



Product competitiveness for dried mangoes

The EU market for dried mangoes still needs to be further developed, particularly for naturally dried mangoes that are soft with an attractive colour. Current supplies to the EU are dominated by Thailand, Philippines, and South Africa, all of whom are innovating in drying techniques. In order to become more competitive, West African countries should stress the better taste, lower price and collaborate more with South Africa e.g. by adopting more advanced drying techniques.

This module reviews the following:

1. Key competitors for West Africa
2. Competitive analysis, opportunities and challenges
3. EU buyers' perspective

1. Key competitors for West Africa

ASIA

Thailand

Dried mangoes are produced in Thailand to reduce the loss in fresh mangoes. In Thailand, around 70% of fresh mangoes were lost due to a lack of sales in domestic and export markets and a lack of a suitable post-harvest technology. This loss is now reduced as the dried mango is now well established with production units that are located in export zones that are usually no more than 5 km from the mango plantations. This means that transportation and operational costs are low.

Thai producers cut mangoes (Nam Dok Mai) in thick slices and use advanced drying techniques and combine the process with osmo-active substances (glycerol, sucrose and sodium chloride), preservative (potassium sorbate), anti-browning agent and microbial inhibitor (sulphur dioxide), as well as a texture improving agent (calcium chloride).

Their marketing is very consumer oriented and dried mangoes from Thailand are attractively packed. They are exported to Asia, USA, Middle East and EU countries and production volumes are backed up by a continued growth in demand in the local market.

Weaknesses

- *High sugar content.* Dried mangoes from Thailand are characterised as highly sugar dehydrated mangoes with a relatively low nutritional quality and a poor mango flavour.
- *Texture and shrinkage.* The quality of dried mangoes from Thailand is still affected by damage to the texture, leading to shrinkage, slow cooking, incomplete dehydration and changes in colour.



Competitors in Asia

Philippines

The Philippines is also a main producing country in the world. The main mango variety (carabao) for drying is very sweet. Cebu is an important production area where mangoes are also processed into balls as candies. Mixing the ripe mangoes with ripe tamarind is another technique to produce a candy called "mangorind".

Canada, USA, Japan, Germany, Australia, Italy and Vietnam are the most important export markets. Dried mangoes are sold in bags of 20 gram, 50 gram, 100 gram and 200 gram in the local market. There are some large international producers such as [Profoods International](#), [7D Food International](#), Dole products, Guimara Best, Costa Buena foods all using modern drying equipment and processing methods.

During the peak harvest season (March – June), local processors struggle to meet the growing demand of the dried mango export market due to the limited drying capacity. Mangoes are cut into thick slices and drying is usually done through convection dryers such as a cabinet dryer heated by LPG (gas) or steam boilers.

In 2013, a new engineered drying technology was introduced using a combined far-infrared and convection heating (FIRCH) system. This dryer is tunnel shaped and made of food grade stainless steel with a dimension of 9.6 meters in length, 0.38 meter in width, and 0.38 meter in height. It uses ceramic heaters to produce infrared energy with a temperature of 250°C. This technology reduces the drying time of mango slices from 12 hours to just 8 hours. This will be a competitive advantage of dried mangoes from the Philippines.

Still, there is a need to dry the semi-dried mango slices using a convection dryer to completely reduce the moisture content down to 14%. But this will only consume 6 hours in the cabinet dryers. More details can be found at [Philmech](#)

Weaknesses

- *Shortage of supplies.* The growth of the local mango processing industry is still limited by high production costs and shortage in the supply of fresh mangoes.
- *Higher prices.* This is forcing producers to sell dried mangoes as a high end product, which makes it difficult to compete with similar products from other countries.
- *Infrastructure.* Problems with the infrastructure and high inter-island shipping costs also increase the production costs.
- *ASEAN Neighbours.* The dried mango industry is facing stiff competition from its ASEAN neighbours e.g. Vietnam and notably Thailand albeit the quality of dried mangoes from the Philippines is superior to those from Thailand.

India

India is the one of the largest and most varied fruit producing nations in the world, accounting for 10% of all fruits and 40% of tropical fruits produced globally. Mangoes are cultivated in almost all the states of India.

In 2012, around 15,000 thousand tonnes of fresh mangoes were produced in India.

