MARKET PROFILE

Market profile

Dried mango and mango juice from Mali

COLEACP

Purpose of the study :	Dried mango and mango juice from Mali, on the local, regional and European markets.
Date :	August 2021

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COLEACP's mission is to develop an inclusive and sustainable trade in fruit and vegetables and food products, focusing on ACP countries' trade with each other and with the European Union.

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I. CONTEXT

Within the framework of the European Commission's cooperation programme "FIT FOR MARKET (FFM)", COLEACP carries out market profiles at the request of its members. In this context, a Malian actor, member of COLEACP, requested a market profile for **dried mango and mango juice produced in Mali**.

The objective of this profile is to assess the market and its environment in order to identify potential opportunities to diversify the product range. The profile focuses on the Malian, West African and European markets for dried mango and mango juice.

II. MARKET PROFILE FOR DRIED MANGO

a. Product presentation:

There are three types of products known as dried mango on the market:

- **Dried "candied" mango**, which is soaked in a sugar syrup before being dried. This product has the advantage of retaining a soft texture, but the taste and nutritional quality are altered by the addition of sugar.
- **Plain dried mango**, with the addition of sulphite for a longer shelf life.
- **Dried mango without preservatives**.

Dried mango is obtained after a homogenisation of the ripeness of the fresh mangoes (often done by exposure to the sun or in ripening chambers for the better-equipped facilities), and after cutting the fruit into homogeneous pieces which are then placed on racks stored in dryers. There are two types of drying units:

- **Traditional drying** units equipped with **"ATESTA" dryers**, a simple and inexpensive system to build, with a wood or gas supply. The problem with these installations is their great fragility, as they are made of wood and burn easily. However, although they represent a serious fire risk, this does not seem to be a big problem for drying companies, as the amortization is done over two years. An ATESTA oven has a capacity of about 30 to 40 kg/day of fresh mango. Workshops sell their production to larger drying units that export the dried mango.
- The **modern units** are equipped with **gas heated stainless steel tunnel dryers**. A tunnel has a capacity of about 200 to 300 kg per day of fresh mango. The products are generally of better quality and more homogeneous than oven-dried mangoes. These actors produce part of their exports and buy the rest from artisanal dryers that they repackage.

The main varieties of mango used for drying are Amelie, Lipens and Brooks, which are harvested in the same consecutive order during the season. Amelie is the most appreciated for its flavour but it is less sweet and does not preserves as long; Lipens is less tasty but sweeter and therefore preserves better; the Brooks variety does not change colour when ripe, which makes it more difficult to harmonise the ripening stage of the fruit before drying.

It is necessary to count between 12 and 15 kg of fresh mango to obtain 1 kg of dried mango with a moisture content between 14 and 18 %.

Statistical databases on international trade do not provide a category to accurately assess the volume of dried mango produced and traded worldwide. There are no specific statistics on dried mango trade at world level.


ATESTA dryer (left) and gas tunnel (right)

b. Supply

i. Main producing countries in the world

Literature and data on the dried mango market indicate a steady growth in exported volumes, in particular due to the high seasonality of mango production and a lack of processing structures in the producing countries, especially in West Africa, where the equipment used is often rudimentary, not very productive and scattered over the territories[1].

There are no statistics to define the volume of dried mango production by country. Imports by Europe, which is very fond of this product, nevertheless allow to provide an overview. South Africa is the main supplier with an estimated market share of 50%, and is moving towards more industrial production of plain dried mango (Keitt, Kent, Tommy Atkins) containing preservatives. Next come Thailand and the Philippines, which together supply around 35% of the market, with preserved dried mangoes of Asian varieties. West African countries supply the rest of the dried mangoes, i.e. around 15% of European imports, with more artisanal00 dried products, often without preservatives and/or organic (Amélie, Brooks, Keitt and Kent).

ii. West Africa

Alongside Ghana, Côte d'Ivoire and Senegal, Burkina Faso is one of the main exporters of dried mango in West Africa, with an average of 1,500 to 2,000 tonnes exported[2]. The Timini company is one of the main Burkinabe players in mango drying with a capacity of 400 tonnes of dried products per year. In terms of production capacity, the Swiss company HPW owns the largest facility in Ghana (HPW Fresh & Dry Ltd.) in Adeiso with a plant processing more than 20,000 tonnes of fresh fruit (mango, pineapple, coconut), and exporting 2,000 tonnes of dried fruit per year. HPW also has a drying unit in Côte d'Ivoire (HPW Fresh & Dry Srl) which produces 800 tonnes of dried fruit per year, mainly mango, pineapple, coconut and banana, half of which is organic.

West African products are recognized for their quality taste, but several negative points are often raised in comparison with the more industrial and homogeneous South African products. The main criticisms concern the poor homogeneity of the products (size, colour), hard and sticky fruits and unattractive packaging.

1 FruiTrop - The dried mango (2016)

2 ClassM field survey (2020)

iii. Organization of the sector in Mali

Profile of the points of sale

Dried mango is marketed by the following types of points of sale:

- **Supermarkets and grocery stores**

Generally located in urban centres, supermarkets and food stores supply individuals with dried mangoes. They maintain a direct communication with the processing units so that when the stock reaches a minimum threshold, the supply is immediately started.

According to the field survey, supermarkets account for 10% of dried mango sales.

- **Wholesalers**

They may be Malians or nationals of countries in the sub-region. They buy large volumes and in turn sell to retailers. For these wholesalers, packaging is done in bags of various weights and purchases are made by the kilo. The bags for wholesale are generally of 1 kg, 2 kg, 5 kg, 10 kg and even 20 kg. They usually have sales outlets in urban centres.

Wholesalers market 65% of the dried mango in Mali.

- **Shops incorporated into processing units**

Almost all processing units have shops where wholesale or retail sales take place.

This profile of dried mango outlets would account for 5% of total dried mango sales.

