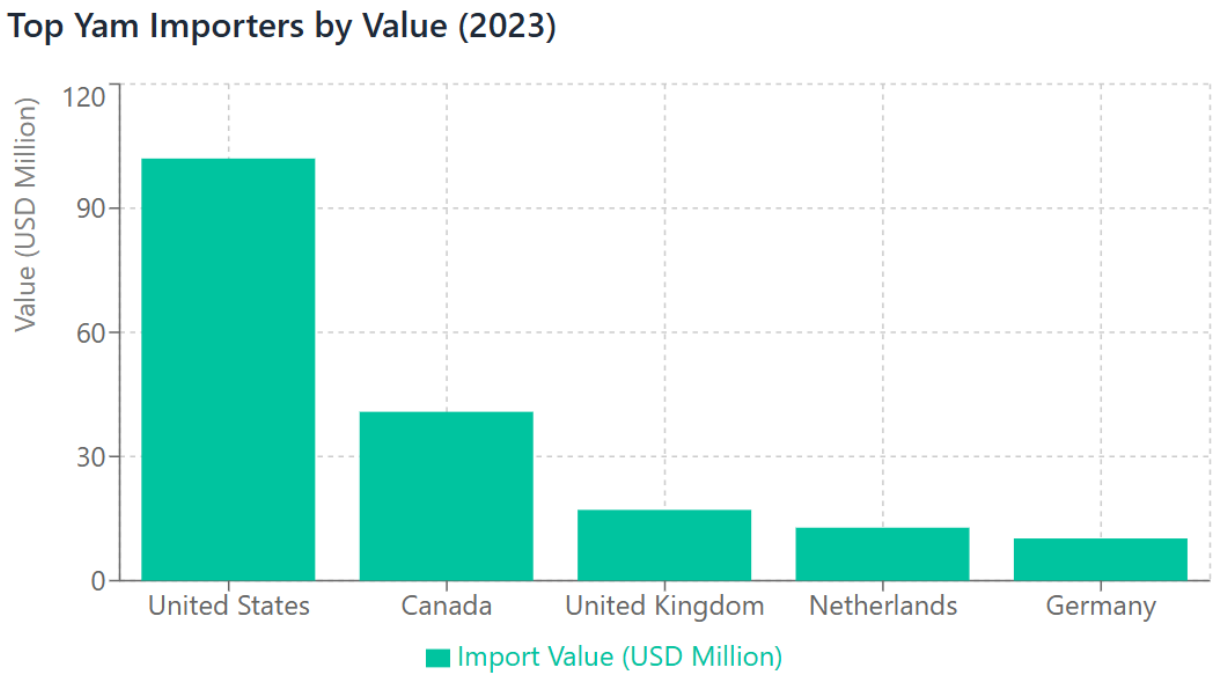


3. Justification for New Work

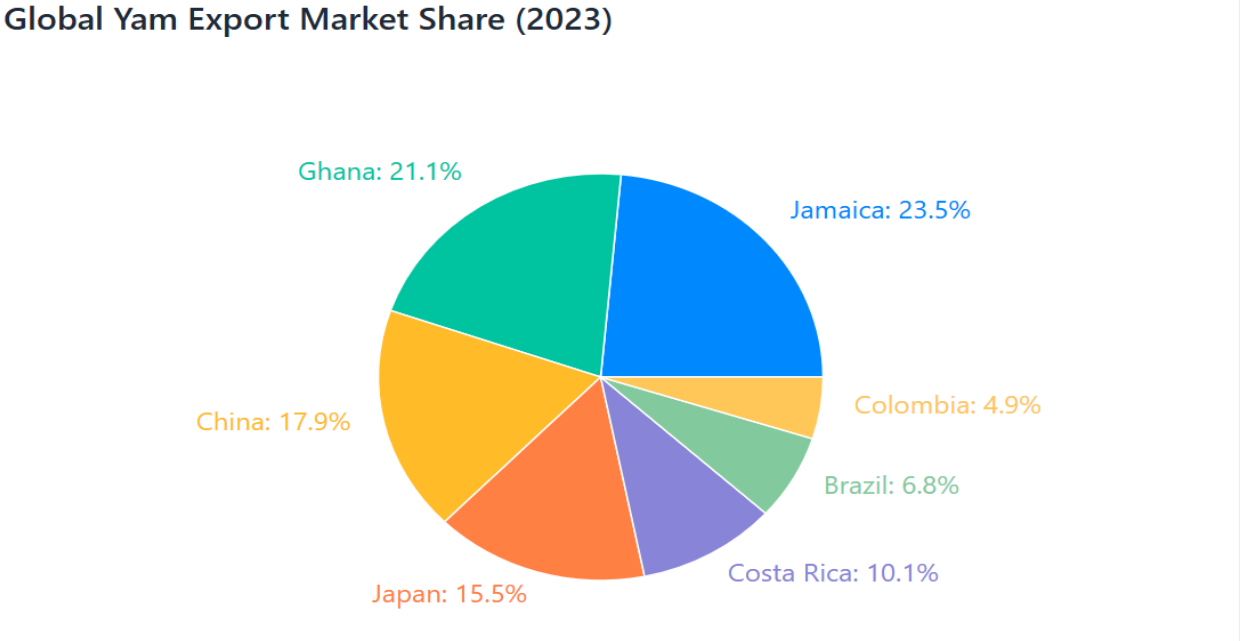
3.1 Trade and Economic Impact

International trade in yam products (flour) is growing, with increased demand in Europe, North America, and Asia. The development of yam-based products has significant potential to boost rural economies in producing countries through value addition, transforming perishable tubers into shelf-stable products. The establishment of an international standard would facilitate market access and entry for developing countries, enabling them to participate more effectively in global trade.