Although India is the world's largest mango producer, current export volumes represent less than 1% of domestic production levels, and an insignificant amount of the total world fruit trade.

Fresh mangoes are exported to Bangladesh, Saudi Arabia, UAE, Kuwait, Bahrain, Qatar, UK and Germany. Processed mangoes such as fruit juice, fruit pulp, puree and pickles are mainly exported to Russia and Yemen. Other markets for processed mangoes, including dried mangoes, go to the Middle Eastern countries, USA, UK, Germany and Switzerland.

Weakness

- *Ban on Indian mangoes.* Since 2013, the EU has banned Indian mango imports, which is set to expire by the end of 2015, due to evidence of too high pesticide levels in Indian mangoes and a lack of sufficient phytosanitary measures. This also affects the Indian exports of dried mangoes to the EU.

Pakistan

Pakistan houses an important mango processing industry (pulp, juice, drink, chutney, pickle or murabbas). The fibreless Sindh variety with its unique sweet taste is mainly used for dried mangoes and drying is done by solar and/or fuel fired dehydrators. In 2010, the production of dried mangoes was estimated according to USAID at 83 tonnes. Mango slices and mango candies are exported to the USA, Europe (mainly UK) and Asian countries.

Instead of mango slices, mango pulp is also dried (called *mango leather*). This can be made in different tastes by various additives in the pulp. Currently Pakistan is developing the mango sector with the help of NGOs (USAID). See also [here](#) for more information.

AFRICA

South Africa

Dried mangoes from South Africa are regarded in the EU to be of a higher quality because they are sweet and their taste is very close to fresh mangoes. Therefore, their price level is higher than dried mangoes from Asia (see table 1). The varieties used for dried mangoes are Tommy Atkins, Kent, Keitt and the Heidi variety, which is popular in the local market.

According to [Subtrop](#), the quantity of dried mangos produced in South Africa increased by 16% between 2009 and 2010, from 8,379 to 9,747 tonnes. Exports are mainly to the UK, and to France in small quantities. Peru is an important competitor in the EU market - mainly for fresh mangoes - and therefore South African exporters are increasingly looking to the East African market and the domestic market for both fresh and dried mangoes.

Supply from South Africa seems more seasonal than Thailand whose products are present all year round. The climatic conditions during the growing season are not particularly good either. Volumes of mangoes (fresh) were down between 2010 and 2012 from 65 to 58 thousand tonnes.

For dried mangoes, a comparison is often made between the products from West Africa and South Africa. South African dried mangoes are better suited to the expectations of EU importers and consumers, even if conventional methods are used here. The production units in South Africa have a significantly greater treatment capacity than West African countries and are more efficient by maintaining the drying temperatures with forced ventilation.

Preservatives are added giving the dried mangoes a longer shelf life and a uniform colour. South African slices are larger and thicker and are cut mechanically. The storage conditions are adapted by reductions in temperature. However, production of dried South African mango also has several constraints, such as the lack of fresh mangoes and fluctuations in the energy supply can disturb the drying operations.

Weaknesses

- *Problems regarding supply.* The mango season is from January to the end of March, which means a shortage of fresh mangoes. Besides there are problems with electricity supply and exports that are not well organised leading to an oversupply of dried mangoes. Cooperation with West African countries could alleviate possible oversupply market situations.

Tanzania and Kenya

Both countries are large producers of fresh mangoes - Kenya 636 thousand tonnes, Tanzania 335 thousand tonnes in 2012 according to FAOSTAT. Exports are primarily focussed on the Middle East, Asia and the African continent. In addition, dried mango production is still small. Farmers in Murang'a County, in Kenya's central region, are drying their fruit and vegetables with locally-made solar driers to make high-value products.

The mangoes are sliced into small pieces, dried and then packed. The dried fruits and vegetables are then sold to exporting companies that also teaches the farmers about processing techniques using a solar drying system.

Some large multi-sector companies (e.g. [Obtala Resources](#)) have started up new projects that are vertically integrated and aim to sell more in the local market and in export markets. They use up-to-date farming practices and irrigation to optimise margins in order to produce revenues all year round.

West Africa

Ghana

Dried mango production is gradually done on larger scale as local consumption and exports increase. [Ebenut](#), Tamale Food Processing Company and [HPW](#) (Swiss owned) are large producers of dried mangoes. They sell certified organic mangoes with Ebenut buying mangoes from Fair trade farmers. Sometimes mangoes are sourced from Burkina Faso or Mali.

