

BAOBAB &

New Solutions
TO GLOBAL WARMING AND FOOD SECURITY

into MARULA

EDS. ARINOLA ADEFILA • AHMAD CHEIKHYOUSSEF • KENNETH Fafa EGBADZOR
RISTO ISOMÄKI • JOYCE LEPETU • ANNIKA SAARTO

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CHAPTER 3.6.

Catalyzing Global Reach: Innovative Strategies for Baobab and Marula Expansion

Cecil Togarepi, Dele Raheem, Kenneth Fafa Egbadzor,
Godwin S.A. Horlu, Nomusa Dlamini, Arinola Adefila & Ayu Pratiwi

Cecil Togarepi, Kenneth Fafa Egbadzor and Godwin,
S.A. Horlu: Ho Technical University, Ghana

Dele Raheem: University of Lapland, Finland

Nomusa Dlamini: Council for Scientific and Industrial
Research, Pretoria, South Africa

Arinola Adefila: Buckinghamshire New University, UK

Ayu Pratiwi: University of Turku, Finland

Corresponding author, e-mail: Ayu Pratiwi, e-mail: ayprat@utu.fi

Baobab and marula have been used for centuries by African communities to provide economic benefits. In this chapter we explore the commercialization strategies of baobab and marula tree byproducts intended for local, regional, and international markets by delving into what sets them apart from other tree-based products. We examine the perception of baobab and marula across different market segments and highlight successful marketing strategies used by businesses of varying sizes. As consumers increasingly seek nat-

ural and organic products, the opportunities for these commodities in the international market are immense. We hope that this chapter will provide an insight into the potential and already realized success stories of these versatile superfoods, shedding light on the value chain and marketing tactics that have been and could be employed to bring them to the market.

Baobab has emerged as an important commodity within the global non-timber forest product (NTFP) organic market. In West Africa, baobab is crucial for subsistence, and the full commercialization of baobab commodities could potentially employ over 2.5 million households (Vassiliou, 2008). Although less prevalent in Southern Africa, its use still presents significant economic potential with projections indicating potential annual incomes up to US\$1 billion (Venter and Witkowski, 2013; Wynberg et al, 2015). However, the local baobab value chains are predominantly informal, characterized by a lack of regulations and standardization. The sector faces several challenges, including poor business organization, limited access to formal financing, and unreliable labelling and standardization practices. Additionally, actors within the informal markets tend to be less organized and possess limited bargaining power when selling to larger traders. This often results in low value-added products and, subsequently, lower profit margins (Welford and Breton, 2008).

Regardless of these challenges, baobab's potential remains significant. Baobab fruit powder, used extensively in local brews, jams, juice, and other food products, underscores its economic and nutritional importance (Mwangi et al., 2023). Baobab oil offers a promising alternative to conventional vegetable oils due to its low level of saturation. Although baobab and marula offer numerous benefits, there is limited

In West Africa, the full commercialization of baobab commodities could potentially employ over 2.5 million households. In the long run the potential could be even higher.

discussion among African government policymakers and in relevant literature regarding their conservation, propagation, and sustainability (Kiprotich et al., 2019; Venter & Witkowski, 2013; Birhane et al., 2020).

Consequently, they have not received as much attention as other tree crops. For instance, in Benin, Ghana, and Nigeria, governments have formulated and implemented various policies for tree crops such as cocoa, cashew, and rubber; and in Kenya for crops like tea and coffee (Horlu et al., 2023). Baobab and marula have been neglected, even though innovation around the various baobab and marula products has been

deep and broad, with centuries of modification, trials, evaluation and development of every aspect of the trees. Africans developed pharmaceutical, chemical, nutritional, cosmetic, nutraceutical and household products from the trees, improving the quality and efficiency of the products over many generations. However, the prevalent cultural narrative seems to be one of sustainability. This alludes to an integrated social political principle which aims to keep the trees viable and productive. See Chapter 2.1 for discussion about historical cultural ties within several African communities, such as customs that restrict the planting of the trees for commercial value or encourage public functions that promote shared utility. These cultural norms have translated the traditional wealth of wisdom poorly to modern patents or commercial produce. Africans have generously shared the products and their knowledge about them with the rest of the world with limited financial return.

