



## The vegetable seed market in brazzaville (Congo): players and socio-economic factors

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### Abstract

Seeds play a crucial role in production strategies and yield optimization. This study aimed to analyse the marketing of vegetable seeds in Brazzaville. A survey was conducted among 100 market gardeners and 50 seed traders. The results indicate that vegetable seed sales operate through both formal (improved seeds) and informal (local seeds) marketing channels, which can be short or long supply chains. Seed shop owners, both men and women, are predominantly adults. They sell seeds along with a wide range of agricultural inputs (local seeds, fertilizers, pesticides, tools) to diversify income streams and meet market gardeners' needs. The improved vegetable seed market is dominated by three key commercial entities (Congosem, Chimagro, and Matondo Semence) and five major seed brands (Technisem, Clause, Griffaton, TBN, and Agria) which are mostly imported. However, local seeds come from both national production and sub-regional imports. The most commercialised and widely used improved seeds are tomato, sweet pepper, cucumber, and cabbage, while the popular local seeds include endive, black nightshade, amaranth, spinach, okra, and spring onion. To strengthen food security and independence, it is essential to improve the national seed system by investing in research, local certified seed production, and enforcing new regulations, while supporting local and informal actors.

**Keywords:** Vegetable seeds, marketing, market gardeners, traders, Congo

### Introduction

Market garden crops, which include leafy vegetables, fruits, roots and root crops, play a significant role in human nutrition and are an essential requirement for agriculture worldwide (Moustier and Pages, 1997) [15]. Their production methods are very specific, depending on environmental factors, regional conditions and market needs (FAO, 1983) [6]. Because of their rich nutrients, vegetables are essential to a balanced diet and contribute to food security (Loumonnier, 1978) [10]. Moreover, market gardening, practiced in both rural and urban areas, represents an important lever for job creation and the socio-economic development of territories (Mahoungou, 2018) [11]. In Congo, this sector stands out as one of the most dynamic agricultural sectors, particularly in urban areas (Mialoundama Bakouetila *et al.*, 2021) [13, 14]. As part of their income diversification and pest management strategies, market gardeners use a wide range of vegetables adapted to local conditions and market needs (Mialoundama Bakouetila, 2021; Marandet, 2016; Mahoungou, 2018; Berton-Ofoueme, 2005) [4, 11, 13, 14]. The choice of resistant varieties is one of the preventive measures most commonly used in Brazzaville to limit the impact of pests and boost yields (Mialoundama Bakouetila, 2021) [13, 14]. From this approach, seed quality is a factor that influences agricultural productivity, as seed availability is an essential prerequisite for successful crop production (Niangado and Kebe, 2002, cited by Baco *et al.*, 2013) [2]. However, seed supply remains a major problem for growers, whether from Rural and urban production hubs.

In the market gardening belts of Brazzaville, local seed production is virtually non-existent; market gardeners essentially buy from traders, whether for local or imported seeds. Despite the strategic value of vegetable seeds in the development of the market gardening sector, socio-

economic studies focusing on this subject remain limited in the Congo. With this in mind, the present study aims to provide some answers to the following research question: what are the socio-economic characteristics of the vegetable seed market in Brazzaville? The aim of this study is therefore to analyze the socio-economic characteristics of this seed market.

### Methods

This study was carried out in several districts of the city of Brazzaville, Republic of Congo, and focused on three main agricultural sectors: Madibou, Talangaï and Djiri. These areas were selected for their significant market-gardening activity. Ten market garden Farming settlement were selected: 17 Km, Agricongo de Kombé, Bikakoudi, Jean Félicien Mahoua, Soungui, Kimpouomo, Mafouta, Mansimou and Mbonouo (Madibou agricultural sector), as well as the Gymnase Nicole Oba site (Talangaï agricultural sector).

Market gardeners operating on these sites and having expressed their availability to take part in the survey made up the first sample of the study, for a total of 100 market gardeners operating in the informal sector. In addition, the state-owned markets selected were those hosting vegetable seed sales outlets and having been recommended by market gardeners or seed sellers. These markets include the Total market, located in the Bacongo area, as well as other outlets in various areas of Brazzaville, such as Poto-Poto, Ouenzé, Talangaï, Makélékélé and Madibou (figure 1).

