French industry rapidly expanding

Originating from South America, the sweet potato is currently grown in more than one hundred countries worldwide, with its consumption increasing by 12 % per year. In France, with imports of 43 000 tonnes in 2018, the sweet potato is stepping up its shelf presence. Several producers and players from professional bodies are taking an interest in this industry, continuously progressing over the last five years or so. Surface areas are seeing unprecedented expansion, and initiatives show that this industry is apparently not minded to limit itself to a local niche market.

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The sweet potato is the world's third most cultivated tuber, with an estimated production of 113 million tonnes in 2017. Despite a decrease in its production, China, and more specifically the Guangxi region in the south, remains by far the world number one producer. This crop is primarily intended for making livestock feed, from both leaves and tubers. Africa accounts for approximately 25 % of world sweet potato production. It makes a major contribution to food security, and is therefore mainly intended for local consumption. Sweet potatoes produced in Africa are white-fleshed, floury and slightly sweet.

The sweet potato, a vegetable with appeal

The sweet potato is an annual vine belonging to the Ipomoea family (*Ipomea batatas*). It is a tropical plant originating from Latin America. The oldest traces of domestication and consumption were discovered in Peru, which is now one of the main centres of genetic diversity, along with Ecuador, Colombia and Guatemala. CIP, the International Potato Centre based in Lima (Peru), has the world's largest sweet potato gene bank. There are more than 500 varieties: the skin colour and flesh colour may vary across a spectrum of orange, red, white and violet, and all colour combinations are possible. The tastes and shapes of these tubers also vary, just like their nutritional values. The various varieties cultivated in Europe are the result of close collaboration between sweet potato purchasers and the USA: Pat Fitzgerald Nurseries in Ireland was a pioneer in the introduction of the sweet potato to Northern Europe. It works in close collaboration with the University of Louisiana, and so has American varieties. It is mainly orange-fleshed varieties which are favoured in the USA and Europe.

Growing demand in Europe and France

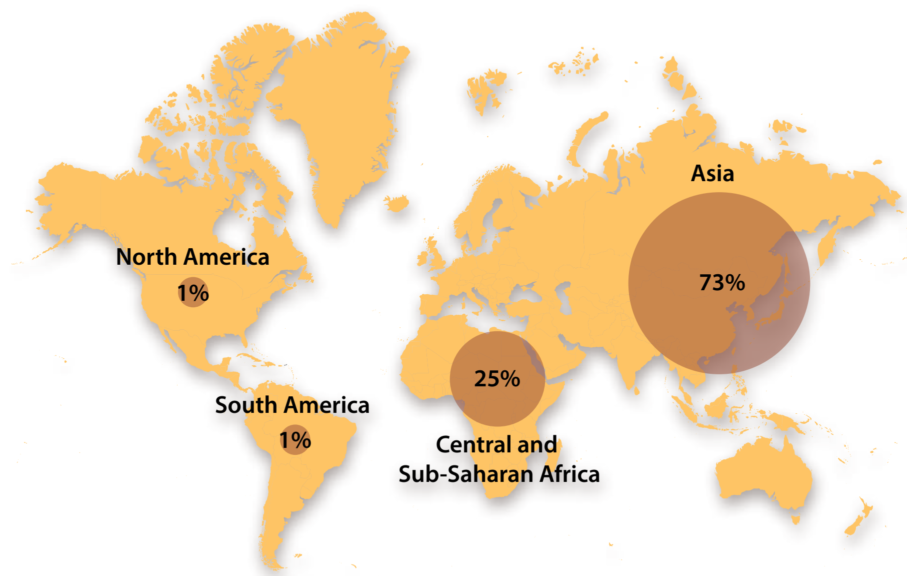
The main sweet potato producer countries are not necessarily the major players in international trade. Although production is increasing by approximately 6 % per year, trade still involves less than 1 %.

World demand has increased by 12 % over the past five years. The consumption increase is marked above all in Europe, which shapes the world sweet potato market. Hence the EU's imports have seen unprecedented growth, practically doubling between 2014 and 2018 (317 000 tonnes). The world's main importer is the United Kingdom. In Europe, the Netherlands, which provides some of Europe's re-exports, holds second place.