The lack of focus could negatively impact the sustainable commercialization of these trees' products. There is limited coordinated effort to develop the infrastructure, training and supply chains in ways that

In Swaziland, approximately 2 million marula trees grow in the low veld and the lower parts of the middleveld, with each tree capable of producing up to 500 kilograms of fruit per year.

are integrated with the cultural values of the people who have become the guardians of the African trees. At the same time, it is crucial to note that excessive commercialization of baobab and marula products, without implementing conservation practices, may strain the environment. To conserve baobab and marula successfully, the domestication of the trees and the utilization of their products must be integrated with appropriate research and policy measures, alongside sustainable commercialization and market expansion efforts.

3.6.1. Situating Baobab and Marula at the Local Market

3.6.2.1 Baobab and the Local Value Chain

Recent years have seen an increase in the consumption of baobab products across many African countries. Baobab fruit is now processed into a variety of food and non-food products, including beverages, powdered forms, ice creams, and cosmetics. This diversification in the use and commercialization of baobab products has significantly contributed to the livelihoods and income generation opportunities for many rural Africans, serving as a crucial source of food, fiber, medicine, and income (Meinhold & Darr, 2021; Lisao et al., 2017). The growing awareness of baobab's beneficial properties has accelerated its commercialization, extending its market reach beyond Africa (Gebauer et al., 2016; Kaimba et al., 2020).

In parts of Western Africa, processed baobab products, such as dried leaf powder, cleaned seeds, and fruit pulp flour, are highly sought after in local markets (Chadare et al., 2008). For example, in the weekly market in Cinzana, Mali, baobab fruit powder is highly valued, selling for 6 to 10 times higher price than small millet, the region's staple crop (Gustad et al., 2004). Conversely, in South Africa, where these products

are used less, whole fruit are sold in local markets, generating minimal income due to a lack of value addition (Nemarundwe et al., 2008). This contrast marks significant local-level disparities in the impact and outcomes of baobab commercialization between South and West Africa.

The trade channels for raw baobab ingredients, such as fruit pulp and seed oil, are relatively straightforward, often involving direct purchases by processors from harvesters. In Namibia, the baobab value chain is underdeveloped, with minimal value addition, while in South Africa and Zimbabwe, the value chains are more advanced, featuring products developed for export markets. Income from NTFPs, including baobab, primarily comes from direct sales; yet there is also significant value in their direct use. Sales can yield several hundred dollars annually per household (Shackleton and Gumbo, 2010). From the viewpoint of value addition, enhancing the processing and packaging of baobab products is crucial. Although unprocessed fruit and fresh leaves are marketable, substantial investment in local post-harvest processing and packaging quality is essential. However, the implementation of these activities faces challenges due to limited local knowledge and infrastructure (Chadare et al., 2009).

Marketing of baobab products typically peaks during the dry season, a time when other agricultural goods become scarce (Assogbadjo, 2006). In this period, baobab serves as a secondary income source and plays an important role in providing relief during droughts and famines (Sidibé and Williams, 2002). Although comprehensive details on the market dynamics and key players in the baobab product trade are limited, companies based in countries such as Botswana, Malawi, Mozambique, Namibia, South Africa, and Zimbabwe have started to directly procure seeds and fruit from rural communities (De Caluwe, 2011: Venter and

In the weekly market in Cinzana, Mali, baobab fruit powder is highly valued, selling for 6 to 10 times higher price than small millet, the region's staple crop.



Baobab products in the local market in Namibia. Whole fruit (left) and fruit pulp (right) with little processing. Photos: Cecil Togarepi.



Baobab flavoured drink product from Zimbabwe. Photo: Nomusa Dlamini.