Shopkeepers present at the time of the survey and willing to answer the questions formed a second sample, made up of 20 stores in the formal sector focusing on the sale of imported vegetable seeds. This sample was completed by that of informal traders specializing in the sale of local

vegetable seeds. These traders were selected on the basis of their involvement in vegetable seed marketing and their

willingness to take part in the study. A group of 30 informal traders was thus included in the overall sample.

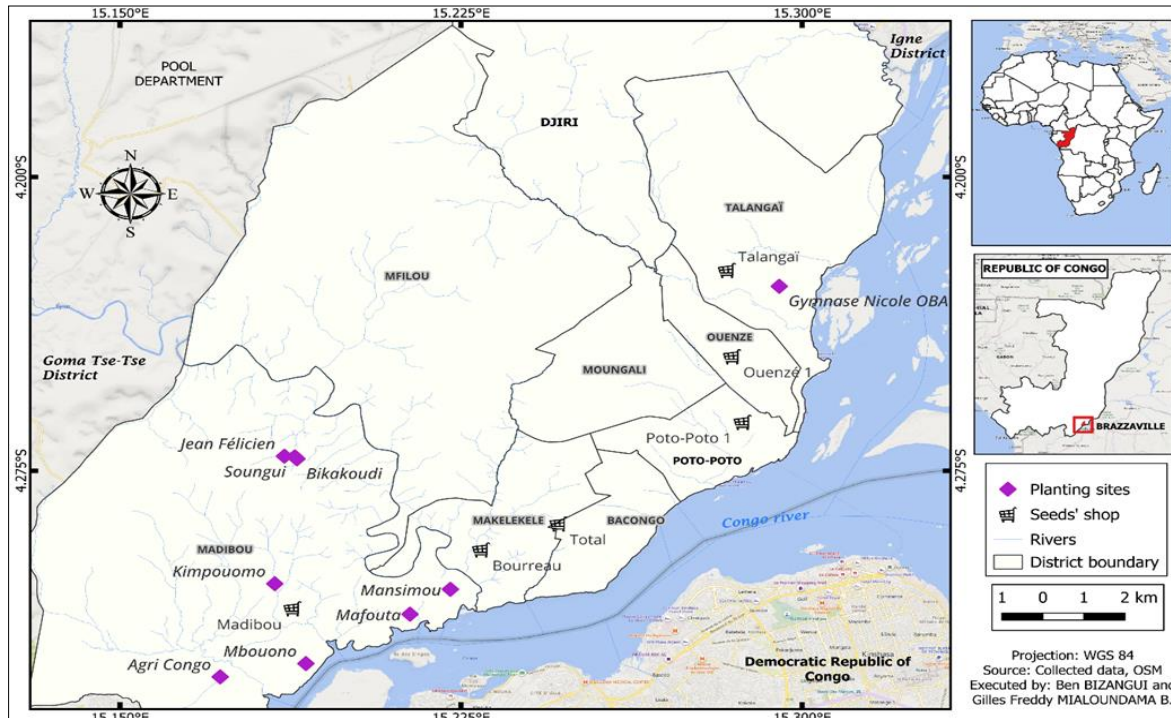


Fig 1: Spatial distribution of improved seed sales outlets

The survey was carried out among the sample of trader’s specialist in the sale of vegetable seeds, as well as among the market gardeners involved in the study. In order to collect the necessary data, the main research tool used was the survey sheet, administered during structured interviews. The survey sheet, designed to meet the objectives of the study, was first validated in a pre-survey.

This approach was followed by a number of other information-gathering methods, including the use of documentary sources, direct observations and semi-structured interviews with various resource persons. These participants included agricultural sector managers, as well as executives from the DGA (Directorate-General for Agriculture) and the INRA (National Institute for Agronomic Research).

The data collected were entered and structured in digital format using Excel 2010 software. An initial processing phase was used to identify and remove data outliers, before all the information was subjected to an in-depth analysis. Data from the qualitative approaches were analyzed using a thematic content approach after transcription. Finally, data triangulation was carried out to cross-reference the different sources of information and ensure an in-depth analysis of the vegetable seed market.

**Results**

**The Profile of Vegetable Seed Sales Traders**

Table 1 highlights the sociodemographic characteristics of

vegetable seed shop owners in Brazzaville. It shows that 63% of these stores focusing on vegetable seed sales, underlining the importance of this segment in the local agricultural market. However, 25% of stores diversify their offer by also offering other agricultural inputs, such as fertilizers and pesticides, reflecting a move to adapt to farmers' needs. Finally, 12% of stores are dedicated to the sale of agricultural equipment, a smaller but essential sector for the development of urban market gardening.