Jamaica leads global yam exports with $42.65M (23.5% market share), followed by Ghana ($38.39M) and China ($32.50M)



The United States dominates yam imports with $102M (40% global share), importing 58,100 metric tons in 2023



3.2 Food Safety and Quality Concerns

Current challenges in the yam products sector include the absence of internationally harmonized quality standards and variations in processing methods that affect product quality and safety. There are significant risks of adulteration with cheaper substitutes, as well as microbial contamination during processing and storage. Additionally, moisture content variations can negatively affect shelf life, and there are potential risks of mycotoxin contamination in yam products.

3.3 Consumer Protection

There is a need for clear labeling requirements to protect consumers against fraudulent practices and to ensure transparency in product composition. Where applicable, proper allergen information should also be provided on product labels.

4. Proposed Standard Elements on the new standard (Yam flour)

The new work on Yam flour shall outline provision for: Essential Composition and Quality Factors; Food Additives; Contaminants; Hygiene; Labeling; Methods of Analysis and Sampling.

5. Relevant Codex Texts and Alignment

The new work standard for Yam four would be developed in alignment with:

- Codex General Standard for Contaminants and Toxins in Food and Feed (CXS 193-1995)
- General Standard for Food Additives (CXS 192-1995)
- General Standard for the Labelling of Prepackaged Foods (CXS 1-1985)
- General Principles of Food Hygiene (CXC 1-1969)
- Standards for other root and tuber flours (e.g., cassava flour)

6. International Regulatory Landscape

6.1 Existing National/Regional Standards

- Nigeria: Nigerian Industrial Standard (NIS) for yam flour
- Ghana: Ghana Standards Authority specifications
- ECOWAS: Regional harmonization efforts underway
- Other national standards may exist in producing countries

6.2 Need for Harmonization

- Variation in requirements across countries creates trade barriers
- Lack of mutual recognition of national standards
- Need for science-based international consensus

7. Proposed Timeline and Work Plan

Year 1:

- Establish Electronic Working Group (EWG)
- Draft standard development
- First round of member country comments

Year 2:

Review comments and revise draft

Present to relevant Codex Committee (New Subsidiary Body-Codex Committee on Roots and Tubers) or (CCPFV - Committee on Processed Fruits and Vegetables**)**

Advance to Step 3

Year 3:

- Second round of comments and revisions
- Advance through Codex step process
- Final adoption at Codex Alimentarius Commission

8. Resource Requirements

- Electronic Working Group coordination (led by proposing country)
- Technical expertise from research institutions/Codex Observers (members)
- Laboratory resources for method validation
- Secretariat support from Codex

9. Benefits and Expected Outcomes

9.1 For Producing Countries

Producing countries benefit significantly from international trade through: enhanced access to global markets, the ability to command premium prices for quality products, increased industry investment and development,

substantial employment generation across value chains, and improved food security through export revenues that enable diverse food imports and strengthen agricultural systems—collectively contributing to economic growth and improved livelihoods.

9.2 For Importing Countries

Importing countries benefit from international trade through assured product quality and safety when exporters meet international standards, reduced inspection burdens at borders due to reliable certification systems that streamline customs processes, enhanced consumer confidence from consistently high-quality imports that support market stability, and clear regulatory frameworks that create predictable trading conditions and facilitate smoother trade operations—collectively reducing costs, protecting public health, and strengthening international commerce.

9.3 For Consumers

Consumers benefit from international trade through access to safe, high-quality products that meet rigorous safety standards, transparent labeling that provides essential information about ingredients, nutrition, and origins to support informed purchasing decisions, protection from fraud through certification and traceability systems that prevent counterfeit goods and false claims, and enhanced nutritional benefits from diverse products available year-round—collectively ensuring marketplace trust, supporting informed choices, and promoting public health and well-being.

10. Potential Challenges

Potential challenges that the new work might encounter includes:

- Existence of diverse yam species and varieties requiring flexible specifications
- Variations in traditional processing methods
- Need to accommodate small-scale producers
- Limited laboratory capacity in some producing countries
- Ensuring specifications on the new standard is practical and achievable

11. Recommendations

The CAC48 is requested to:

(i) Approve new work: Recommend that Codex approve the development of a standard for yam flour

(ii) Establish Electronic Working Group: Designate lead country and co-chairs with expertise in yam production and processing

(iii) Committee assignment: Assign to Committee on Processed Fruits and Vegetables (CCPFV).