Witkowski, 2013). Although there have been concerns about a potential decline in demand due to Africa's young, urbanizing population, these worries are largely unfounded, with the regional demand for baobab products remaining strong (Gustad et al., 2004). Baobab products are shifting from their traditional applications towards occupying higher-value market segments, a transition fueled by their rich vitamin C, dietary fiber, and overall nutritional content (Darr et al., 2020).

3.6.2.2. Marula and the Local Value Chain

Marula fruit is generally harvested from wild trees. Similarly to baobab, products derived from the fruit are sold both locally and internationally. Marula oil is used by food, cosmetics, and pharmaceuticals industries, and valued as an export commodity. In Namibia, the value chains for both marula and baobab fruit are vital, offering employment

and income opportunities while contributing to the national economy (Jäckering et al., 2019; Beckett, 2012). Traditionally, the extraction of marula fruit juice begins with the removal of the skin, often using a cow horn or fork (Hiwilepo-Van Hal, et al., 2014) or mechanically using a pressing machine. The skin is carefully split open, turned inside out, and separated from the pulp, which is then discarded (Shackleton, 2004). Following this, the fruit are squeezed, and the juice is collected in a clean container, resulting in a concentrated liquid. In a separate process nuts retaining some pulp are mixed with water in equal parts. This mixture is crushed with a wooden spoon to extract excess juice and pulp, which is then hand-squeezed to obtain the remaining juice. The juice is left to settle overnight, allowing it to self-cleanse and form a scum layer on the surface, which is subsequently discarded (Legodi et al., 2022). However, without immediate processing or preservation, marula fruit juice has a very short shelf life, attributed to enzyme activity or microbial growth (Dube et al., 2012).



Marula nut to be processed into oil and marula oil sold in the local market using recycled bottle. Photos: Cecil Togarepi.



Commercial marula oil for domestic and export market in Namibia processed by Eudafano Women's cooperative. Photos: Celcil Togarepi.



Following the extraction process, it is a common practice to combine the concentrated and diluted juices to allow for natural fermentation, using the native yeasts present in the juice. Some marula wine producers expedite the fermentation process by reusing the same container for multiple batches throughout the season without cleaning it, believing this method activates the microorganisms more quickly for subsequent batches. Alternatively, to accelerate fermentation, pro-

Marula Cosmetic oil Use. Photo: Dele Raheem.

ducers may introduce fermented wine or partially fermented juice from a previous batch as a starter culture, a technique known as ‘back-sloping’. This method involves adding a previously fermented product to a new batch to initiate fermentation more effectively (Oguntoyinbo, et al 2016). A deep understanding of the biological and biochemical reactions during fermentation and their control mechanisms is essential for effectively managing the fermentation process (Legodi et al., 2022).

Beyond its use in beverages, marula oil is also a favored ingredient in cosmetic products throughout Africa, with the degree of product complexity and commercialization varying by regions. In some areas, marula nut oil is traditionally processed and marketed locally in simple packaging. In Namibia, a Women’s Cooperative has taken the initiative in the commercialization of marula, enhancing product processing and packaging quality. This innovation in product level allows them to participate effectively in both domestic and export markets. Additionally, a South African cosmetic brand, Portia M, has developed a product line featuring marula oil. Portia M products are distributed by Clicks, a leading health, beauty, and wellness retailer and the largest retail pharmacy chain in South Africa.

3.6.3. The Key for Valorization: Certification and Standardization

The opportunities offered by baobab, marula and other NTFPs in the regions are still in infancy. This limited development is largely because most indigenous fruit products undergo only minor value addition, with only a few NTFPs reaching the high-end markets. To fully capitalize on the opportunities NTFPs offer, there is a need for substantial innovation within the value chain systems, including product development, marketing, and organizational or institutional reforms. The journey to elevate baobab and marula into highly valued NTFPs is fraught

with challenges, including slow commercialization, an undefined market and ambiguous consumer demand.