France is Europe's third biggest sweet potato importer. The main varieties consumed are orange-skinned and fleshed, and come primarily from the USA, Spain and Israel.

- **The USA** is the world's main exporter, with 300 000 tonnes of orange sweet potatoes, 65 % of which are earmarked for the European market. The main production zones are situated in North Carolina, Mississippi, Louisiana and California.
- **Spain** is also one of the main orange sweet potato exporters, with half of its exports aimed at the European market. Production has made big progress within the space of a few years, going from approximately 22 000 tonnes in 2014 to more than 51 000 tonnes three years later. It is concentrated primarily in the Malaga region in the south of the peninsula. Spain is now the European number one for the sector.
- **Israel** is one of the top ten sweet potato exporters to Europe. In addition, it is one of the main sweet potato plant suppliers to France. It primarily produces orange varieties.

France's import volumes tripled between 2014 and 2017. However, between 2017 and 2018, a slight decrease in imports was recorded, while the percentage of re-exports remained around 6 %, and consumption kept growing. This may be attributable to increased local production.

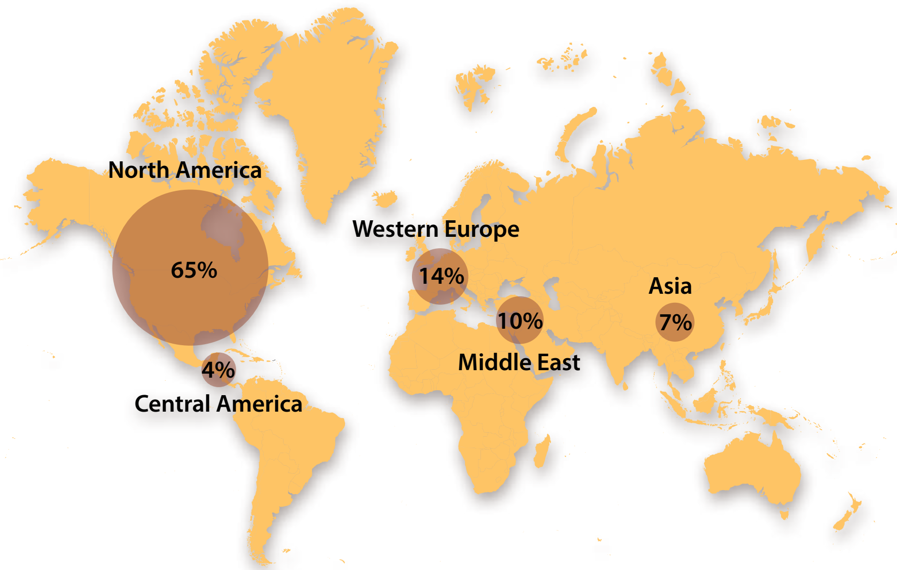


Distribution of world sweet potato production
(source: FAOStat, 2018 | processing: Romy Lynn Chaib)

Sweet potato – World top 10 producer countries

in million tonnes	2017
Total world, incl.	**112.8**
China	72.0
Malawi	5.5
Tanzania	4.2
Nigeria	4.0
Indonesia	2.0
Ethiopia	2.0
Angola	1.8
Uganda	1.7
United States	1.6
India	1.5

Source: FAOStat 2018



Main sweet potato export areas
(source: TradeMap, 2019 | processing: Romy Lynn Chaib)

A considerable development dynamic for French production

Sweet potato cultivation in France is expanding, thanks to the adaptability of the American, Spanish and Israeli varieties to North European climates, cooler and drier than in the tropics. The progress of French production is also directly due to consumer demand, with increasing awareness of the origin and quality of the products. Hence while they are demanding more local French products, they also seek novelty and a taste of the exotic, which applies to the sweet potato. This craze has led to local French production progress over approximately the past five years now.