- **Retailers**

There are two categories of retailers: door-to-door or street and bus station retailers, and retailers based at vehicle checkpoints at the borders and exits of major cities.

About 20% of the total dried mango sold would be attributed to retailers.

Marketing

From a marketing point of view, dried mangoes are packaged in transparent plastic bags with labels bearing logos, locations, telephone numbers, production and expiry dates.

There are pilot promotion actions at the local level, for example Keitala Negoce often promotes its processed products (including dried mango) with the support of local radio stations in the city of Sikasso. In its communication strategy, it emphasizes the origin of the mango (Made In Mali).

Annual promotional fairs for processed products are also organized (Sikasso Agricultural Fair, Bamako Exhibition Fair, the Agriculture Show). It should also be noted that with the support of the AgriProFocus-Mali network, weeks of promotion of processed agricultural products are organized in Bamako.

There are international fairs for the promotion of dried mango in which Malian actors participate (the Paris International Agricultural Show, the Dakar Agriculture and Animal Resources Fair).

Origin of the products

The majority of dried mango production available on the local market is of Malian origin. They come from mango groves planted in the country's major production basins, namely : Bougouni, Yanfolila, Sikasso, Kadiolo, Koutiala, Koulikoro, Bamako, Ségou and Kita. The table below lists some of the players in this market.

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Dried mango made in Mali

NAMES OF THE ACTORS	DJEKABARAA-TON (76 32 82 27)	KEITALA NEGOCE (76 01 39 89)	Femme -Actions (Rokia COULI-BALY) 75 19 07 82	MABANTIO - Femmes courageuse (Mrs SANOGO Masseni) 76 12 14 46	(Multifunctional cooperative) AminataYOH TRAORE (76 36 64 05)
LOCATION	Sikasso, Hamdallaye	Sikasso, Wayer-ma 2, Rue : 138, porte: 70	Sikasso, Wayer-ma 2,	Sikasso, Mamassoni	Sikasso, Wayer-ma 2
EQUIPMENT USED	Artisanal gas dryer	ATTESTA dryer	3 ATTESTA dryers	3 ATTESTA dryers	3 ATTESTA gas dryers
AVERAGE VOLUME PROCESSED PER CAMPAIGN	350 kg	1,500 kg	150 kg	500 kg	700 kg
MAIN CUSTOMERS: IN MALI, INTERNATIONALLY	Individuals, supermarkets, food stores, semi-whole-salers, Burkina, Dakar	Individuals, supermarkets, food stores, semi-whole-salers, Turkey, France, Moroc-co, Mauritania	Individuals, food supplies in Sikasso, Koutia-la, Bamako	Individuals, wholesalers, supermarkets, Burkina and Dakar	Individuals, food stores
CERTIFICATIONS: ORGANIC, FAIR TRADE	Not certified	Not certified	Not certified	ISO 9001 and organic	Not certified
OTHER DRIED PRODUCTS	Dried and pow-dered ginger	Dried cashew, baobab, coco-nut slice,	Dried cashew nuts,	Dried ginger, dried potato, dried tomato	Potato, ginger
THE PURCHASE PRICES OF FRESH MANGOES	The mango crate from 750 to 1,000 FCFA	5 mangoes for 100 FCFA	5 mangoes for 200 FCFA	Organic mango crate from 1,500 to 2,500 FCFA	1 kg of mangoes from 35 to 50 FCFA
SELLING PRICE OF DRIED MANGOES	50 g at 250 FCFA, 100 g at 500 FCFA, 1kg at 5,000 FCFA	Detail : 3,000 FCFA/kg, the bag of 100g at 500 FCFA	100 g at 400 to 500 FCFA, 1 kg at 4,000 to 4,500 FCFA, 2 kg at 8,000 to 9,000 FCFA	1kg at 4,000-5,000 FCFA, 2kg at 8,000-10,000 FCFA	1 bag of 100 g at 500 FCFA, 1 kg of dried mangoes 5,000 FCFA

Table 1: List of dried mango stakeholders in Mali

NAMES OF THE ACTORS	Nantenin MAGASSOUBA (Nantenin Unit) 76 08 59 24	EKT 76 46 29 62)	JEMANGELE Unit (76 01 90 45)	GIE AGSA (75 11 70 41)	SOTRAPHO YIRIDEN SARL (76 44 66 41)
LOCATION	Sikasso,Wayer-ma 2	Bamako, Niam-akoro	Koulikoro Gare	Sanoubougou I, Sikasso	Bamako, Kala-bancoura Rue 158, porte 277
EQUIPMENT USED	In provision of services (1000 FCFA per pro-duction)	1 dryer and 2 gas dryers	Cutting table and 2 dryers (1 gas and 1 solar)	ATTESTA and Tunnel dryers	ATTESTA dryers
AVERAGE VOLUME PROCESSED PER CAMPAIGN	500 kg	500 kg	200 kg	10,000 kg	1,000 kg
MAIN CUSTOMERS: IN MALI, INTERNATIONALLY	Individuals, Burkina Faso, Bamako, wholesalers in Koutiala	Individuals	Individuals	Food stores, individuals	Supermarkets, service station shops, individuals
CERTIFICATIONS: ORGANIC, FAIR TRADE	Not certified	Not certified	Not certified	Certified OR-GANIC	Non certifié
OTHER DRIED PRODUCTS	Dried ginger, dried potato, dried potato	Dried jujube, dried ginger, dried roasted fruit	Dried tomato, dried shallot		Cashew nuts
THE PURCHASE PRICES OF FRESH MANGOES	4 mangoes for 100 FCFA	10,000 to 20,000 FCFA per basket	3 mangoes at 100 FCFA	1 kg of mangoes at 50 FCFA	1 kg of mangoes from 60 to 100 FCFA
SELLING PRICE OF DRIED MANGOES	1 bag of 100 g at 500 FCFA, 1 kg of dried mangoes 3,000 to 5,000 FCFA	1 bag of 70 g at 400 to 500 FCFA	1 bag of 1 kg of dried mangoes CFAF 3,000 to 5,000	100 g from 250 to 500 f, 1kg from 2,500 to 3,000 FCFA	1 bag from 400 to 500 FCFA, 1 bag of 1kg from 4,000 to 5,000 FCFA

Table 1: List of dried mango stakeholders in Mali

c. Demand

i. European market

The European dried mango market is estimated at nearly 6,000 tonnes per year in 2018 with an estimated import value of 47 million euros [3], up from an estimated 1,600 - 3,400 tonnes in 2016[4]. These estimates show a strong growth of the European market, of almost 50% in 3 years. It is estimated that the growth has continued at the same rate until today.