A pivotal factor in enhancing the marketing and commercialization of baobab and marula lies in standardization and certification. The primary challenges are the gaps in information regarding the production, consumption, and trade of NTFPs. Although recent recognition of NTFPs emphasizes their environmentally friendly harvest, concerns persist about the unsustainable extraction of many NTFP resources. Certification schemes, by enforcing ecological and socio-economic standards, offer dual benefits: they assure quality to consumers and encourage sustainable practices among harvesters, growers, processors, and local communities. Embracing certification compels stakeholders to clearly identify trading partners and customers, fostering direct relationships and feedback, which may also facilitate the elimination of intermediaries (Bass, 2001). Currently, the market offers a variety of certification schemes suited for NTFPs, including the Fairtrade Label, Forest Stewardship Council (FSC), and Organic label, providing diverse options for verification and trust-building. The richness of the indigenous African narratives linked to the sustainability and viability of trees like baobab and marula is indeed a significant selling point in this area.

Baobab's post-colonial commercial journey began in the late 1990s and early 2000s, driven by a rising demand for natural products and initiatives from development organizations. The movement gained momentum in Senegal and Southern Africa, introducing baobab to an international forum. In 2001, the Baobab Fruit Company was established in Senegal and Italy with the goal of penetrating the European market by importing baobab fruit pulp as dietary supplements, albeit in small trade volumes (Gruenwald & Galizia, 2005). The Southern African Natural Product Association, PhytoTrade Africa, initiated the commercialization of baobab in Southern Africa. Founded in 2001 and inspired by donor-funded activities in Malawi, which produced baobab juice for

the local market, this endeavor led to further exploration and use of baobab products. Initially focusing on baobab oil, PhytoTrade shifted to fruit powder, attracted by its development impact and efficiency. In 2006, PhytoTrade launched the Tree Crops enterprise in Malawi, dedicated to ethical bio-trade principles, sustainability, traceability, and hygiene (Bennet, 2006).

Exporting baobab, especially to the European Union, required overcoming regulatory obstacles to prove its safety for human consumption. According to the Novel Food Regulation (EC) No 258/97, a novel food is defined as a food or food ingredients that has “not been used for human consumption to a significant degree” within the EU before May 1997 (The European Parliament and the Council of the European Union 1997). Addressing these regulations, PhytoTrade worked with suppliers and trade networks to conduct the necessary tests, leading to the EU’s approval of the novel food application in 2008 (2008/575/EC). This achievement was soon followed by FDA approval for the US market (GRAS Notice No. GRN 000273), marking baobab’s entry into the formal international food market and opening new opportunities for African farmers.

On the other hand, marula ‘berries’ have yet to achieve ‘novel’ status in the EU (UNCTAD, 2020). Consequently, it is unlikely that marula fruit products will be accepted in the EU without additional notifications or applications, unless certain measures are implemented. Moreover, to meet EU technical and data requirements, it is necessary to document the History of Use (HUS) dating back at least 25 years. Acquiring such documentation is challenging, as the current evidence of HUS is predominantly folkloric or anecdotal, rather than based on formal studies (UNCTAD, 2020). For securing the EU’s regulatory approval and marketing authorization for marula as a food ingredient, it would be more appropriate to adopt the Traditional Food (TF) route, as outlined in Article 14 of Regulation (EU) 2015/2283 (UNCTAD, 2020).

3.6.4. Product Evolution to Conquer the Global Market

The launch of the international high-end baobab sector coincided with the global financial crisis, during which food manufacturers exercised increased caution in new product development. After a slow start, demand began to rise in 2010, with baobab making its appearance on Western shelves albeit in limited quantities (Meinhold, 2022). Over the last 20 years, the international demand for baobab fruit powder has seen some fluctuation but has steadily grown to reach several hundred tons per year (Meinhold, 2022). The African Baobab Alliance reports that the export of baobab fruit has consistently increased and is expected to reach 5,000 tons by 2025, potentially creating a \$400 million industry (McCallister, 2018).