There are two mango production seasons from January/February and from May to August if there is sufficient rainfall during these periods. According the [ITC](#), the potential production of dried mangoes in Ghana is estimated at 100 tons per year, if enough fresh mangoes are available and problems in logistics, transport can be overcome and high costs (of ovens) can be reduced.

Dried mangoes in Ghana are usually air-dried by ovens. Mango slices are prepared and dried by using a low-temperature drying process with clean air. This process retains the mango flavour (taste), colour and nutritional values without adding preservatives or other additives.

Exports are mainly to the UK, some other EU countries as well as to North Africa and the Middle East, especially during Ramadan.

Burkina Faso

As in other DCs, drying mangoes was seen as an opportunity to reduce the waste of fresh mangoes, which was estimated at 35 - 50% of the total fresh mango production in Burkina Faso. Since the 1990s, production units were established with the help of NGOs - including OXFAM. Mango production was also stimulated in order to diversify from the cotton monoculture.

Organic dried mangoes from Burkina Faso are now well-represented in organic shops and Fair trade shops in Switzerland ([Claro Suisse](#)), Belgium ([OXFAM](#)), France ([Solidar'Monde](#)), Austria (EZA), Italy (CTM), Netherlands ([Fairtrade](#), organic shops) and Germany ([GEPA](#)).

There are several cooperatives specialised in dried fruits close to Ouagadougou, Bobo Dioulasso and Mayabouti. Since 1992, five cooperatives joined forces by creating the Cercle des Sécheurs (CDS) with 600 people (80% women) that have grown to a considerable economic group with an export licence. The group owns 18 orchards being certified by Ecocert International with 60 certified smallholders and owns 5 production units. [NAAM](#), Tensiya and Maybouti are the most important cooperatives.

The Kent, Brooks and Keitt varieties are usually sun-dried and since 1996, gas ovens for drying are used. Sometimes both drying methods are combined.

Mali

Being a large producer of mangoes, there are excellent opportunities for dried mangoes from Mali. Around 50% of dried mangoes come from small processors in the Sikasso area and are certified by ECOCERT. The dried mango sector in Mali remained limited to small family businesses with a lack of coordination in the value chain and a low visibility of Mali in exports. Processors in Bamako registered their dried mangoes as 'exports from Senegal' and a large part of Malian dried mangoes were re-exported to the EU or USA by Burkina Faso.

As there is a large availability of the Kent, Keitt and Amélie varieties from organic certified growers in Mali which are particularly suitable for drying and have a strong taste, the sector has a large potential to develop further. Several programmes were launched to improve the cooperation in the value chain, to promote pre-treatment processing, to use more advanced drying techniques, and to organise the dried mango sector in Mali. For example:

- The **PCDA** (Projet de Compétitivité et de Diversification) for capacity building of the processors and other actors in the value chain with a consultation of South Africa. This was financed by the World Bank.
- The **AWEF** Programme (Hillary Clinton) to stimulate women entrepreneurship that will be re-launched in Mali in September 2014.

One of the bottlenecks for mango processors and exporters is the development of packaging of a good quality. Currently the high temperature storage limits the lifetime of dried mangoes after 7 – 10 days, even if they are vacuum packed.

Another challenge for the sector is to meet the strict buyer requirements in the EU and the need for transparency. On the positive side, progress has been made, despite the political problems, by the creation of a web-based platform (Fruiléma and Monobi) which organises ICT-trainings.

High energy costs of air dried ovens in West Africa

In Ghana, Burkina Faso and Mali thin mango slices are air dried in ovens (electrical or gas) under low temperatures with clean air keeping the flavour, colour and nutritional values. The costs of electrical drying are high and there are regular electricity cuts that can be solved by using diesel generators. Using solar panels or biogas are more ecologically sound solutions (reducing CO2 emission) both used in Burkina Faso and Ghana. Compared to the other African and Asian countries this is a competitive disadvantage.