The United Kingdom and Switzerland are the largest importers of dried mango in Europe. The United Kingdom imports 1,200 to 2,000 tonnes per year, of which 10 to 20% are organic and/or fair trade labelled products. The main origin of dried mango is South Africa, marketed in supermarkets. Imports from Switzerland are estimated at between 200 and 350 tonnes/year in 2016, of which 10 to 30% are organic and/or fair trade. The main origin is Burkina Faso. Dried mango can be found in supermarkets and in shops specialising in organic and fair trade products.

The rest of the European market, especially in France, remains a niche. Dried mango is distributed almost exclusively in organic shops. A few attempts at mass distribution have been made, but are struggling to survive. This is the case, for example, of the Franco-Senegalese company Ker Diop, which distributes dried mangoes and other Senegalese products through the Monoprix chain of stores. The product can be found at a price of €3.69 per 100 grams in stores. Other German branded products, such as Seeberger, for dried and sliced mango is sold at € 4.95 per 100 grams.

Ker Diop dried mango distributed in the French chain of stores Monoprix

Ker Diop dried mango distributed in the French chain of stores Monoprix

ii. West Africa

All West African mango producing countries have developed a more or less important and structured mango drying industry. The first target market for dried mango production is Europe, and secondly North America (United States, Canada). The West African market consumes part of the dried mango produced locally as a snack. In Burkina Faso, for example, of the 2,500 to 3,000 tonnes of dried mango produced each year, about 2,000 tonnes are exported to Europe. However, there are no official statistics to assess the exact volume of dried mango produced and consumed in West Africa.

3 CBI - Value chain analysis of processed fruits in Burkina Faso, Mali and Côte d'Ivoire (2019)

4 FruiTrop - Dried mango. A developing diversification niche (2016)

iii. Mali

Malian demand for dried mango is mainly supplied by national production.

There are no figures for local consumption, which seems to be quite low. The dried mangoes sold by retailers in the street are often of the lowest quality available at 100 FCFA per 50g.

Mali sometimes receives dried mango from countries such as Burkina Faso, but the quantities are small. The few statistics show that imports of dried mango are almost non-existent.

d. Regulation

i. Europe

In Europe, all imported processed fruit and vegetables must meet the requirements of the General Food Law (Regulation (EC) 178/2002), concerning food safety and establishing the European Food Safety Authority (EFSA).

The main requirements of the European market for dried fruit in terms of regulations concern :

- Pesticide residues: the European Commission sets a regularly updated list of active ingredients that must respect a Maximum Residual Limit (MRL). The evaluation of MRLs is done by laboratory analysis of samples and may concern several hundred chemical compounds.
- Microbiological contamination: particular attention is paid to *E. coli* and salmonella contamination, which present major public health risks.
- Food additives: the European Commission regulates the addition of foreign substances to food products, such as colourings, preservatives and flavourings. In the case of dried mango, the main additives concerned are preservatives (sulphur) and E110, a yellow-orange colouring agent.

Some importers have additional requirements, such as compliance with UNECE DDP-28 standards for dried pineapple[5]. Other contaminants may also be subject to control and interception, such as heavy metals, physical contaminants, mycotoxins, etc. The COLEACP Research &

5 UNECE - Standard DDP-28 concerning the marketing and commercial quality control of dried pineapple (2014)

Innovation Department is currently revising a mango 'technical itinerary' document (only available for beneficiary partners), which includes information on mango diseases and SPS problems.

ii. West Africa and Mali

In terms of sanitary regulations on dried mango, West African countries, including Mali, mainly apply the conditions set by the Codex Alimentarius on dried fruit[6].

More specifically, for the purpose of selling mango on the European market, any operator registered by the Competent Authorities who intends to export mango by air, sea and land must comply with various requirements.

These requirements take into account the regulations in force at national, regional and international level, in particular:

- Decree N°00505/P-RM of 16 October 2000 on the regulation of foreign trade;
- Law N°02-013 of June 03, 2002 instituting phytosanitary control in the Republic of Mali;
- The Decree N°02-305/P-RM of June 03, 2002 fixing the modalities of application of the law instituting the phytosanitary control in the Republic of Mali;
- Decree No. 09-314 P-RM of 19 June 2009 on the quality and labelling of products;
- Inter-ministerial Order N°06-287/MIIC/MEF-MAT-MET of 14 February 2006 on the specific conditions for the organisation of the profession of fruit and vegetable exporter;

6 FAO - Code of hygienic practice for dried fruits (CAC/RCP 3-1969)

- Order N°06- 3275/MA-SG of 30 October 2005 fixing the conditions of treatment of wood-based packaging materials in the Republic of Mali;
- Regulation N°07/2007/CM/UEMOA on plant, animal and food safety in the UEMOA region;
- The EC Regulation 178/2002 on the obligation of traceability for all food products;
- The EC Regulation 852/2002 on the hygiene of foodstuffs;
- The International Standard for Phytosanitary Measures on Wood Packaging Material in International Trade (ISPM 15);
- The UNECE Standard for Mango, 2010 version
- Codex Alimentarius Standard for Mango ;
- The Decree N°06- 253/PRM of 23 June 2006 instituting the authorization of the marketing of foodstuffs, animal feed and food additives;
- Ministerial Order 07-2650/MS - MEP-MA - MIC -MEF -SG of September 26, 2007 determining the conditions of application of Decree N°06- 253/PRM of June 23, 2006 instituting the authorization of marketing of foodstuffs, animal feed and food additives.