Furthermore, this industry is progressing because producers see an opportunity to diversify their productions and their revenue sources. The initiatives are mainly being driven by small producers selling their products in short circuits. However, some cooperatives and large groups are also throwing themselves into production of this tuber, and want to develop long circuits. Hence plant producers are in turn being urged to undertake sweet potato production. This industry is forming bit by bit, with planted surface areas constantly expanding. Today, sweet potato production in France is concentrated primarily in Occitanie and Nouvelle Aquitaine, though it is also developing in the PACA region, in Pays de Loire, Brittany and Normandy. Surface areas are estimated by professionals at around 500 ha, i.e. marketable volumes of nearly 10 000 tonnes, taking into account sorting rejects and losses. We should reckon on approximately 30 000 plants per hectare on average, producing one kilo per plant.

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Sweet potato – Top 10 EU supplier countries

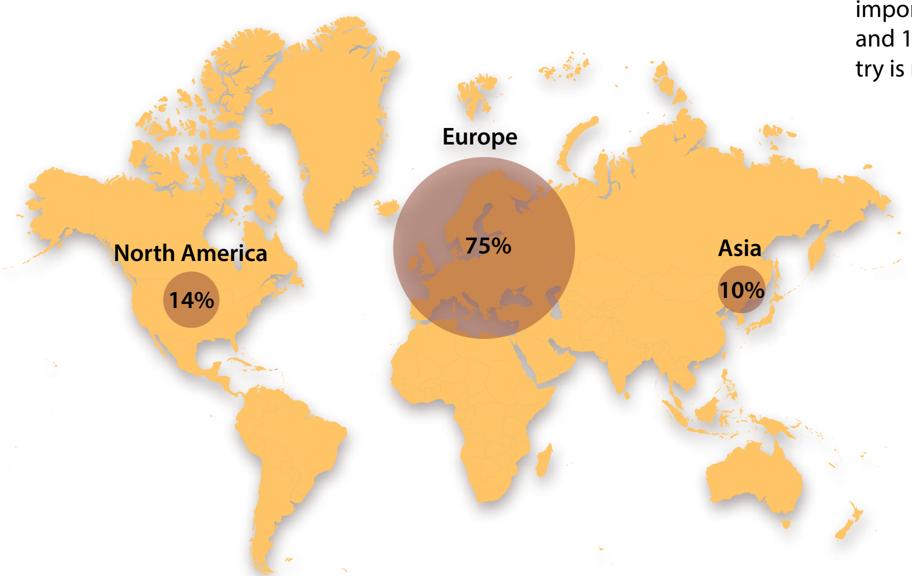
in 000 tonnes	2014	2015	2016	2017	2018
Total, incl.	**142.0**	**216.2**	**271.0**	**314.4**	**316.8**
United States	85.1	126.9	176.7	203.5	199.2
Spain	15.2	37.7	32.9	31.9	28.8
Egypt	9.8	9.5	11.3	11.5	23.2
China	6.8	10.6	13.1	22.2	20.5
Portugal	1.8	1.8	2.3	5.6	11.0
Honduras	8.1	10.0	12.7	14.1	10.9
Israel	6.3	8.9	8.6	4.5	5.5
Senegal	1.8	3.1	4.9	6.7	3.7
Brazil	1.2	1.2	1.4	2.0	2.1
Guatemala	-	-	-	1	1.0

Source: Eurostat 2018

Sweet potato – Some varieties

Varieties	Skin/flesh colour	Launched by
*Beauregard**	copper/orange	USA (Louisiana Agricultural Experiment Station)
*Jewell**	copper/orange	USA (North Carolina State University)
*Covington**	red/orange	USA (North Carolina State University)
Jasper	red/orange	Spain
*Evangeline**	pink/orange	USA
Georgia Jet*	pink/orange	USA (Georgia)
Orleans*	pink/orange	USA
California	orange/orange	USA (Louisiana Agricultural Experiment Station)
Murasaki*	purple/white	
Bushbok	red/white	South Africa
*Bonita**	cream white/white	
Stokes Purple	light purple/dark purple	USA

