

Where does cheese come from? Geographical indications for Brazilian regional development: a review

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Abstract

Geographical indications (GIs) are crucial for protecting the unique characteristics of products originating from specific places. They preserve the reputation and quality of traditional items, promote cultural heritage, and inform consumers about product origins and quality. Obtaining GI seals can be challenging as it requires reconciling traditional production methods with modern standards. However, the seal brings small producers and traditional products to the forefront, benefiting less-favored regions. GIs ensure consumers purchase products with known quality and reputation while allowing producers to differentiate and command premium prices. Moreover, GIs support regional development by adding value, attracting tourists, and boosting the local economy. Recognizing the value of traditional products and production methods, GIs preserve cultural heritage and encourage sustainable development. Thus, the aim of this review is to highlight the importance of GIs in regional development and traditional product appreciation from the example of the five cheeses with the protected GI seal existing in Brazil.

Keywords: cheese; geographical indication; regional development; Brazilian cheese; Brazilian geographical indication.

Practical Application: Impacts of geographical indications in regional development and productive process.

1. INTRODUCTION

The appellations of origin (AO—Appellation d'Origine) are as old as the world's history, with examples such as Carrara marble, Persian rugs, and Chinese silk, but it was only in the eighteenth century that a region was formally discerned as the origin's place of a product, with the request made by the Marquis of Pombal to delimit the geographical perimeter in Portugal of the Port wine production in 1756 (Almeida & Tarabal, 2020). However, the denomination of origin (DO), or AO, was only established in 1919 by the French agricultural policy. From 1935 to 1955, the AO became the Appellation of Origine Contrôlée (AOC) with the creation of the National Institute of Originality and Quality (INAQ), responsible for controlling and recognizing products as AOC (O'Connor, 2006).

In 1992, the European Union introduced the protected designation of origin (PDO) and the protected geographical indication (PGI) labels on the market. The first indicates that the product was produced, processed, and prepared in the region that gives it its name, i.e., all stages, from knowledge to production, were carried out in the same place, while in the second, despite its quality being linked to the place that appears on the label, it is required that only one of the stages of its production be carried out there. In Europe, there is also the Traditional Speciality Guaranteed (ETG) label, which specifies

the protection of a traditional composition or production of a certain product (Grunert & Achmann, 2016).

Thus, PGI is the geographical name of a country, city, region, or locality that has become known as a center of production, manufacture or extraction of a particular product, or provision of a specific service. On the other hand, PDO is the geographical name of a country, city, region, or locality that designates a product or service whose qualities or characteristics are exclusively due to the geographical environment, including natural and human factors (Froehlich et al., 2010).

The PGI label is used as an official quality standard and an effective tool for products with unique features, working as a guarantee to meet consumer expectations (Grunert & Achmann, 2016). The registration of a GI has an indefinite period, being valid as long as the proven elements for the respective PGI are present.

GIs emerge as a possibility in the midst of a globalized world to know the origin of the food that is consumed, in which the differentiation of a product is essential for adding value and, consequently, for the development of the place where it is produced, since the seal guarantees the quality of the product and its regional characteristics, making it a strategic tool, in addition to boosting tourism in the region (Caldas, 2003; Mendes et al., 2014).

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The tradition of GIs for cheese has an enormous importance for the European Union, with 189 PDO and 48 PGI registrations for this type of product (European Commission, 2022). This is due to a European strategy to fight against excess milk production and add value to products, develop rural areas, and create interest in agrotourism (Adro & Franco, 2020). In South America, only Brazil and Colombia have cheeses registered and protected with GI, with Brazil having five of them and Colombia having two (Richard, 2018).

Paraná is the second state with the highest milk production in Brazil, behind only Minas Gerais. Among the mesoregions of the state, the southwest region stands out in the first place and west region in the second place (Alves et al., 2020). In addition, Paraná has specific laws that enable the production and sale of artisanal cheeses. The Law 19.599 (Paraná, 2018) emphasizes the use of raw bovine milk from the rural property itself to produce traditional cheeses. Despite the high milk production and incentives to produce traditional cheeses, the state of Paraná has only one cheese with an indication of origin, Colônia Witmarsum in the eastern region of the state, near Curitiba. However, initiatives such as the Biopark's Fine Cheese Project in western Paraná (the second largest dairy region in the state) can help change this scenario, adding value to cheese, bringing new technologies and knowledge to the rural producer that increase the quality of traditional cheeses, and also producing fine cheeses on these properties.