III. MARKET PROFILE FOR MANGO JUICE

a. Product presentation

There are three main categories of fruit juice on the market:

- The **100% pure juice:** it is obtained from the simple pressing of fruits without adding sugar
- **Juice from concentrate:** the juice is concentrated by evaporation to facilitate storage and transport, then reconstituted with the same volume of water as that which was evaporated, without any added sugar.
- **Nectar:** is obtained from concentrated juice and/or fruit puree, with or without the addition of sugar. The minimum fruit content of nectars must remain between 25 and 50% of the final product. Mango nectar must have a minimum fruit content of 25%[7].

b. Supply

i. Main producing countries in the world

Asian, South American and African countries are the main producers of mangoes and consequently of mango juice and pulp., which is mostly exported to North America and Europe. India, Thailand and the Philippines are major Asian producers and exporters. China also produces large quantities but is less focused on the export market. South American producing countries, such as Mexico, Brazil, and Peru, are also important players, supplying the American and European markets.

The mango juice beverage segment is experiencing a strong growth which is said to be even outpacing that of the soda segment[8]. The Asian market is particularly dynamic with China, Indonesia and India as the main consumers in the region, international beverage companies such as Coca-Cola and PepsiCo have a strong presence in the mango-based beverage segment.

According to a study by Goldstein Research, the global mango juice market is expected to reach US$22.1 billion by the end of 2024 from an estimated US$16 billion in 2016, growing at a CAGR of 4.1%.

ii. Juice and pulp producers in West Africa

There are two types of mango juice and pulp manufacturers in West Africa:

- Industrial units capable of processing several thousand tonnes of mango per season, which mainly produce pulp and concentrate for the food and beverage industry for the international and sub-regional markets.
- Units specializing in the production of juice for the domestic or sub-regional markets, for mass consumption, often of smaller entity size.

7 FAO - Codex Alimentarius: General Standard for Fruit Juices and Nectars(CODEXSTAN247-2005)

8 Goldstein Research - Global Mango Juice Market Outlook, Forecast 2017-2030 (2021)

The following table presents the main players in the production of mango juice and pulp in several other West African countries (excluding Mali):

COUNTRY	COMPANY	DESCRIPTION
Burkina Faso	Dafani	Dafani has a production line for mango pulp and concentrate, and a production line for fruit juice. The company has both a pulp export activity (minority) and a juice production activity for the national and sub-regional market, under the Dafani brand. The factory processes around 12,000 tonnes of fresh mangoes into pulp per year, which gives 3,500 tonnes of mango puree per year.
Burkina Faso	Baraji	Baraji produces flavoured water for the domestic consumer market and sources fruit puree and pulp from Dafani.
Burkina Faso	Delicio	Delicio produces fruit juices based on local production (Mango, tamarind, ginger, guava...) and distributes them on the national market.
Burkina Faso	COAB	COAB produces mango concentrate and drinks and juices in PET bottles. The factory is under construction in Bobo
Senegal (headquarters and factory)	Kirène	Le groupe Kirène est une société d'embouteillage qui distribue de l'eau minérale, des produits laitiers et des jus de fruits. Sa gamme de jus Pressea est élaborée à partir de fruits locaux, et destinés au marché national et sous-régional.
Ivory Coast (factory)	Kirene	The Kirène Group is a bottling company that distributes mineral water, dairy products and fruit juices. Its range of Pressea juices is elaborated from local fruits, and intended for the national and sub-regional market.
Senegal	Zena	Zena Exotic Fruit SA is a Senegalese company specialized in the transformation of local fruits into juices, jams and syrups, including mango.
Ivory Coast	Atou Ivorio	Ivorio is the leading brand in the fruit juice sector in Ivory Coast. The company is primarily specialized in pineapple processing (6000 tonnes per year), but also produces 300 tonnes of mango puree.
Ghana	Sunripe	Sunripe Co. Ltd is the largest juice production unit in Ghana with a capacity of 20 tonnes per day of juice. It processes pineapple, mango, papaya, passion fruit, watermelon, into pulp, puree, juice, smoothie and fresh cut pineapple.
Ghana	Blueskies	Blueskies is a British company specialising in the packaging and processing of fruit for fresh export and the production of juice for the domestic market.
Ghana	Frutelli	Frutelli is a company specialized in the production and distribution of fruit juices made from local productions. The company distributes its juices in more than 10 countries in West Africa

Table 2: Main players in mango juice and pulp in West Africa

iii. Main producers in Mali

The processing of mango into fruit juice, pulp and dried mango has developed in recent years in Mali.

Companies such as Comafruit (reported processing capacity of 6,000-7,000 tonnes of fresh mango) and CEDIAM (reported processing capacity of 12,000 tonnes of fresh mango) produce and export mango puree and concentrate. Semi-industrial companies such as Nako, Mouna-Utrafle, Yango and Zabbaan Holdings process mango and other fruits into juice to satisfy local demand, competing with imported brands that benefit from better packaging and a longer shelf life.

Nevertheless, mango processing remains a minor activity, since it concerns about 19,000 tonnes (for 70,000 tonnes of harvested mangoes announced) in 2019, the vast majority of which is intended for the production of juices and concentrates by the aforementioned industrialists[9]. The rest is mainly intended for export.

SUCCESS STORY: FOCUS ON CEDIAM

CEDIAM is specialized in the production and export of mango concentrate. It produces aseptic organic mango puree for the international juice and fruit based products industry.