* Varieties tested in France according to the professionals surveyed
In italics, the varieties listed on the Rungis market
Sources: CIRAD 2015, LSU AgCenter 2016, professionals



Main sweet potato importing areas
(sources: Eurostat 2018, TradeMap, 2019 | processing: Romy Lynn Chaib)

Sweet potatoes produced in France are mainly orange-fleshed, the most familiar type for consumers, who are attracted by their colour and shape. According to professionals, these varieties represent more than 90 % of consumption of sweet potatoes in France, the main varieties sold on the French market being Beauregard, Orléans, Covington, Jewell, Georgia Jet and Evangeline. For the moment, the variety that seems to be the most common among French producers is Beauregard: not only is it free from any rights, meaning that it can be grown from stock plant cuttings by the producer, but it also bears homogeneous tubers. Some white varieties are being tested in France, such as Murasaki or Bonita. The white sweet potato market however remains a niche ethnic market, although there is great potential to harness, since these sweet potatoes are richer in dry matter and less rich in fast-acting sugars.

French-produced orange sweet potatoes sell on average for 2.50 euros/kilo on the wholesale market, while in the short and local circuits, retail prices can rise to 4-5 euros/kilo. These same sweet potatoes, when imported, sell for a wholesale price of between 1.50 and 1.80 euro/kilo. So the French sweet potato industry is not very competitive on its domestic market.

Sweet potato – France
Top 10 supplier countries

in 000 tonnes	2015	2016	2017	2018
Total EU, incl.	**19.7**	**28.2**	**43.3**	**42.8**
United States	2.4	3.6	12.8	15.6
Spain	7.0	11.6	14.5	11.1
Israel	5.5	5.9	2.6	4.0
Portugal	0.1	0.5	3.2	3.1
Netherlands	0.3	1.0	2.7	2.4
Egypt	1.2	1.3	1.0	2.1
Honduras	1.2	1.8	1.9	1.5
Senegal	-	-	1.8	1.2
Brazil	0.1	0.1	0.3	0.5
Belgium	-	-	0.6	0.3

Source: French Customs 2018

Sweet potato – World
Top 10 importer countries

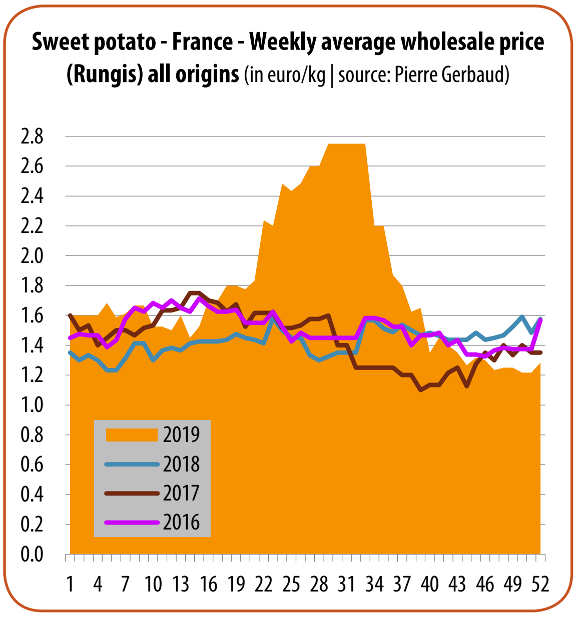
in 000 tonnes	2014	2015	2016	2017	2018
Total world, incl.	**388.8**	**445.5**	**547.8**	**599.3**	**NA**
United Kingdom	81.3	133.2	157.4	156.8	147.7
Netherlands	44.3	59.5	84.4	110.2	126.9
Canada	45.8	55.6	62.7	66.2	72.4
France	16.9	20.3	29.1	47.3	46.9
Belgium	3.6	4.9	15.2	34.0	40.2
Germany	14.0	19.6	25.4	32.1	33.4
Thailand	16.7	21.4	17.1	18.8	21.0
Japan	18.7	16.1	16.2	18.4	15.6
United States	16.2	19.6	13.2	12.1	14.5
Malaysia	10.5	11.7	12.2	11.5	11.5