Moreover, the legal status of seed stores reveals a more even split between single establishments (50%) and limited liability companies (49%), reflecting an entrepreneurial dynamic shared between sole proprietorships and limited liability companies. However, the presence of SARLU (1%) remains marginal, suggesting a low take-up of this legal form within the sector.

In terms of gender profile, the vegetable seed market is largely dominated by men (69%), which may reflect general trends in the agricultural sector, where formal business activities are predominantly male-dominated. Nevertheless, the presence of women, although a minority (31%), remains significant and could benefit from policies encouraging female entrepreneurship. On the other hand, the breakdown by age bracket shows a strong predominance of adults over 36 (85%) compared to young people under 35 (15%). This suggests that the business is mainly run by people who have acquired a degree of economic stability and business expertise.

Table 1: Socio-demographic profile of vegetable seed store owners in Brazzaville

Variables	Response Options	Frequency (%)
Main Activity	Vegetable seeds	63
	Other agricultural inputs	25
	Agricultural equipment	12
Legal Status	Establishment	50

	Limited Liability Company (LLC)	49
	Single-Member Limited Liability Company	1
Gender	Female	31
	Male	69
Age Group (years)	Young (< 35 years)	15
	Adult (> 36 years)	85

The results of the survey reveal that 77% of vegetable seed market operators sell both wholesale and retail, demonstrating the versatility of the sector's players. On the other hand, 23% of structures surveyed specialize exclusively in retail sales, sourcing their supplies mainly from semi-wholesalers such as Congosem and Matondo semence.

The analysis also reveals an average of 16 years' experience in the vegetable seed sales sector. What's more, 78% of operators have more than 10 years' experience, showing the durability and expertise of the players present on this market. In particular, the oldest companies La Main Verte (LMV), Groupement des Producteurs Ruraux (GPR), FSL and Matondo semence have been in business for between 24 and 30 years, testifying to their key role in supplying and developing the sector.

In terms of commercial structure, the vegetable seed stores surveyed have an average of two sales outlets. However, 23% of operators have between 5 and 7 stores, including Matondo semence, Congosem and La Main Verte (LMV), which have 7 and 5 stores respectively. However, the majority (77%) have fewer than three. Some companies, such as Paci semence and Agrostock, have one store each, but in two different districts, while others, such as AAM, GEB, Dossa semence and AP2VPA, have just one outlet. Heaven is the only exception, with three stores.

In terms of location, the data show that 85% of stores selling vegetable seeds are located in 2<sup>nd</sup> district (Bacongo), mainly in and around the Total market. By contrast, stores in the Madibou and Talangaï arrondissements remain in the minority, accounting for 8% and 7% of the total respectively.

The second category of traders surveyed are local seed sellers, who operate mainly in the informal sector, in very small commercial units (VSEs) with no formal legal status. Moreover, the sale of local seeds at the barn is exclusively female (100%), reflecting a gendered specialization in this market segment. Men, on the other hand, are more involved in wholesale and semi-wholesale sales of local seeds, particularly in stores specializing in agricultural inputs. Furthermore, the analysis reveals a low level of youth involvement in this trade, with only 10% of young people involved, compared with 90% of adults. This intergenerational disparity could be explained by various socio-economic factors, such as young people's preference for activities perceived as more modern and lucrative.

### The Origin of Vegetable Seeds: A Strong Influence from The International Market

Vegetable seeds marketed in Brazzaville and used in peri-urban market gardening come from both local production and imports. However, local production is limited to so-called local (peasant or traditional) or non-conventional seeds, including amaranth (*Amaranthus* spp.), okra (*Abelmoschus esculentus* L.), green beans (*Phaseolus*

*vulgaris* L.), endive (*Cichorium intybus* L.), spring onion (*Allium fistulosum* L.), nightshade (*Solanum americanum* L.) and spinach (*Basella alba* L.). The primary production basin for these seeds is located in the Bouenza Department, specifically in the locality of Loutété. Nevertheless, it should be pointed out that the majority of local seeds are imported, mainly from the Democratic Republic of Congo, Cameroon and Ivory Coast. Local seeds are generally packed in unconventional packaging, which can be rudimentary (plastic bags, cloth bags, jars) and lack standardized information on their origin, genetic purity or storage method.

