The Food Value Chain of Buckwheat in Belgium

CROPDIVA – 5.1

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1.1 Buckwheat in Belgium

Originally cultivated in East Asia, Buckwheat *(Fagopyrum esculentum)* has successfully made its way to Europe since the 15th century. Buckwheat is also called a "pseudo-grain" as the harvested product of interest is the plant's seed, which is not a true cereal. For its composition, buckwheat is a viable source of protein and other essential micronutrients, and it is also free from gluten (Campbell, 1997). While buckwheat contains desirable nutritional benefits, it is only marginally produced in Belgium, with approximately 5 ha of land cultivated for the crop in Flanders, and around 26 ha of organic production in Wallonia in 2016 (FilAgri, 2019; DLV, n.d.).

As of 2020, Belgium's largest export markets for buckwheat include France, Germany, and the Netherlands, accounting for almost 80% of total exports. Apart from this, export values of buckwheat are steadily rising through the years, and thus, this crop has a huge potential for market development, as seen in Figure 1. Despite the rising exports of buckwheat from the country, Belgium remains to be a net importer, with import values approximately twice that of the country's overall exported amount in 2020 (OEC, 2020).

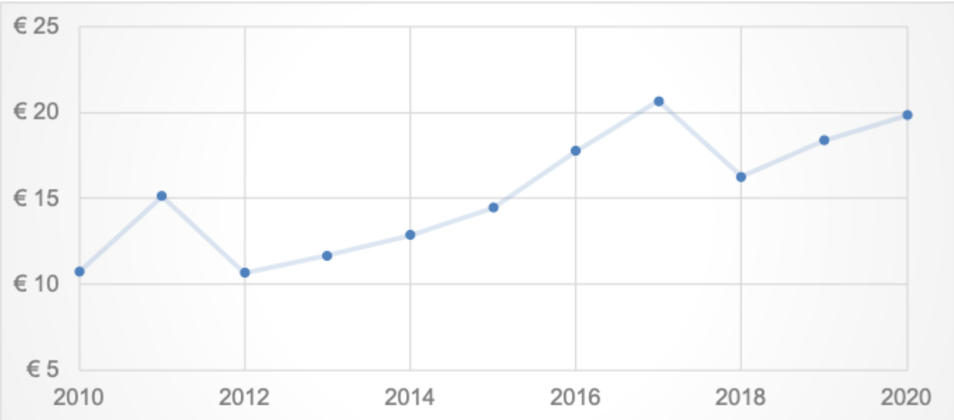

Figure 1: Export value of buckwheat from Belgium, in million € (OEC, based on BACI data, 2020)

While it is evident that buckwheat exports are becoming robust in recent years, the relatively large imports of buckwheat indicates the growing demand for the crop (and its derivatives such as buckwheat flour), for both food and feed uses in Belgium. In fact, a consumer study conducted by Altergrain revealed that most Belgian consumers are familiar with buckwheat, and they usually associate this crop with breakfast meals and other cereal-based snacks such as muesli or granola bars (Linssen et al., 2019). Even so, buckwheat still faces the challenge of low representation in the domestic retail environment, and majority of buckwheat can only be acquired in specialty food shops such as organic product stores (Vleugels, 2020).

Nevertheless, certain buckwheat producers are exerting efforts in order to promote the production of buckwheat in the country. For example, in the Limburg region, buckwheat is usually processed into flour through the aid of traditional milling equipment, and these artisanal methods are well-preserved. The local gastronomy of Limburg often makes use of buckwheat flour to create traditional pancakes served with local Limburg syrup, and buckwheat is also used as an ingredient in making porridge or blood sausages (VLAM, 2022). Indeed, the overall beneficial properties of buckwheat coupled with its growing market potential can lead to more diverse farming systems, in line with the goals of CROPDIVA.

1.2 Results

1.2.1 Description of the buckwheat value chain

The Belgian value chain for buckwheat is largely dependent on the international market. Collectors and processors import buckwheat and buckwheat flour or other derivatives . Collectors supply to processors or directly to retail, with a specific segment for smaller organic shops. In bakery products buckwheat groats are used as decoration. Buckwheat needs to be dehulled and milled to attain buckwheat flour. None of the processing interviewees were active in these processes due to low economic potential as buckwheat flour was a very small segment of their ingredients. Buckwheat flour was always used as an ingredient in their flour mixes or was bought from collectors to re-sell in smaller quantities to their customers. Both artisanal and industrial bakeries show interest in products containing buckwheat. Flour mixes containing buckwheat were sometimes developed on demand of a customer. Buckwheat cannot be present in too high percentages in the end product, to obtain an attractive end product for the consumer. The value chain for buckwheat is listed in Figure 2.