2. Competitive analysis, opportunities and challenges

Based on the characteristic in the previous section important competitors for West African countries are:

- Thailand and the Philippines, and increasingly Pakistan are serious competitors for dried mangoes in the EU market.
- Pakistan will supply more to UK importers and retailers who are unable to supply mangoes from India. However, the taste of Asian mangoes remains sweet because of a preference in the local markets, Russia, emerging Asian and Middle Eastern countries.
- The Philippines with mangoes of a better quality and taste but higher in price. However, if the new processing technique (FIRCH) is more widely adopted by producers, price levels of dried mangoes are likely to reduce.
- South Africa exports dried mangoes to the EU that have a good taste and use the same varieties as West Africa. The country is recognised as a high quality supplier, although the production seasons depend on the availability of fresh mangoes, which is limited. They could be sourced from West Africa in exchange for transfer of drying technology.
- Tanzania and Kenya are developing their dried mango production by using locally made solar driers that require a high investment in the beginning but can be profitable in the end, if larger quantities are produced all year around.
- More competition may arise as well from Brazil and Peru that are already the main fresh mango exporters to the EU.

Opportunities for West Africa

- **Excellent taste.** There is no doubt that the taste of dried mangoes from West Africa is excellent and much better than the Asian varieties because the taste is sweet/fresh and much closer to the taste of fresh mango.
- **Stress the healthiness of naturally dried mangoes** as a snack and as an ingredient in breakfast cereals or snack bars that contain too much sugar.
- **Focus on a wider consumer group.** A study done by Sense showed that the EU market for dried mango was promising for West African countries even if Mali and Burkina Faso have lost market share since 2008. The quality needs to be improved by better drying technology, pre-treatment, storage, transport conditions and a focus on a wider consumer group.
- **Testing new ovens.** Discussions with South African companies have led to tests with new ovens in Burkina Faso and Mali, drying techniques and new product development (quick frozen mango cubes and mango energy bars).
- **Ingredient in muesli.** Dried mango can enter into the composition of specific preparations such as muesli. Its production and trade could be expanded. However, the low seasonal production remains a major handicap.
- **The proximity to the EU** of the West African countries with frequent air and sea links implies a good USP of selling dried mangoes that are 'fresher'. Even if exporters consider airline connections insufficient, dried mangoes can still be delivered within 24 hours, thanks to direct connections of passenger or cargo flights.
- **The use of organic waste** from fruit (skin, core) could also be valued for the production of dried fruit (decomposition gases) and lessen the energy requirements of the transformation (associated with energy sources already used: gas, electricity, solar energy).
- **Lower prices.** The wholesale and retail prices of dried mangoes from West Africa are lower than those from Asia or South Africa. This can encourage consumers to try them.

Table 1 Prices (€) of dried mangoes wholesale (by sea) and retail in the EU

	Wholesale kg	Retail 150 g	Remark
Dried mangoes			
Thailand	4.70 – 7.00	1.90 - 2.65	By air wholesale price 9.50 – 11.50 Loose sales (150 g) retail price 2.20
Seeberger (Thailand)		3.80	Well-known German brand
South Africa	5.50 – 7.50	2.50 – 2.75	By air wholesale price 10.00 – 12.50
Burkina Faso	5.50 – 6.00	2.00 – 2.20	
Other dried fruit			
Seeberger dried apricots (soft)		1.87	
Seeberger dried pineapples (no additives)		4.48	with additives of the same brand much cheaper € 1.80

Source: various checks at stores and wholesalers (2014)

Prices of dried mangoes from South Africa were higher than the other countries (Thailand, Burkina Faso) because they are soft and their taste is better. If they are transported by air, wholesale prices are 60-80% higher because of more 'freshness' of the product.



Seeberger mangoes



Burkina Faso mangoes

Price comparison. Price range depends mainly on the uniformity of presentation of the product in terms of size and the colour of the slices. Retail prices of natural dried mangoes from Burkina Faso were much lower in price than the dried mangoes sold by the German brand Seeberger, which is a competitive advantage.

Dried mangoes are still quite expensive compared to other dried fruits such as dried apricots (see table 1), or dried fruit mixes. Dried pineapples without additives, a new product by [Seeberger](#), was even more expensive being 20% higher in price than dried mangoes (with preservatives).

Challenges for West Africa

Exports are still limited and West African companies do not have the capacity to export on a large scale like companies in Asia. The volume of exports of dried mangoes from Burkina Faso, Mali and Ghana remains comparatively small. In West Africa, there are many actors in the mango value chain because the mango orchards are small and are scattered in different areas.