The purpose of this review is to highlight the importance of GI seals in promoting regional development and in valuing typical products, exemplifying with the cheeses that hold this seal in Brazil.

2 REGIONAL DEVELOPMENT

Local economic development is the action that boosts the economy and local society which, through the efficient exploitation of the capacities and potentialities internally available, manages to stimulate its economic growth, generate jobs, and improve the quality of life of a local community (Buarque, 1999; Martinelli & Joyal, 2004).

According to Puig (2012), development can be considered as a qualitative, multidimensional, and, therefore, complex phenomenon, so that territorial identity can help and catalyze the construction of collective strategies of policies for development, where innovation is a constant and productive differentiation is a reality.

In the midst of globalization, local development is a direct product of the ability of producers and local society to organize and mobilize themselves, through their specificities, their potential, and their own culture, seeking to compete in global markets, being an endogenous process that occurs in small territorial portions (Buarque, 1999; Casas & Scorza, 2016; Kornekova, 2022).

Globalization has made it attractive to know the product's origin, as there is a worldwide standardization and interconnection, where the same products are consumed all over the world, so that the adoption of development strategies at the local level provides differentiation and local identification, consequently

improving income and reducing social inequality (Kornekova, 2022; Martinelli & Joyal, 2004). Buarque (1999) emphasizes that there is a movement to value the local and the diverse, thus creating new market opportunities with territorial proximity, favoring local development.

In modern and increasingly competitive markets, the use of differentiated products is a possibility for adding value, allowing the consumer to differentiate identical or similar products from a company (Trentini & Sae, 2010). Therefore, one way to face the globalized and highly competitive scenario is through the valorization of the territory and local production that, in addition to the ideal of development, refers to quality (Molinari & Padula, 2013). Protected agricultural and food products promote local development by keeping the industry linked to the territory, whether on a local or regional scale (Mejías & Budría, 2012).

Puig (2012) reports that an alternative for local development is the use of territorial identities, such as DOs, which can enable the construction of this identity and, together with other products and services such as tourism, lead to a territorial project that provides development.

In rural areas, the territorial approach emerges from the understanding that rural and agricultural development cannot be separately built but together (Anjos et al., 2020). According to Anjos et al. (2020), agriculture modernization, productivity, and profitability increase do not configure rural development, but agricultural development, since for rural development to occur, it is necessary to improve life quality, reduce poverty rates, and lessen inequality in the countryside.

3 PROTECTED DESIGNATION OF ORIGIN AS A FORM OF REGIONAL DEVELOPMENT

Human food does not only refer to the physiological role it fulfills, but also assumes a social, recreational, and cultural role, in addition to being a source of anthropological and historical knowledge of humanity, as each people and each era has its own food tradition. Food serves as a form of food-memory, with a connection between the ingestion of a certain food and some event or person, so food is considered an intangible heritage (Mendes et al., 2014).

Faced with the globalization on food markets controlled by multinationals and the health problems related to some foods, recognizing the product quality and origin, distinguishing it from others, is a strategic market tool (Mejías & Budría, 2012). In this sense, the designation of origin allows the consumer to distinguish products that have unique flavor qualities and geographical origin, in addition to generating an appreciation with territorial resources, valuing the product and the region, allowing a balanced territory occupation, adding direct value to the product, and boosting the region economy due to tourism (García-Hernández et al., 2022; Mendes et al., 2014).

The designation of origin provides historical recovery, traditional production, quality identification, incorporation of legal means, construction of the product image, and valorization of food products (Mendes et al., 2014). In line with this, Mannia (2018) states that among the PDO main objectives are favoring

the production diversification, the promotion of quality products, and the increase in the income of producers. A product with DO establishes positive synergies with others and propels the place abroad, through its own certification system, which provides the prior qualification of the final product in the global market without losing its regional characteristics (Puig, 2012).

Geographical identification demonstrates a relationship between people, products, and place of origin. At the same time, sustainable rural development is more successful when it unites and interconnects people, products, and territory. The designation of origin takes the name of the place where the product is produced to all the places where the product arrives, generating greater visibility (Puig, 2012).