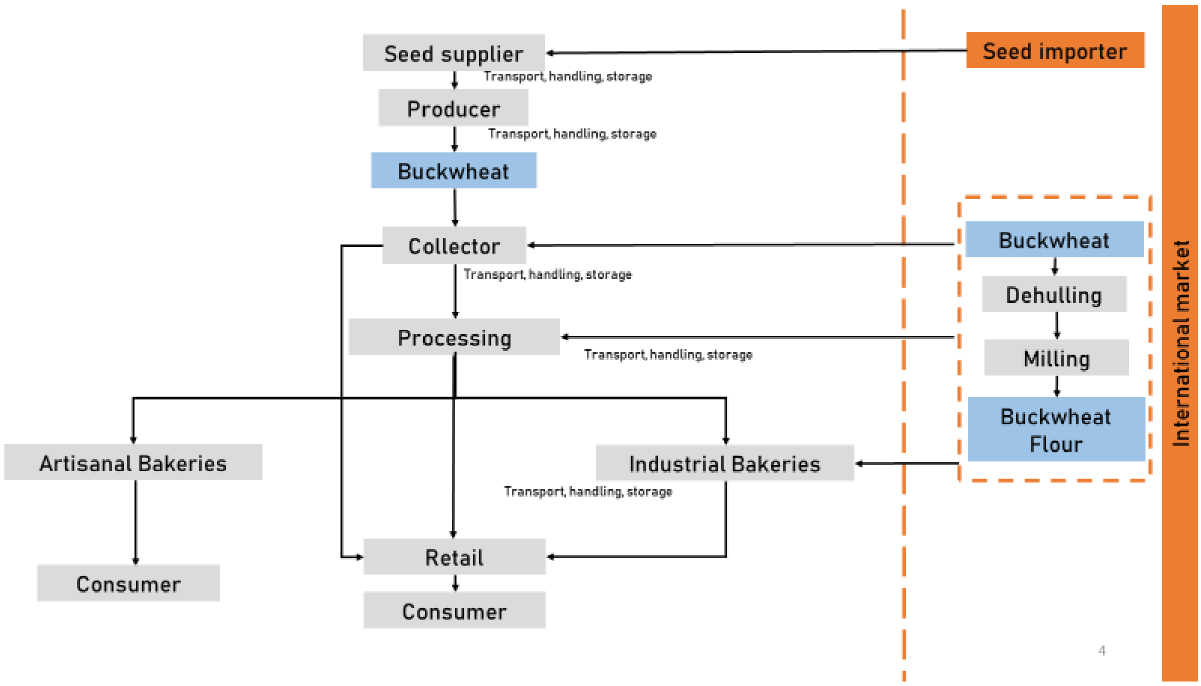

Figure 2: Buckwheat value chain in Belgium

1.2.2 Overview of the interviews completed

In total, 7 interviews took place to generate the overview of the Belgian buckwheat value chain. The interview partners in the Belgian buckwheat value chain have been collected over internet desk research, snowball sampling, and requests to producer associations. Buckwheat farmers were not interviewed. Snowball sampling and interviews with farmer associations showed that there are close to none farmers who produce buckwheat for a purpose outside of their own farms. Therefore, it was nearly impossible to contact buckwheat farmers. Dependent on their activity and engagement with other

CROPDIVA crops some interview partners have been interviewed also to other CROPDIVA crops. One interviewee was interviewed on their processing and retail activities.

Table 1: Overview of the interviews completed

VC actor	Input supplier	Farmers association	Collector	Processor	Retailer
Number of interviews	1	1	1	3	1

1.2.3 Input suppliers

Buckwheat is a minimal share of the seed that input suppliers sell. It is offered as seed for sowing, or processed into green manure. Buckwheat isn't implemented much by farmers, and therefore the sale of seed is low, as the yield is not sufficient to sow it on the overall rich Belgian soil. The supplier shows interest in buckwheat if the crop would have higher yields.