It is difficult for mango exporters to coordinate and control the production to achieve consistency in the quality and colour of dried mangoes and most production and exports are still limited to the main mango seasons.

Different worlds and high costs of production. Between the smallholders in the West African countries, there is much competition and a lack of communication and cooperation. In addition, the energy costs for electrical drying or drying by gas are high. The dried fruit/mango product is still based on the 'made to order' principle and not very marketing oriented so they are still unknown among consumers, wholesalers and importers.

Other common problems that affect the development in production are:

- *Availability.* The dried mango production depends on the fresh mango availability during the main mango seasons (January - August) and is therefore not continuous throughout the year. This affects the competitiveness of dried mangoes in export markets.
- *The transport* for the supply of fresh mangoes for drying is not well developed. This affects the quality before the drying process.
- *The drying equipment* commonly used in West African countries is old and less efficient compared to Asian countries.
- *Manual processing* of fruits (handling, peeling or cutting) is a handicap not only for the productivity but also in terms of hygiene, i.e. the dried mango usually goes through the hands of 5-6 different persons during processing.

The above constraints are responsible for the quality of dried mangoes from West African countries. The main points of criticism about the product are:

1. **The slices or chunks are often too different**, even if attempts are made to make them more uniform in size and thickness.
2. **The colouring is diverse** and changing after some time to dark brown, which makes the product look old and unattractive/unappetizing for many consumers.
3. **The dried mangoes are hard/tough** when tasting them and some are sticky.
4. **Unattractive packaging.** The basic packing in a transparent plastic bag or case), is often unattractive. The promotion on the package need to be more sophisticated, especially if it is an expensive product – see photo.



Dried mangoes from Cameroon

3. EU buyers' perspective

The negative image. The African continent is often associated with poverty, corruption, unreliability or political instability. This image is being reinforced by cases that are exaggerated by western media. However, the negative image is slowly changing as in some African countries the young population is growing fast and more agricultural/economic activity is developing.

Suspicion and cautiousness towards West Africa

Being a smaller exporting company, you will have to compete by showing your professionalism. One the first rules to avoid, is to start the business relationship by asking for money in advance to cover production or transportation costs.

EU importers have complained in the past that they sent money or seeds for growing operations. However, by harvest time, they had still not received the promised products, nor heard anything.

Although several reasons can explain the various shortcomings, EU importers now have a general 'suspicion' vis-à-vis exporters from African countries, especially from West Africa.

Importers (buyers) have therefore become cautious and tend not to engage in a business relationship that starts by requesting money for production. Moreover, their cautiousness has reached a point that even when they are expected to pay for transportation costs, they will be reluctant to do so for first trials.

Explain that you are open to discuss terms of payment and delivery based on common practice (Incoterms), on the basis of a clear knowledge of your own value chain and the potential risks in your country. Once you have agreed with the importer, confirm this by e-mail and try to stay in close contact with him.

Considerations for action:

- **Stress the natural sweet taste** Emphasize the natural sweet/fresh taste of your dried mangoes that are made from varieties with a strong taste (Kent, Keitt, Brooks, Amélie). This is an advantage compared with the conventional dried mangoes from Asia, which are much sweeter. Note that colour and softness are still important – see Module 'Product characteristics'.
- **Seek cooperation with South Africa.** An improvement in drying can be achieved by collaboration with South Africa where more advanced technologies are used and the quality of dried mangoes is higher.
- **Different drying techniques.** Test the effect on quality, softness and shelf life by testing drying with different mango humidity levels, cold storage and refrigerated transport.
- **Stress the low price level to buyers,** especially for natural dried mangoes that are transported by air and therefore are more 'fresh'.
- **Improving your image.** If a buyer refers to a bad case, just recognise that malpractices are happening. Then, try to create a dialogue with importers (or buyer) saying you are aware of such practices - by inexperienced exporters or via shady middlemen. You can demonstrate more professionalism and providing evidence (e.g. testimonials) that this is certainly not the case for your company, and that the quality/taste of your product is excellent.
- **Be more distinctive** when presenting your mangoes by emphasizing their originality and excellent taste. It will be up to all exporters to develop '*an origin*' on a regional level on the African continent rather than a specific company or country brand to differentiate from Asian dried mangoes. For example 'Dried mangoes from West Africa'.

This survey was compiled for CBI by **Searce**
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