Moreover, all improved seeds used in urban and peri-urban market gardening are exclusively imported. They are sold in well-printed conventional packaging, with detailed information on their origin, agronomic properties, expiration date and method of use. Certified vegetable seed is imported from the following continents:

- **European:** the Congosem sales organization, a branch of the French Technisem group, imports vegetable seeds from France. Similarly, the Pointe-Noire-based operator TBN obtains seeds from Top Harvest, a Netherlands-based producer;
- **African:** the operator Chimagro SARL markets agricultural equipment and inputs, including Clause brand vegetable seeds imported from Cameroon;
- **Asian:** Matondo semence imports its vegetable seeds mainly from India and Thailand.

### Actors and Marketing Channels for Vegetable Seeds Direct Actors in The Marketing Channels for Vegetable Seeds

The results of the survey enabled us to identify the marketing channels for vegetable seeds in Brazzaville (figure 2). Several groups of actors are involved in this trade, notably seed producers, semi-wholesalers, retailers and market gardeners. The first group is made up of seed companies, responsible for vegetable seed production. They are subdivided into two sub-groups:

- seed companies focusing on the production of certified improved seeds, mainly foreign firms involved in varietal selection, seed multiplication and marketing. Technisem, Vilmorin, Griffaton, Clause HM and TBN are among the players with the strongest presence in Brazzaville's distribution channels. These companies maintain commercial relations with certain semi-wholesalers based in Brazzaville, such as Congosem, a subsidiary of the French Technisem group, which selects seeds in France and multiplies them via its partners in Cameroon. Similarly, semi-wholesalers Matondo Semence and La Main Verte import their seeds from Vilmorin and Griffaton;
- seed companies focusing on local seed production, which include individual growers, agricultural

cooperatives and research centers in the sub-region.

The second group of players is made up of traders involved in the sale of improved and local seeds, who can be divided into two sub-groups:

- semi-wholesalers, who play a central role in seed distribution. Those who focus on improved seeds import them from seed companies and resell them either wholesale to retailers or directly to market gardeners. These include specialized commercial structures such as Congosem, Matondo Semences, Agrostock and GPR. On the other hand, semi-wholesalers specializing in local seeds operate mainly in the informal sector;
- retailers, who sell vegetable seeds at retail level. This group is mainly made up of local seed retailers, including itinerant sellers who travel to the market garden areas.

Finally, the third group of players involved in vegetable seed marketing is made up of market gardeners, who are the main users of vegetable seeds. They buy from both retailers and semi-wholesalers. It should be noted that some development projects and political players also buy seeds from semi-wholesalers and donate them to market gardeners

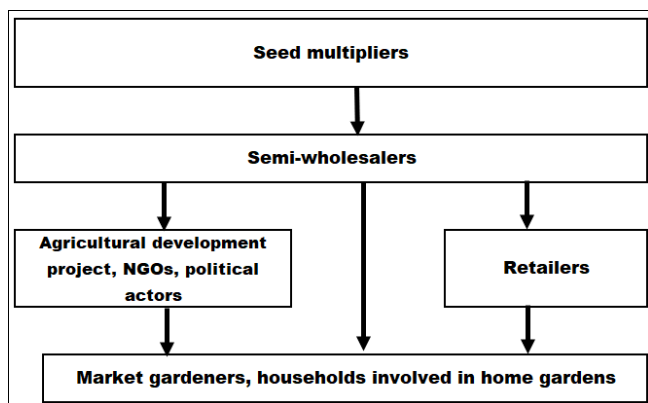


Fig 2: Supply Chains of Vegetable Seeds in Brazzaville

Vegetable seeds, whether locally produced or imported, are distributed through multiple marketing channels, with short supply chains being the most prevalent. The direct supply chain, involving the sale of local seeds from the seed producer to the market gardener without intermediaries, is virtually non-existent. In contrast, two-intermediary chains typically involving semi wholesalers and retailers are the most common for local seed sales. However, in the case of certified improved seeds, short supply chains that directly link semi wholesalers and market gardeners are the most prevalent.