However, there may be some negative points regarding the PDO adoption, since, in some cases, there is the exclusion of a group that carries out production in accordance with the established, but is located outside the area delimited by legislation, or there may occur some political pressure for the addition of new producers, generating monopolies formation by favoring some producers and excluding others, inflexibility of norms, and bureaucratization (Mendes et al., 2014).

4 SOCIOECONOMIC INFLUENCES OF GEOGRAPHICAL INDICATIONS

At an international level, quality certificates mean access to niche markets (Mendes et al., 2014). As they are products that qualify for the differential, it is important that consumers are able and willing to pay for the product, which the more valued, the more expensive it will be, increasing producers' income (Mendes et al., 2014).

The indication of origin and quality in agri-food production is presented as a way of promoting the development of rural territories, based on the experience of the European Union countries, in which market distinctions (traditional products, GIs, ecological products, etc.) are seen as elements that promote transformation processes and production matrix diversification (Anjos et al., 2020; Török et al., 2020).

In Brazil, the Vale dos Vinhedos region, which produces wines in Serra Gaúcha, was the first Brazilian region to obtain a GI (an indication of origin), in 2002 (Anjos et al., 2020; Chimento et al., 2016). The wine production in Serra Gaúcha is a legacy of Italian immigrants who arrived in Rio Grande do Sul in 1875. Italian immigrants brought the wine production and consumption tradition, but until the early 20th century the production was only for family consumption using rustic grape varieties. Afterward, the region entered the national market, through the improvement in the quality of grapes and wines produced, emphasizing the quality of grapes, but not the product's place of origin. Mercosul creation and the consequent entry of Argentine, Chilean, and Uruguayan wines, subsidized by international agreements in Brazil, led to the creation of Associação dos Produtores de Vinhos Finos do Vale dos Vinhedos (Aprovale), as well as the implementation of initiatives focused on demonstrating the "terroir effect" of this region on the wines produced, and on defending the sector, thus resulting in the first national indication of origin (Anjos et al., 2020).

The Vale dos Vinhedos region observed that in just over ten years, there was a fivefold increase in local tourism, comparing 2001 (45,000 tourists) and 2012 (more than 248,000 tourists) (Chimento et al., 2016). It is noteworthy that the region has qualified itself in order to offer a unique experience to visitors, offering visits to vineyards and factories, wine tasting, and specialized hotels and restaurants (Chimento et al., 2016). According to Anjos et al. (2020), the Vale dos Vinhedos region also benefited from the traditions inherited from Italian immigrants as a promotion of local tourism.

Tourism based on quality gastronomy and products with territorial identity can be an alternative to attract tourists and improve the local economy of farmers, manufacturers, hotels, and merchants, being this a tourism strategy focused on experience, in which you can enjoy genuine local food in its own place of production, in addition to allowing greater conservation of local culture and gastronomy, favoring regional and sustainable development (Folgado-Fernández et al., 2017). Thus, a product GI makes it possible to transform the region into a tourist attraction (Chimento et al., 2016).

Vale dos Vinhedos's indication-of-origin achievement added to wines price with quality attested by the indication requirements in 20–30% on average, because the use of the geographical seal causes an increase in the price due to its unique characteristics that are unreproducible in another environment (Molinari & Padula, 2013). In addition, land in the region has appreciated between 200 and 500% (Molinari & Padula, 2013; Trentini & Sae, 2010). Therefore, the process involving GI in Vale dos Vinhedos, with a strong innovation aspect, contributed to boost the region development as a whole, which benefits from the constant increase in the volume of tourists (Chimento et al., 2016).

According to Marins and Cabral (2015), indications of origin can bring benefits to the consumer and the producer. For consumers, GIs represent unique and higher quality products, enable traceability, transmit information, in addition to preserving cultural, traditional, and environmental values. As for the producers, they add value to the products, protect the tradition and local culture, differentiate, and make the products unique and improve the region. On the other hand, some losses arising from GI labels are the increase in prices for consumers, competition, and innovation reduction; for producers, it leads to an increase in the production cost (Marins & Cabral, 2015).