Located in the Yanfolila mango basin since 2012, their factory is equipped with the latest processing and quality control technologies and holds FSSC ISO 22000 certification.

With a processing capacity of 240 tonnes per day, CEDIAM processed 11,000 tonnes of mango in 2016, exclusively into concentrate. The actual production is 200-210 tonnes per day. For the 2020 campaign, CEDIAM processed 8,000 tonnes of mangoes collected from its local network and produced about 4,000 tonnes of aseptic puree.

The company obtains its fresh mangoes from a network of more than 2,000 small producers structured into 44 cooperatives.

Like other actors, CEDIAM has to take into account the seasonality to harvest mangoes (4 months of the year, from March to June). Currently, its processing plants are underutilized at about 36% of their capacity during the mango season and inoperable the rest of the year 10. To improve its operations, CEDIAM is working closely with producers to promote better practices and improve yields, while developing its own mango orchard with financial support from the International Finance Corporation (IFC) of the World Bank Group.

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9 CBI - Value chain analysis of processed fruits in Burkina Faso, Mali and Côte d'Ivoire (2019)

10 Crossboundary - On the functioning of agricultural markets in Mali (2018)

Profile of the points of sale

Supermarkets and grocery stores

Supermarkets and food stores, generally located in urban centres, sell mango juice to individuals. They buy in bulk from the manufacturing units in boxes of 12 to 24 bottles. They sell both retail and wholesale.

Shops incorporated into processing units

Almost all processing units have shops where wholesale or retail sales take place.

Ordinary shops

Located on street corners in urban centres, shops are an important link in the distribution of mango juice in Mali. The major requirement for this distribution is the availability of a refrigerator or freezer. These shops are seen as the main supply points for individuals.

Restaurants and hotels

In terms of mango juice supply, restaurants and hotels operate on the basis of orders. The commercial relationship between restaurants/hotels and mango juice manufacturing units is a relationship of trust built on the regularity and quality of the product.

Marketing

Malian mango juice is packaged in plastic or glass bottles, labelled with the following information: logos, names of units or brands, addresses, production and expiry dates. The pulp is distributed in 220 L aseptic bags.

As for dried mango, annual fairs provide promotional frameworks for processed products (Sikasso Agricultural Fair, Bamako Exhibition Fair, the Agriculture Show). It should also be noted that with the support of the AgriProFocus-Mali network, weeks of promotion of processed agricultural products are organized in Bamako.

Origin of the products

Like dried mangoes, the mango juices available on the Malian market are almost all of Malian origin. They come from the country's main production regions, namely : Bougouni, Yanfolila, Sikasso, Kadiolo, Koutiala, Koulikoro, Bamako, Ségou and Kita.

Mango juice made in Mali

c. Demand

i. Europe

Global demand for tropical fruit juices, including mango, has been increasing in recent years, driven in particular by Asia. The European Union saw its overall consumption of fruit juice decline slightly over the period 2014-2018, with a volume decrease of 5.5% over this period. However, the volume of 100% pure juice (not from concentrate) and fresh juice (preserved at 6°max) increased by 17% and 13% respectively over the same period. This trend highlights a change in consumer habits towards fresher and more nutritionally rich products, and is reflected in an increase in the value of the market[11].

The European market nevertheless remains dynamic for tropical fruit juices and absorbs more than 20% of the consumption of mango juice produced in the world, of which more than 50% by the UK[12].

TOTAL FRUIT JUICE AND NECTARS IN EU						
Volume Million Litres	2014	2015	2016	2017	2018	17-18% gr
Total	9,565	9,480	9,217	9,193	9,067	1,40%
Branded	5,519	5,607	5,553	5,546	5,540	-0,10%
Private Label	4,046	3,872	3,664	3,647	3,526	-3,30%
FRUIT JUICE (100% JUICE CONTENT)						
Total Fruit Juice	6140	6054	5921	5956	5900	-0,90%
Branded	3,438	3,497	4,493	3,511	3,522	0,30%
Private Label	2,702	2,556	2,427	2,445	2,378	-2,70%
Ambiant	4,783	4,675	4,452	4,465	4,365	-2,20%
From Concentrate	4,311	4,118	3,915	3,865	3,766	-2,60%
Not From Concentrate	1,829	1,935	2,005	2,091	2,134	2,10%
Chilled	1,357	1,379	1,399	1,492	1,535	2,90%
NECTARS (25-99% JUICE CONTENT)						
Total Nectars	3,425	3,426	3,297	3,237	3,166	-2,20%
Branded	2,081	2,110	2,060	2,034	2,018	-0,80%
Private Label	1,344	1,316	1,237	1,202	1,148	-4,50%

Table 3: The fruit juice industry - global fruit juice consumption. (Source: AIJN Liquid Fruit Report 2019)

11 AIJN-Liquid Fruit Report(2019)

12 Goldstein Research - Global Mango Juice Market Outlook, Forecast 2017-2030 (2021)

LARGEST EU FJN MARKET BY VOLUME CONSUMPTION, 2018	
Country	Million Litres
Germany	2,321
France	1,359
United Kingdom	1,060
Poland	837
Spain	799
Others	2691
Total	9,067

LARGEST FJN MARKET BY PER VOLUME CONSUMPTION BY REGION, 2018	
Region	Million Litres
Asia Pacific	8,367
Nord American	8,331
West Europe	8,052
East Europe	4,264
Latin American	3,492
Africa & Middle East	3,429
Total	35,935

LARGEST EU FJN MARKET PER CAPITAL CONSUMPTION, 2018		
Country	Population (million)	Litres per person
Cyprus	0,9	30,9
Malte	0,4	29,4
Germany	83,5	27,8
Sweden	10,2	21,9
Poland	38,3	21,8
Autstria	8,9	21,5