**Indirect Actors In The Vegetable Seed Trade**

Trade in improved vegetable seeds also mobilizes indirect actors, involved in administrative and logistical operations, including:

- the Brazzaville Chamber of Commerce and Industry, Agriculture and Trades (CCIAM), which is called on by importing semi-wholesalers to make import declarations (DI);
- COTECNA, a service provider responsible for calculating seed rates, issuing import declaration

certificates and verifying compliance with phytosanitary standards;

- forwarding agents, who handle transit and customs clearance via the Guichet Unique des Opérations Transfrontalières (GUOT) or freight forwarding. These include service providers such as TransLo, Atlas Logistiques, Betty Export, BNI Transpo Congo, BST Transitaire and others. Some also take charge of transporting goods to the storage or sales location;
- customs officers, who supervise the transshipment of goods;
- transporters: these are mainly small companies specialized in the transport of goods, ensuring the routing of seeds from the Guichet Unique des Opérations Transfrontalières (GUOT) or freight to storage or sales sites.

Unexpected audits are carried out in seed sales outlets and on merchandise by decentralized government departments, in particular:

- the Ministry of Agriculture, whose phytosanitary officers check compliance with phytosanitary standards;
- the Ministry of the Environment, which examines the quality of packaging and the sales environment;
- the Ministry of Trade, whose agents check seed import documents (import declaration, customs clearance certificate, etc.), as well as commercial standards (labeling, packaging, etc.).

**The range of products sold**

Operators in the vegetable seed market are deploying various strategies to ensure the profitability of their business. These include the diversification of agricultural product ranges. The inputs most frequently sold with improved seeds are pesticides (92%) and fertilizers (85%). Indeed, the strategy of diversifying the range of products sold enables vegetable seed market operators to increase their revenues while meeting the needs of market gardeners, who are looking not only for seeds, but also for fertilizers, pesticides and agricultural equipment. Table 2 shows the main product combinations marketed by seed store owners.

Table 2: Main product ranges sold

Product range	Number of product types	Frequency
Improved seeds, local seeds, fertilizers, pesticides, equipment	5	Frequently encountered
Improved seeds, local seeds, fertilizers, pesticides	4	Moderately encountered
Improved seeds, fertilizers, pesticides, equipment	4	Moderately encountered
Improved seeds, fertilizers, pesticides	3	Rarely encountered
Improved seeds, pesticides	2	Rarely encountered
Improved seeds	1	Rarely encountered

In the study area, several local and improved vegetable seed species are marketed by vegetable seed market operators.

Analysis of the weighted index of the five main local seed species shows that endive (*Cichorium intybus* L.), nightshade (*Solanum americanum* L.) and spinach (*Basella alba* L.) are among the best-selling species (figure 3). These three species are followed by amaranth (*Amaranthus* spp.),

okra (*Abelmoschus esculentus* L.) and green bean (*Vigna unguiculata* subsp.). However, green beans appear to be the least marketed vegetable seed, accounting for just 3% of sales by the shopkeepers surveyed. This low marketing rate could be explained by reduced demand.