With baobab entering international trade, producers across Africa have gained the ability to participate more independently in the formal market. This development offers producers and consumer countries greater opportunities to enhance the commercialization of their products as both distributors and manufacturers. However, even though baobab is found in roughly 30 African countries, the number of official exporting enterprises is limited, with major exporters being Zimbabwe, South Africa, Mozambique, Senegal, and Ghana. Even within these countries, significant disparities exist in the domestic market's density and intensity of use, underscoring the challenges that entrepreneurs in this industry face. Additionally, the market price for baobab fruit powder experienced a decline in 2004, dropping from about €35/kg to €8-14/kg due to increased supply and concerns over the circulation of lower quality baobab that fails to meet ethical standards for equity and environmental conservation. In the mid-2010s, the demise of PhytoTrade led to formation of the African Baobab Alliance (ABA) in 2018, comprising key industry stakeholders committed to promoting sustainable, reliable, and ethical supply chains.

In 2021, North America is the largest market for baobab powder (Futuremarketinsights, n.d.), with Western Europe being the second largest, holding 25% of the global market share in 2017 (CBI, 2022). Within the EU, Germany, France, and the Netherlands emerge as pivotal markets for baobab fruit powder, with France, Germany, and the UK leading as primary exporters of baobab products (Gruenwald & Galizia, 2005). Notably, Yeo Valley, a UK food producer, launched a vanilla and baobab yogurt in Britain's biggest supermarket. Costco introduced a breakfast bowl featuring baobab and acai; while Coca Cola's Innocent brand released a baobab smoothie in 2016 (Warc, 2018, see Figure 3.5.6). However, Brexit introduced uncertainties in baobab's international supply chain, with UK-based businesses facing tariffs on re-exporting organically certified goods to the EU, and delays in renegotiating deals with developing countries. Presently, the UK has signed a Memorandum of Understanding with the African Continen-

Coca Cola's Innocent brand released a baobab smoothie in 2016.



Baobab solid shampoo produced by Estonian company (left), and baobab oil manufactured by Czech company (right). Photo: Ayu Pratiwi.

tal Free Trade Area, potentially reduced tariffs and enhancing market access (CBI, 2022). The demand for baobab ingredients in the European market is projected to grow by 4% in the upcoming years (CBI, 2022).

A health food company owner in Northampton highlighted baobab's nutritional superiority, noting that it contains "six times the antioxidants of blueberries, six times the vitamin C of oranges, more potassium than bananas, more calcium than milk" (McCallister, 2016). Baobab oil is also gaining popularity in Europe, fueled by growing interest in natural cosmetics. Baobab is frequently blended with aloe vera and other established ingredients like argan oil, reflecting its versatility and appeal in natural product formulations.

Often referred to as the 'tree of life,' baobab's applications differ markedly between Western and Eastern markets. In Western countries, baobab is primarily valued as a healthy food ingredient, and its nutritional benefits are emphasized. Furthermore, its use in cosmetics products tends to be gender-neutral, or even targeted toward men. Brands like Organic Shop, Saloos, and Urtekram Beauty, amongst others, highlight baobab's virtues in their popular launches.

Established in 2010, the Estonian Organic Shop company prioritizes innovation and creativity, drawing inspirations from all over the world to develop self-care products that combine the benefits of aloe vera and baobab in the form of solid shampoo (see [Organicshop.com](https://www.organicshop.com)). Similarly, Saloos cosmetics of the Czech Republic, founded in 1993, is among the largest manufacturers of naturally certified cosmetics in the country (see [saloos.cz](https://www.saloos.cz)), and its popular product line includes baobab oil. The Danish natural brand, Urtekram Beauty, known for vegan, naturally sourced, and ecologically certified cosmetics, also launched a Baobab-Aloe hair and body wash designed for men. This masculine imagery may stem from the trees' symbolic association with being "big and strong," (see Rashford, 2023).

Aloe Vera – Baobab hair and body wash for men produced by Danish Urtekram Beauty. Photo: Ayu Pratiwi.



Conversely, the Asian market demonstrates a distinct preference for baobab’s skincare and cosmetic advantages. In Japan, baobab is known through the fairy tale “The Little Prince” by Antoine de Saint-Exupery and enjoys popularity among young women familiar with the novel (Lim, 2019). Baobab oil is not only moisturizing but also light on the skin, making it an ideal product for all seasons and especially suited to the Japanese market.