LARGEST FJN MARKETS PER CAPITAL CONSUMPTION BY REGION, 2018		
Region	Population (million)	Litres per person
Noth American	366,4	22,7
West Europe	425,6	18,9
UE28	514	17,6
East Europe	403,1	10,6
Latin American	644	5,4
Africa & Middle East	1483	2,3
Asia Pacific	4177,8	2

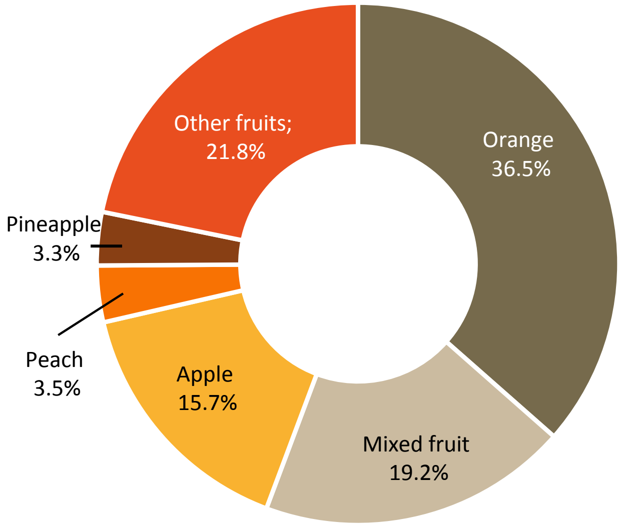

Figure 1: European consumption of fruit juices and nectars by flavours. *(Source: COLEACP based on AIJN Annual report 2018)*

Orange juice remains the most popular in Europe. In the figure above, the "other fruit" category includes mango juice, which is attractive to consumers in Europe. Mixed fruit juices come third in the market, many of these contain mango.

ii. West Africa

Although there are no official statistics on mango juice consumption volumes in West African countries due to informal nature of this market, a real market dynamic has been observed with the creation of many national brands over the last twenty years.

Considering HS code 200980 ("Fruit or vegetable juices (except orange, grapefruit, pomelo, citrus, pineapple, tomato, grape incl. grape must, apple)"), under which mango juice is recorded, it can be seen that import volumes of fruit juices by West African countries are increasing, especially in recent years. Only Ghana, being the main importer until 2014, shows a strong downward trend.

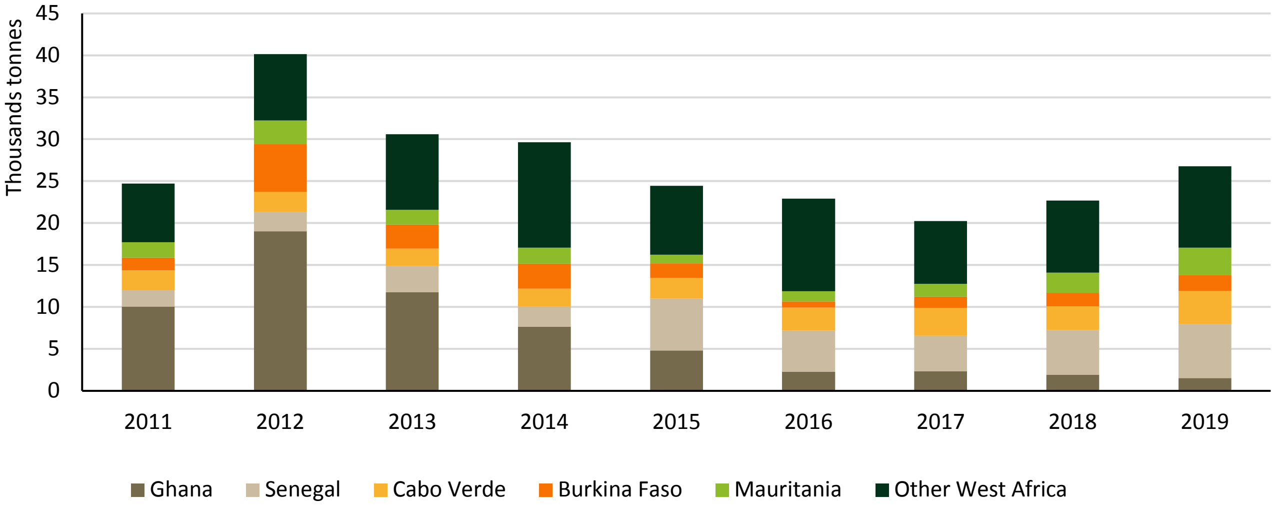

Figure 2: Fruit juice imports in West Africa (HS 200980), in volume, with details of the evolution of imports in volume for the 5 largest importers and the evolution of cumulative imports for the 12 other countries representing West Africa. *(Source: COLEACP from IFPRI, UN-Comtrade and national statistics)*

iii. Mali

Investigations carried out at INSAT revealed that there are no import statistics specifically for mango juice.

Profile of buyers

Malian companies representing juice brands

The demand for mango juice in Mali seems to be very high. The importation of innumerable brands is the strongest testimony of this. Visits to Bamako's supermarkets and food stores have enabled us to discover brands such as Viva (Egypt), Interjus (Spain), Valencia (Morocco), Delice Fruit (Tunisia), Bashayer (Egypt), Fontata (Cyprus), Piko (Lebanon), Alboustane (Egypt). Malian companies are the exclusive representatives of the above brands: they have the exclusive right to market and distribute them in Mali. Among them are: GDCM (Golonina opposite the market), Etablissements Madjou Simpara, Etablissements Fofana (Bagadadji beside the central mosque).

Wholesale distributors

They buy from import companies and distribute throughout Bamako. Their clients are hotels, restaurants, supermarkets and some high-end shops. Among these are Simpara boutique in Djélibougou Bamako opposite the Total station, Etablissements Elhadji Mamadou COULIBALY in Moribabougou, opposite the market, Etablissements Fofana (Bagadadji beside the central mosque).