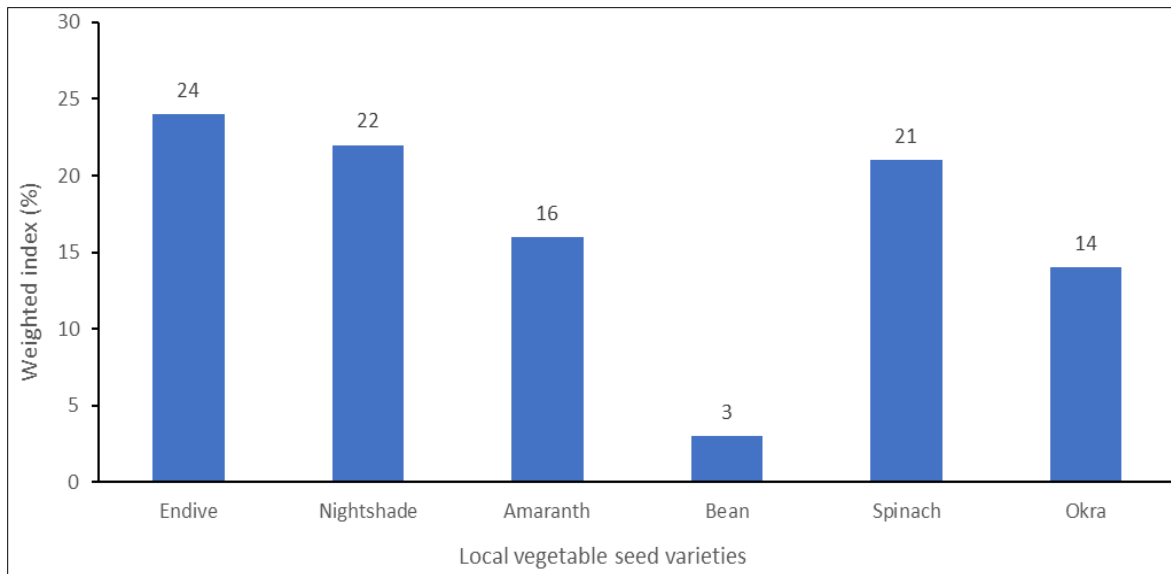


Fig 3: Weighted distribution of the main local vegetable seeds marketed

The survey also revealed a diversity of improved vegetable species marketed by operators on the vegetable seed market. Among these, four species stand out as the most widely sold: tomato (*Solanum lycopersicum* L.), sweet pepper (*Capsicum annuum* L.), cabbage (*Brassica oleracea* var.) and cucumber (*Cucurbita pepo* L.) (figure 4). Together, these seeds account for almost 75% of the demand for improved vegetable seeds, demonstrating their importance to vegetable growers. Furthermore, analysis of the weighted index of the main species marketed shows that tomato and bell pepper seeds clearly dominate the market, being the two most widely sold species. This result confirms their strong demand among market gardeners, probably due to their

economic profitability, adaptability to local conditions and high consumption.

The lack of scallion seeds in seed stores or on stalls is mainly due to the practices of market gardeners, who prefer to buy local cuttings rather than seeds. These cuttings, mostly from Liranga in the Likouala department, have the advantage of being easily multiplied, making them more accessible and economically viable for growers. On the other hand, the multiplication of improved seeds is more demanding, due to the specific technical requirements and growing conditions they impose. As a result, market gardeners are often obliged to purchase new seeds, which can represent an additional cost and a limiting factor for their large-scale adoption.