1.2.4 Farmers associations

Buckwheat has a history in the Limburg province of Belgium in the past as a crop used by very small farmers who mainly worked as contract workers but grew buckwheat on their own farm as it could withstand poor soils and required less maintenance. These small farmers disappeared from the landscape as did the cultivation of buckwheat. Recently, the region acknowledged buckwheat as an official regional product which might boost the cultivation of buckwheat in the future.

1.2.5 Collection centre

Buckwheat is popular in Belgium in regards to the organic sales market, where consumers also often value gluten free products.
Two standards in regards of organic products are in place, one is the European organic label and the second is the Demeter label. The Demeter label guarantees biodynamic practices. The interviewed organic collection centre is the only Belgian firm that offers Demeter products. Not all the buckwheat they supply is in line with the Demeter standards, but all buckwheat is in line with organic standards. All buckwheat is imported, mainly from the Netherlands and France.
Sales are B2B, to organic shops or larger processors of meat substitutes. The main focus of the value chain analysis is on bakery products, therefore the use of buckwheat for meat substitution is not represented in the value chain. The strength of the collection centre is their position as an intermediate for smaller organic shops who otherwise don't have the bargaining power to interact with larger wholesalers. They export to the Netherlands and France. Belgium has the largest market segment.

They don't pose additional standards or audits to their suppliers, they rely on the certification procedure of organic and Demeter products. All their supply is imported, nothing originates from Belgium. They demand that their customers sell at least 70% organic products.

1.2.6 Processing firm

Processing firms which are using buckwheat belong to two categories: milling firms or bakeries. The interviewed milling firms don't dehull and mill themselves. When they use buckwheat, it is only a small part of their flour mix. Buckwheat is not milled by the milling company as it is not cost efficient for them to initiate a milling run specially for buckwheat. The flour mixes containing buckwheat distinct themselves by containing multiple grains, which is branded to the consumer as the healthier and more artisanal option.

Multiple processing firms used buckwheat in a larger quantity in their mixes in the past. Using larger quantities gives the final bread product a very typical color and flavor. The mixes were promoted to use for end products such as buckwheat-desem breads. Mixes containing a large quantity of buckwheat are not offered by the interviewed processing firms anymore.
An option for the use of buckwheat is the production of glutenfree products. None of the processing firms offer glutenfree products anymore. In the past, they focused more on this but all the processing firms interviewed dropped this segment of their market as it's too hard to attain the allergy standards or it doesn't fit their wheat-oriented philosophy of the company. They rather focus on the origin value of their production, which is wheat based products and therefore not gluten free. Implementing gluten free products using buckwheat might impose issues with consumers, who generally are not fond of the typical smell and color of the foodstuff when buckwheat is used in a high amount.

The processing firms import buckwheat from the Netherlands from which they buy a variety of seeds and grains. The suppliers of buckwheat to the processing firms are usually large companies in the market. Supply by small suppliers is avoided as they regularly don't comply with the quality standards larger milling and processing companies require, such as the presence of metal detection in triage, strict standards towards cross-contamination when working with allergens, British Retail Consortium certification,…
The import of buckwheat is a small amount of the processing firms' total stock as it is often only present in an amount of 1-5% of the total flour mix. It is rather added to be able to make a claim about the amount of grains and the presence of buckwheat, rather than for its properties. Processing firms confirm that therefore it is easy to replace if a cheaper alternative would arise. Only a limited amount of costumers specifically ask for the presence of buckwheat in their mixes.
The principal customer of buckwheat-containing flour mixes is artisanal bakeries and industrial bakeries. Processing firms often re-package buckwheat and buckwheat flour without incorporating them into their products to offer the buckwheat and buckwheat flour to their customers if they want to integrate this more into their production or gamma.

1.2.7 Retailing

Buckwheat is mainly offered in retail to respond to the trend of artisanal bakery products. It adds a grey colour to bakery products which is associated by consumers to this type of products. The grey colour should not be too overwhelming, usually buckwheat is maximum 10% of the total content to maintain a pleasant looking product for the consumers accommodating to the general retail stores. Buckwheat is used to tell the "old grains" story in some of their products, as this is wanted by consumers. A focus on older, underused grains from older farming practices is a story that catches on. A guiding text on the back of the packages in question containing some of these grains such as buckwheat is provided to inform the consumers.
The contracts between the retail stores and processing facility are on demand, they have an internal delivery system and each store can pick up the number of bags they desire in the case of the linked processing and retail firm.