Supermarkets and smaller food stores

They obtain their supplies from these import companies and in turn serve hotels, restaurants and individuals. The supermarkets and food stores visited during the study are: the Superette la Corniche (Diandjiguila, commune VI of Bamako, opposite the river), the Caliprix supermarket (Niaréla, commune II of Bamako, below the Hotel Campagnard), and the Monoprix food store (Boulkassoumbougou, commune I of Bamako).

- **Hotels and restaurants**

Hotels and restaurants source imported juice from food/supermarkets directly from import companies or wholesale distributors.

- **High-end shops located at the corners of important roads.**

These corner shops are evolving towards food stores, they have the particularity of being well equipped with freezers and/or refrigerators. Many individuals buy fresh juice from these shops.

- **Individuals**

The points of purchase of imported juice by individuals are: supermarkets/food stores and high-end shops located at the corners of important roads.

The table below lists some of the players in this market.

NAMES OF THE ACTORS	NATIOCAJOU (76 13 44 22)	MARBOUTIE (Rokia COULI-BALY (75 19 07 82)	Mme SANOGO Masseini (76 12 14 46)	Coopérative multifonction-nelle (Aminata Yoh TRAORE) 76 36 64 05)	Nanténin MAGASSOUBA (Nantenin) (76 08 59 24)
LOCALISATION	Sikasso, Sanoubougou 1, near the Thiona high school	Sikasso, Wayer-ma 2,	Sikasso	Sikasso	Sikasso
TYPES OF EQUIPMENT (OVEN, TUNNEL)	Artisanal equipment	Cooker, pasteurizer, grinder	Stainless steel tanks	Kettle and buckets in nickel and accessories	Seal and cup, stainless steel knife
VOLUME PROCESSED IN EACH CAMPAIGN	1,800 bottles of 33 cl	4,000 bottles of 25cl and 33cl	200 one-litre bottles	150 bottles of 90 cl	100 plastic bottles of 33 cl
MAIN CUSTOMERS: IN MALI, INTERNATIONALLY	Individuals, supermarkets	Individuals, supermarkets in Bamako		Individuals, supermarkets	Individuals, food stores in Sikasso, Bamako
CERTIFICATIONS: ORGANIC, FAIR TRADE	No, certification activities are ongoing ANSSA	Not certified	ISO 9001 and BIO	Not certified	Not certified
MANUFACTURE OF OTHER JUICES	Blackberry and cashew juice	Blackberry and cashew juice	Juice of bissap, ginger, Balanites, Tamarind, pineapple	Ginger, tamarind and bissap juice	Ginger, tamarind and bissap juice, balanites
PURCHASE PRICE OF FRESH MANGOES	4 mangoes for 100 FCFA	5 mangoes for 200 FCFA	4 mangoes at 100 FCFA	1 kg of mango between 35 and 50 FCFA	4 mangoes for 100 FCFA
SELLING PRICE OF MANGO JUICE	33 cl bottle at 350 FCFA	33 cl bottle 400 to 500 FCFA, and 25 cl bottle 350 to 400 FCFA	1 litre glass of juice at 1,000 FCFA		Plastic bottle of 33 cl at 500 FCFA

Table 4: List of mango juice stakeholders in Mali

NAMES OF THE ACTORS	EKT (76 46 29 62)	Unite JEMANK-AGELE (76 01 90 45)	NAKO (66 73 43 78)	NAPRO (74 14 77 48)	UTRAF YANGO (76 42 26 02)
LOCALISATION	Faladiè Solola	Koulikoro Gare, rue, porte 66	Niamakoro, Bamako	Kalabancoura, Bamako, rue 257, Porte	CRRA of Sotuba Bamako
TYPES OF EQUIPMENT (OVEN, TUNNEL)	1 Grinder, Pasteurizer,	3 grinders, cappers, kettles	mills, pasteurizers, cappers	2 grinders, 4 pasteurizers, 2 cookers, bagging machine	1 grinder, freezers, sieves and pasteurizers
VOLUME PROCESSED IN EACH CAMPAIGN	4,000 units 20 cl in ALU	24,000 bottles of 33 cl		10,000 33 cl plastic bottles	30,000 bottles of 30 cl
MAIN CUSTOMERS: IN MALI, INTERNATIONALLY	Distributors, food stores, individuals	Food stores, hotels, restaurants, individuals	Foods stores, hotels, individuals	Hotels, restaurants, individuals	Restaurants, hotels
CERTIFICATIONS: ORGANIC, FAIR TRADE	Not certified	Not certified	Not certified	HACCP certification in progress	Not certified
MANUFACTURE OF OTHER JUICES	Juice of ronier, Balanites, baobab, guava, bissap	Juice of ginger, tamarind, bissap, monkey bread, guava balanites, papaya, pineapple, lemon, orange, cocktail	Papaya, orange, guava juice	Guava, pineapple, papaya juice	Juice of papaya, guava, ronier, baobab, ginger and tamarind
PURCHASE PRICE OF FRESH MANGOES		3 mangoes at 100 FCFA		5 mangoes for 100 FCFA	75 FCFA per kg of mango
SELLING PRICE OF MANGO JUICE	Box of 12 bottles of 33 cl at 4,200 FCFA, 25 cl 4 000 FCFA, 1 box of 20 cl of 25 bottles at 4 200 FCFA	33 cl bottle of juice at 300 FCFA		Bottle of 33 cl 400 to 500 FCFA	30 cl bottle 260 to 300 FCFA