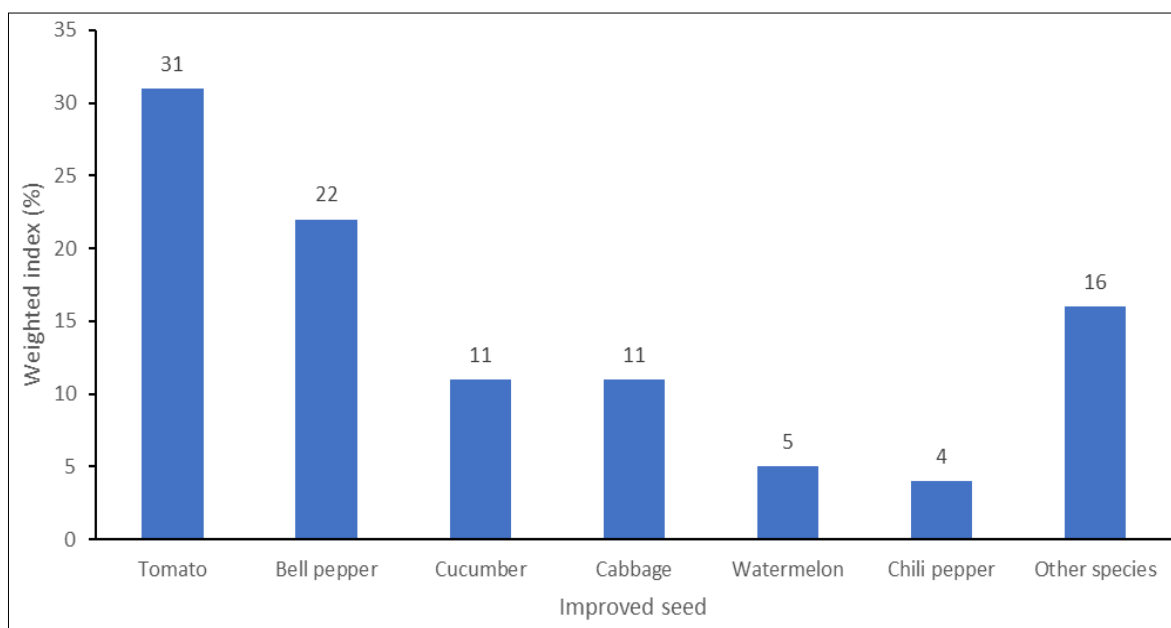
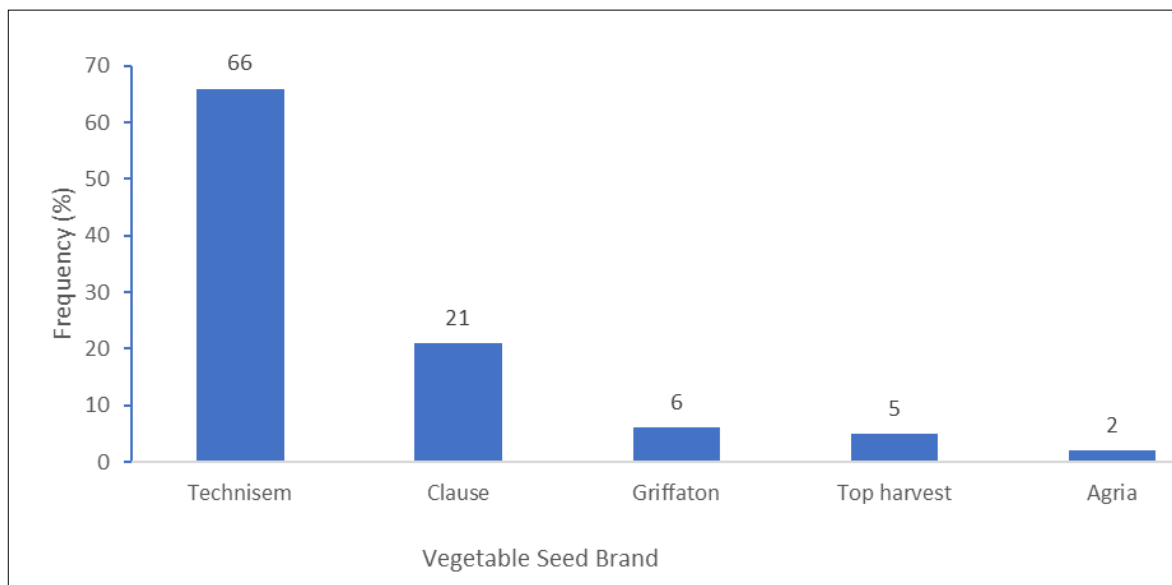


Fig 4: Weighted proportion of main commercial improved vegetable seeds

**Main suppliers and diversity of seed brands**

Seed shop owners in Brazzaville primarily source their vegetable seeds from three local suppliers: Congosem (44%), Chimagro (30%), and Matondo Semences (4%). Among these, Chimagro and Matondo Semences specialize in importing and distributing agricultural inputs, including fertilizers, pesticides, and farming equipment. In contrast, Congosem focuses on selling seeds from well-known brands such as Technisem, Limagrain, Seed Co, and Jardi Tropic. These three main suppliers source their seeds from foreign seed producers, including Technisem, Limagrain, Seed Co, and Clause. Additionally, the company EP<sup>2</sup>AVPA markets both Technisem seeds and Agria seeds of Italian origin. Other players in the vegetable seed market procure their supplies from Congosem, Matondo Semences, and Chimagro. Furthermore, the company TBN distributes

Dutch products under the Top Harvest brand, which includes vegetable seeds, fertilizers, and pesticides. Several vegetable seed brands are marketed by vegetable seed operators, including: Technisem (66%), Clause (21%), Griffaton (6%), Top Harvest (5%), Agria (figure 5). Congosem, a subsidiary of the Novalliance group, imports Technisem, Limagrain and Seed Co brand seeds into Congo. Chimagro imports Clause brand seeds, while Matondo Semences imports Griffaton products. Finally, Agria products are imported by EP<sup>2</sup>AVPA. Market analysis reveals the dominance of the Technisem brand, which enjoys the highest profile among the variety of vegetable seed brands marketed in Brazzaville. This is due in particular to its extensive distribution network, its excellent reputation for quality and supply reliability, and the strong commercial relationships it has established with key local suppliers such as Congosem.