Sources: Trademap 2019, Eurostat 2018

Sweet potato – European Union
Top 10 importer countries

in 000 tonnes	2014	2015	2016	2017	2018
Total EU, incl.	**186.7**	**266.5**	**349.5**	**425.0**	**452.3**
United Kingdom	81.3	133.2	157.4	156.8	147.7
Netherlands	44.3	59.5	84.4	110.2	126.9
France	16.9	20.3	29.1	47.3	46.9
Belgium	3.6	4.9	15.2	34.0	40.2
Germany	14.0	19.6	25.4	32.1	33.4
Italy	10.9	8.5	6.7	7.2	9.1
Spain	1.2	1.5	1.9	2.0	8.5
Ireland	3.8	4.7	8.5	7.4	6.1
Finland	2.9	3.7	4.5	5.4	5.8
Sweden	1.4	1.8	2.8	4.5	5.7

Source: Eurostat 2018



Sizing

French consumers seek L size tubers, without particularly favouring L1 or L2. The M size is also favoured by traders and consumers. Hence after manual sorting to remove broken, nibbled or holed tubers, the harvest should ideally comprise M and L sizes. After sizing, orange sweet potatoes are put in 6-kg boxes to be sold loose. White sweet potatoes may be packed in 10-kg boxes.

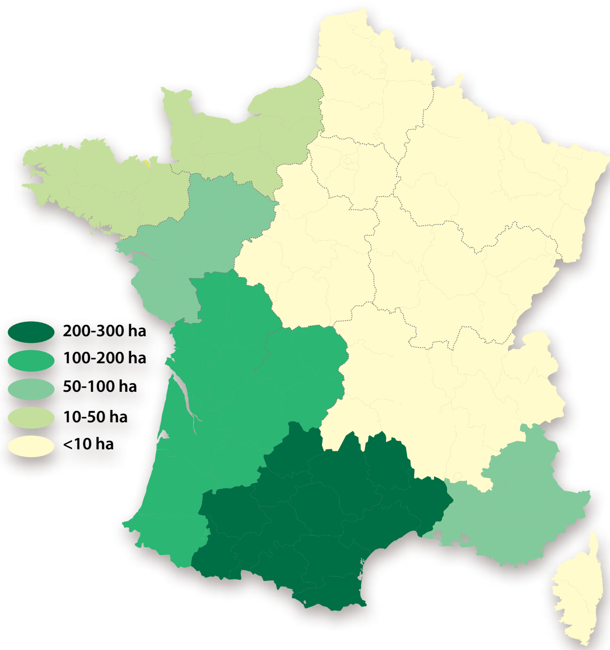
Sweet potato – Sizing

Size		Weight
S		< 150 g
M		150-300 g
L	L1	300-450 g
	L2	450-600 g
XL		600-900 g
G		900-1500g

Toward a sustainable industry?

The progress of the French sweet potato industry is driven by ambitions of sustainability, but first and foremost can be boiled down to its economic dimension. However, the industry has not yet stabilised: as it is today, it is inefficient and remains vulnerable to certain brakes. On the one hand, producers must face technical problems of weeds and pests, against which no product is currently approved. On the other hand, production costs, especially plant prices, may be too high, and prevent some producers from investing in this industry. However, there are a host of ongoing projects to find solutions to the technical and economic problems. The sweet potato industry has huge potential given the numerous avenues for development which exist, but which are only just starting to be harnessed. Hence the diversity of outlets, the development of long circuits, the diversity of cultivated varieties and processing of local sweet potatoes should help make the industry more sustainable. French production is not setting out to replace imports, nor does it have the resources to do so in the short or medium term. It still needs to work on developing technical itineraries, in order to lift certain blocks. The fact remains that this industry has a fine future before it, and like others it will be able to harness in particular its local character ■

Romy Lynn Chaib
info@fruitrop.com



Estimated cultivated areas of sweet potato in Metropolitan France
(source: analysis of stakeholder and producer surveys, Romy Lynn Chaib, 2019)