There is significant demand for baobab oil in markets like China, South Korea, and Southeast Asia.

Baobab also possesses anti-ageing properties and can combat free radicals and inflammation, aligning with the growing trends of anti-ageing skincare. While trends in Japan are fleeting, there is currently significant demand for baobab oil in markets such as China, South Korea and Southeast Asia. In China, cold-pressed baobab oil, among other similar products, has been traded for a long time, focusing on product development that includes anti-ageing moisturizer and pure organic massage oils, as well as hair and skin products, notwith-



Adansonia Digitata seed oil as ingredients of Dewytree cleansing oil. Photo: Ayu Pratiwi.

standing the scarcity of standalone brands dedicated to baobab. Likewise, in South Korea, although baobab is not highlighted as a primary ingredient, it is included among the listed components of some products. For example, Dewytree, a Korean cosmetic brand founded in 2010 and known for high-quality skin care products derived from natural ingredients using advanced technology (see Dewytreeglobal.com), uses baobab seed oil in its popular cleansing oil product. This suggests that baobab's properties are recognized and utilized, even though it may not enjoy a star ingredient status, yet.

Nevertheless, baobab's popularity seems to gain traction in South Korea, whose cosmetics industry reached a record US\$9.3 billion between January and November 2024 (Jumaway, 2024). The rise of Korean pop culture has also boosted the country's cosmetic sector,

known for cutting-edge, fun, and innovative products. Its emphasis on eco-friendly formulas, competitive price points, and clean beauty appealing to all genders and age groups has captivated beauty enthusiasts worldwide.

Milkbaobab promotes baobab as a “natural moisture tank”, and claims a product sale every five seconds. South Korea’s urban lifestyle demands multipurpose ingredients that address daily skin concerns such as moisturization while simultaneously enhancing overall skin wellness, inner glow, and resilience. Milkbaobab offers an extensive product range for the entire family, from babies to the elderly. The key ingredients are Senegalese baobab seed, dubbed as the “nature’s most restorative ingredient” and New Zealand’s purest foremilk, obtained from dairy cows within 72 hours from delivery (see milkbaobab.com).

Additionally, one of South Korea’s major cosmetic producers, The Saem (part of the Hankook Cosmetics group), recently launched a popular collagen cream featuring baobab as the star ingredient. According to the company’s website, The Saem draws on “the teachings of different cultures, customs and wisdoms around the world to discover the beauty secrets of different ethnic groups” (thesaemcosmetics.com),



The Saem Baobab Collagen Cream.
Photo: Ayu Pratiwi.

with key ingredients like gooseberry used by the Inca tribe in Peru. The baobab cream targets dry skin, reflecting the image of the baobab tree in Africa as a water container.

In the European market, marula oil is celebrated as an indigenous vegetable oil, known for its emollient and conditioning properties. The marketing strategies for these commodities often highlight their unique and native ingredients, with Omega 9 (oleic acid) being the primary fatty acid. Cosmetic brands frequently share stories of specific regions to enrich their marketing narratives. An example is the Dutch company Rituals, which has developed product lines inspired by regional beauty rituals and uses local ingredients as the foundation for their marketing strategies. Marula oil, with its narrative of being harvested in the wild, brings into limelight the advantages of this kind of marketing messages for local collecting communities.

Cosmetic ingredients entering the EU must meet strict requirements to claim substantiation (Regulation (EC) 1223/2009) and to comply with market access standards related to quality control, traceability, and sus-



Marula face oil (two from the left) and marula-based shampoo and oil spray for hair in EU market (two from the right). Photo: Ayu Pratiwi.

tainability. Amidst rising competition from other vegetable oils, marula oil can be promoted by drawing attention to its additional desirable properties. It is considered a very stable oil, with minimal problems with rancidity and thus suitable for cosmetic applications. This stability allows formulators to reduce the use of preservatives in final products (CBI, 2019).