**Fig 5:** Breakdown of main commercial improved vegetable seed brands in Brazzaville

**Discussion**

The vegetable seed market in Brazzaville remains heavily dependent on imports for improved exotic varieties (from France, the Netherlands, Cameroon, and India), while local vegetable seeds are sourced from domestic production and neighboring countries like DR Congo and Cameroon. This strong import dependence highlights the structural fragility of the Congolese seed system, which remains largely informal (MRSIT and FAO, 2020) [16]. The near-total absence of a formal certified seed production program - with the exception of certain African vegetable varieties - is particularly concerning. Furthermore, Congolese agronomic research has historically neglected varietal adaptation and dissemination of selected vegetable seeds, focusing instead on staple food crops like cassava, groundnuts, and beans (Baouamio, 2019) [3].

This reliance on imports and the weakness of the national seed system raise critical concerns regarding food sovereignty and food security in Congo. A weak national seed policy and excessive dependence on imported seeds leave the country vulnerable to external shocks, such as price fluctuations in international markets or export restrictions from supplier countries. As highlighted by Altieri and Koohafkan (2008) [1], seed genetic diversity constitutes a cornerstone of food security, and the erosion of

this diversity – often associated with dependence on imported improved varieties – can heighten agricultural systems' vulnerability to diseases and climate change. A nation's capacity to produce its own locally adapted seeds is fundamental to ensuring stable and resilient agricultural production, thereby reducing food insecurity risks (FAO, 2017) [5]. Consequently, investing in local agronomic research and developing certified vegetable seed production programs is essential to strengthen Congo's seed autonomy and, by extension, its food sovereignty.

The distribution of exotic vegetable seeds is primarily handled by private economic operators through short commercial circuits (one intermediary: semi-wholesaler importer) or long circuits (two intermediaries: semi-wholesaler importer and retailer, or development project/NGO). These configurations are similar to those observed in the general food supply system in Brazzaville (Berton Ofoueme, 2005; Mialoundama Bakouetila, 2017; Linguiono, 2021) [4, 9]. The main stakeholders in the exotic seed supply chain include foreign seed multipliers (e.g., Technisem, Vilmorin, Limagrain), semi-wholesaler importers, retailers, agricultural development projects and NGOs, as well as market gardeners. Wholesale and retail trade is carried out by entities operating under Congolese law. Institutional actors also play an indirect but crucial role

in the supply and distribution process. These include the Ministry in charge of trade, COTECNA, freight forwarders, and decentralized state services (customs, phytosanitary services), ensuring compliance with Law No. 3-2007<sup>[8]</sup> of January 24, 2007, which regulates imports.

Although the number of stakeholders is comparable to that of the food crop trade (producers, semi-wholesalers, retailers, consumers), the marketing of improved seeds differs due to the absence of wholesalers and a greater involvement of institutional actors. This stronger institutional presence is driven by regulatory requirements related to imports and seed quality. This institutional involvement affects marketing costs and, ultimately, the selling price of seeds. Nevertheless, such involvement is essential to ensure seed quality, generate tax revenue, and comply with both national and international regulations particularly phytosanitary controls required by the International Plant Protection Convention (Keyser, 2013)<sup>[7]</sup>.

### Conclusion

The study of the vegetable seed market in Brazzaville highlights a sector heavily reliant on imports of improved seeds and characterized by a fragmented local supply. This imbalance reveals the fragility of the Congolese seed system, which remains largely informal and insufficiently structured to ensure a stable production of certified vegetable seeds. Agronomic research, historically focused on staple food crops, has invested little in vegetable seed development, further reinforcing the reliance on imports and posing a threat to the country's food sovereignty.

Marketing channels are dominated by private actors, particularly semi-wholesalers and retailers, whose average experience exceeds 16 years demonstrating the sector's long-term stability. The diversification of marketed products combining seeds, fertilizers, and pesticides addresses the needs of market gardeners and enhances the sector's profitability. The most in-demand improved seeds are tomato, pepper, cabbage, and cucumber, while the most favored local seeds include endive, African nightshade (*Solanum*), and spinach. The predominance of foreign brands, particularly Technisem, reflects the strong influence of the international market. To ensure seed autonomy and long-term food security, it is essential to invest in local agronomic research, strengthen the production of certified vegetable seeds, and improve the marketing conditions for local seeds. Improved access to financing and better structuring of the informal sector could also encourage greater involvement of youth and women contributing to a more resilient and self-sufficient agricultural system.

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