1.3 Discussion

1.3.1 Past challenges & successes of the value chain

Buckwheat has been implemented by small farmers in Belgium in the past. Together with the decrease in diversity of farmers, also the sowing of buckwheat has been minimized. The low yields of buckwheat created an implementation gap and farmer shifted towards other crops. On the level of the processing firms, flour mixes and bakery products containing buckwheat are decreasing. The consumer acceptance and recognition is lower than expected creating a revenue too low for conventional production. When products containing buckwheat are developed, this is usually on demand for a specific customer.

1.3.2 Current and foreseen challenges and chances of the value chain

Buckwheat recently got recognised as a regional product in the Limburg region in Flanders. Regional products are a separate labelling system for the local level in Flanders, not related to AOP or GI on the European level. This recognition can boost the future production and consumption of buckwheat in the future. Speciality products in these areas are for example buckwheat pancakes and the use of buckwheat in a specific type of local sausage.

The use of buckwheat in general is popular in the consumer segment which focusses on organic products with a Belgian collector in the value chain specialized in supplying small organic stores. If farmers want to produce for this consumer segment, they need to be in line with the European organic production standards. The collector in the value chain even poses higher standards than the European organic standards, namely the Demeter certification. Achieving this certification in Belgian buckwheat production might be a challenge to be a able to supply to this segment in the value chain.

The supply of processing firms is currently dependent on large suppliers, which trade such large quantities that they won't easily include Belgian produced buckwheat. An opportunity for Belgian buckwheat might lay with the smaller suppliers and connecting these suppliers to processing firms might enhance the demand for Belgian buckwheat. The challenge regarding the integration of smaller suppliers lies in the standards certain collectors or processors require to guarantee the food safety standards or certification of their own production.

Consumer trends regarding bakery products based on "old grains" are still popular in Belgium, although according to one of the processing firms this trend already passed its popularity peak. Including buckwheat in the story telling of the marketing strategy of baked goods can increase consumer recognition. Future threats for the use of buckwheat in these type of consumer products depend on the development in yields of other alternative grains, as according to value chain actors there is not much specific value focussed on buckwheat which makes it replaceable by other grains when they are more profitable.

Table 2: Main challenges of the Belgian buckwheat value chain

VC actor	3-5 main challenges (order: most important first)	Strategies undertaken/to undertake	Potential & benefits for the actor in the VC chain
Seed supplier	1. Low yields of buckwheat resulting in low implementation by farmers	1. Investing in R&D for local, resistant varieties with high yields	1. Building a new supply segment promoting agricultural biodiversity
Farmers	2. Organic certifications	2. Educating farmers on the added value of organic labels	2. Marketing advantages regarding organic certification and alignment with the EU Green Deal
Processing firms	3. Access to local buckwheat through smaller suppliers 4. Maintaining consumer interest	3. Training programmes to support the alignment of production standards for smaller suppliers 4. Creating relevant marketing strategies which focus on buckwheat as an artisanal and old grain with relevance to local diversity	3. Integrating smaller suppliers in the value chain, creates access to a diversity of suppliers in the value chain 4. Strengthening the consumer segment that focusses on artisanal bread products

1.3.3 Limitations

No farmers were interviewed due to a very limited amount of farmers producing buckwheat.

1.4 Synthesis

Buckwheat is a crop which is barely grown in Belgium by farmers. Farmers growing buckwheat use the crop as feed for their own animals. The underdevelopment of buckwheat regarding the R&D potential resulted in the decrease of implementation of buckwheat on poor soils as other crops nowadays achieve higher yields. Buckwheat is a popular product in the organic consumer segment, which generates additional challenges to grow buckwheat according to these certifications. When buckwheat is implemented in processed food, the content of buckwheat is low to maintain an attractive end product for the consumer. Buckwheat has been implemented to serve the consumers' demand for artisanal and "old grain" bakery products. A new marketing strategy might need~~s~~ to be developed to further support the implementation of buckwheat in the Belgian value chain.

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