3.6.5. Going Forward

Baobab and marula have largely been embraced by small businesses and segments of the international market whilst their products remain largely underdeveloped and suffer from limited consumer awareness. Even African communities have not proceeded with the level of innovation or experimentation that led to current products and uses. However, more recently, global brands have also started to ride the waves of baobab and marula. Within Europe, baobab and marula products often follow short-lived trends, due to challenges in securing adequate and stable supply that would enable marketing them as star ingredients. By contrast, in Asia baobab use in cosmetics and skincare tends to be more enduring, with baobab frequently highlighted as a primary component.

To elevate baobab and marula to mainstream success, collaboration with African governments, communities and food, drink, & cosmetics brands that can sustain the cultural heritage, develop viable and sustainable paths to commercialization and reward the wealth of knowledge curated over centuries is essential. The challenge lies in transforming products traditionally collected by harvesters into internationally recognized, high-quality goods. There are no universal solutions, as the development of the baobab and marula sector relies on a wide range of innovation across the value chains. In terms of *product innovation*, there is a significant demand for novel formulations using these ingre-

dients, potentially extending to sports and energy drinks, smoothies, bars and chocolates as well as probiotic and symbiotic products (Meinhold, 2022). This innovation should also be complemented by advancements in processing technology and storage solutions (*process innovation*).

To maximize the potential of baobab and marula in the export market, *organizational innovation* becomes paramount to meet market requirements, which extend beyond legal frameworks to include standards set by food manufacturers, possibly necessitating more rigorous measures when ingredients enter their production facilities. Specifically, baobab products prepared for exports must adhere to strict standards, including the absence of pesticide remnants and heavy metals. Furthermore, hygienic practices in the processing of raw materials and traceability play cru-

To elevate baobab and marula to mainstream success, collaboration between African governments, communities and major food, drink, and cosmetics companies is essential. To maximize their potential in the export markets, organizational innovation becomes paramount to meet market requirements.

Baobab health supplement drink powder manufactured by Finnish company Hey'Mo. Photo: Ayu Pratiwi.



cial roles in the supply chain. Overcoming these challenges is difficult, as most baobab harvesters lack advanced food processing systems and are not adequately rewarded for their labour or knowledge as curators and designers of the raw material. Traditionally, funding for baobab and marula projects has relied on grants, instead of private investment (Meinhold et al., 2022). The 2004 Ethiopian initiative to trademark (Sereke-Brhan 2010) native Ethiopian coffee even though the product had been commercialized globally for centuries provides a good case study for NTPFs like baobab and marula.

On the consumer side, much can be done to leverage the benefits of baobab and position it in the high-end market. In particular, the high pectin and fiber content in baobab fruit pulp, for example, presents an opportunity from a food technology perspective, as it can serve as a thickening agent (Bennett, 2006). Beyond its well-known advantages as a healthy and nutritional supplement, a range of product concepts incorporating baobab powder have been developed for the cosmetics and healthcare industry, showcasing the ingredient's versatility for nutraceuticals developed by communities all across Africa.

The high pectin and fiber content in baobab fruit pulp presents an opportunity for the food industries, as it can serve as a thickening agent.

3.6.6. Conclusion

The path to innovation for baobab and marula faces significant challenges, primarily due to the scarcity of funding, which constrains scalability. Unlike widely cultivated crops such as coffee or cocoa, baobab and marula do not lend themselves easily to plantation farming. This is especially true for baobab, which requires 16-23 years to reach maturity and begin flowering, compelling farmers to depend on naturally existing trees. Fortunately, this may change in the future (see the chap-

ter about domestication of baobab in Ghana to see how the research conducted in Ghana's Ho technical University has already shown that it is possible to speed up the flowering of baobab). Meaningful innovation for baobab and marula crops must begin at the grassroots level, focusing on production and cultivation strategies. This approach, as discussed in Chapter 1.2., suggests that starting innovation at the cultivation stage holds the key to successfully integrating baobab and marula into the mainstream market. By tackling these foundational challenges, the potential for baobab and marula to achieve broader market acceptance and success becomes significantly more attainable.

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