Table 4: List of mango juice stakeholders in Mali

NAMES OF THE ACTORS	ADAM SAVEURS (76 07 49 79)	SAHELLO (78 38 38 24)	GOOD JUICE (76 04 86 49)	Dickel production
LOCALISATION	Hamdallaye Bamako, door 259, street 94	Sarambougou, Kati	Daoudabougou, Bamako, door 102, street 174	Faladiè Bamako, Gouverneur Street
TYPES OF EQUIPMENT (OVEN, TUNNEL)	1 grinder, sieve	Pasteurizer, grinder and stainless steel kettles	Basins, buckets, sieves	1 grinder, 1 pasteurizer, cappers, washing tanks, freezer
VOLUME PROCESSED IN EACH CAMPAIGN	33 cl bottles	7,000 bottles 33 cl	500 30 cl plastic bottles	120 bottles of 33 cl
MAIN CUSTOMERS: IN MALI, INTERNATIONALLY	Restaurants, hotels, individu-als, food stores	Supermarkets, hotels, restau-rants, individuals	Individuals, shops	Food stores, restaurants, hotels and individuals
CERTIFICATIONS: ORGANIC, FAIR TRADE	Not certified	Not certified	Not certified	Not certified
MANUFACTURE OF OTHER JUICES	Juice of papaya, guava, ronier, baobab, ginger and tamarind	Mahogany apple juice, saban, bissap	Guava juice, lemon	Juice of ronier, Balanites, baobab, guava, bissap
PURCHASE PRICE OF FRESH MANGOES	1 bag of mangoes: 7,500 to 15,000 FCFA	Carton of mango 3,500 to 5,000 FCFA	3 mangoes from 100 to 200 FCFA	
SELLING PRICE OF MANGO JUICE	Bottle of 33 cl 350 to 500 FCFA	33 cl bottle from 400 to 450 FCFA	33 cl bottle at 200 to 300 FCFA	1 bottle of 33 cl at 350 to 400 FCFA

Table 4: List of mango juice stakeholders in Mali

NAMES OF THE ACTORS	USK	Société Abdoulaye Hamadoun	SOTRAPHO YIRIDEN SARL
LOCALISATION	Sanankoroba, Kati	Kalabancoro Kourouba, Kati	Bamako, Kalabancoura Rue 158, porte 277
TYPES OF EQUIPMENT (OVEN, TUNNEL)	Drums, grinders, mixers, cappers	1 crusher, capper	1 pasteurizer, 1 grinder, capper, filling tables
VOLUME PROCESSED IN EACH CAMPAIGN	33 cl bottles	35 cl	15,000 33 cl glass bottles
MAIN CUSTOMERS: IN MALI, INTERNATIONALLY		Shops, hotels, individuals	Supermarkets, shops, individuals
CERTIFICATIONS: ORGANIC, FAIR TRADE	Bio in progress	Bio in progress	Not certified
MANUFACTURE OF OTHER JUICES		Bissap juice, orange, monkey bread	Ginger juice bissap, cashew, guava, pineapple, papaya, watermelon, monkey bread, lemon, squash, balanite, zaban
PURCHASE PRICE OF FRESH MANGOES		1kg of dried mangoes at 1,000 FCFA	1 kg of mangoes from 60 to 100 FCFA
SELLING PRICE OF MANGO JUICE		35 cl bottle from 250 to 300 FCFA	Bottle of 33 cl 400 to 500 FCFA

Table 4: List of mango juice stakeholders in Mali

d. Regulation

i. Europe

Fruit juices are subject to the European Directive on fruit juices: Council Directive 2001/112/EC. This directive defines the characteristics of fruit juices, juice from concentrate and nectars, their names, compositions, etc. It is a directive and not a law, which means that it must be transposed into the laws of each specific country to export fruit juices to that country. The directive is complemented by the two directives 2009/106/EC and 2012/12/EU. In addition to the EU Fruit Juice Directive, juice products are subject to various EU laws regarding manufacturing and labelling, such as EU Regulation 1169/2011 [13].

ii. West Africa and Mali

In terms of sanitary regulations on fruit juices, West African countries, including Mali, mainly apply the conditions provided by the Codex Alimentarius on fruit juices in the CODEXSTAN247-2005 standard.

In Mali, mango juice is subject to the same requirements as dried mango. Thus, any operator in the mango juice sector must comply with the minimum requirements that take into account the regulations at the national, regional and international levels.

13 AIJN - Key EU legislation

IV. CONCLUSION: ANALYSIS OF CHALLENGES AND OPPORTUNITIES

Mali has the advantage of having a large surplus of mangoes produced on its territory.

The **dried mango export market is growing**, particularly in the organic and fair trade labelled segments. Moreover, there are few national competitors in this sector, which offers a good opportunity to position oneself. The competition in West Africa is still mainly composed of small players against whom it is possible to be competitive quickly. The investment in a drying unit remains relatively modest and the ramp-up of this activity can be done gradually: a South African type gas drying tunnel can process about 1.5 tonnes of mango per 20 hour cycle with an investment cost of about 45,000 euros.

The **mango juice export market is much more difficult to access**, as it requires the production of puree or concentrate in compliance with fairly strict hygienic procedures and two industrial players are already present in the country. This activity requires a significant investment for an industrial scale production (minimum 3 million euros), and a good control of the industrial equipment and processes. An orientation towards a smaller scale activity to produce a juice for the national market is less risky, but will require the development of a range of several products to produce all year round. In addition, there is the strong competition from several imported sweetened juices, notably from Egypt, Spain, Tunisia, Morocco and Nigerian products available at very low prices.

However, given the quantity of mangoes available in Mali, the positive consumption trends - regardless of the markets considered (local, regional or international) - and the current Malian imports, we can conclude that the market segment is potentially very promising and could or rather should be the subject of a more in-depth feasibility study for industrial production in Mali.

MARKET PROFILE
DRIED MANGO AND MANGO JUICE
FROM MALI

COLEACP

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Belgium - Avenue Arnaud Fraiteur 15/23 - B-1050 Brussels
France - Rue de la corderie, 5 - Centra 342 - 94586 Rungis Cedex
Kenya - Laiboni Center, 4th floor, P.O. BOX 100798-00101, Nairobi
network@coleacp.org | www.coleacp.org