For Chimento et al. (2016), the innovation aspect must be considered, alongside tradition, as an important part of the products competitiveness strategy that seeks a GI. According to the same author, two factors justify the low GI exploitation in Brazil, a country full of culture and tradition. They are: the reduced understanding of the asset among the producers and the low public recognition. As for consumers, many are unaware of the GI, and others do not have the economic conditions to acquire a higher value product.

However, high prices can be justified by product distinction because the differential traits of these products arise from mechanisms to add value. Therefore, GIs, PGI and PDO, are ways of generating product distinction in which the justification for adding value is the territory and the typical methods of production in the place (Molinari & Padula, 2013).

In Brazil, in addition to wine, other products, such as coffee, grapes, beef and meat products, yerba mate, honey, leather, brandy, manioc flour, guarana, mango, cocoa beans, cashew nuts, rice, cheese, socol, shrimp, jabuticaba and its products, cocoa, molasses, pineapple, melon, ornamental fish, guava, Fuji apple, and yam, have the geographical identification registered at the National Institute of Industrial Property (INPI), responsible for the registration of GIs in the country (Brasil, 2022). In November 2022, there were 70 GIs registered at the INPI, among which only five are cheese.

5 BRAZILIAN CHEESE WITH GEOGRAPHICAL INDICATIONS

The history of cheese in Brazil dates back to the colonial period, when Portuguese settlers introduced cattle and the recipe for Portuguese cheese into the country, being this considered the starting point of some traditional Brazilian cheeses, such as Minas Artesanal and Canastra cheeses, which were adapted according to local conditions. As livestock farming expanded, artisanal cheese production also increased in order to absorb surplus milk production when perishables were difficult to sell (Pires, 2013).

Despite the long history of cheese production, there is no cheese registered with a PDO in Brazil to date, but there are five cheeses with an indication of origin, which are Minas Artesanal do Serro cheese in 2011; Canasta cheese in 2012; cheese from Colônia Witmarsum in 2018; Queijo Artesanal Serrano from Campos de Cima da Serra, Santa Catarina, and Rio Grande do Sul states in 2020; and Marajó cheese in 2021 (Brasil, 2022).

5.1 Minas Artesanal do Serro cheese

In the state of Minas Gerais, some traditional cheese-making regions stand out: Serro and Serra da Canastra, which currently have a record of identification of origin, and Salitre/Alto Parnaíba/Cerrado, which follow a similar process of artisanal cheese production, with whole raw cow's milk, rennet, and using a natural ferment. This starter culture, called "pingo" by the producers, is composed by a group of lacto-fermentation bacteria, which are typical of each region. Pingo is obtained from the whey that drains from newly manufactured cheeses in the first maturation day and reflects each territory ambience and its specificities (Meneses, 2006). Serro cheese shows a semi-hard consistency, thick texture, yellowish white color, slightly sour taste, and a thin crust with no cracks. Compared to other Minas artisanal cheeses, the flavor is more acidic and quite typical.

According to Medeiros et al. (2016), in which the tourists' opinions regarding artisanal Minas cheese from Serro were analyzed, there was a favorable attitude toward paying a higher price for products with identification of a GI and identity highlighted by the region symbols and signs. Although the topic "cheese" comes to people's mind when they visit a given region, it is still not one of the factors that motivate a visit to the place in more than 70% of cases (Medeiros et al., 2018). One of the reasons for this may be related to the lack of information about this cheese on official websites of the component cities of Serro region, which, despite valuing the product and recognizing it

as intangible heritage, could better explore the registration of a GI in the media (Medeiros et al., 2018).

5.2 Canastra cheese

Although the production process of Canastra cheese is very similar to Minas Artesanal do Serro cheese, its ripening period and the high-altitude tropical climate of the region lead to a cheese with a thin crust with yellow color and without cracks, white yellowish mass, dense texture, semi-hard consistency with a tendency to soft, butter-like nature, slightly acidic taste, and a marked and spicy flavor (Kamimura et al., 2019).

Serra da Canastra is the most well-known region among the zones of Minas Gerais state producing artisanal cheeses. The region has a strong culture of persistence to the agrarian values, having in the cheese production from raw milk the guiding of its cultural background. Its production is more than 200 years old and is part of the residents' life and history, even though the requirement of milk pasteurization by legislation almost put an end to this tradition. All the challenges of territorial maintenance make the cheese only continue to exist due to the resilience and resistance of the people during the historical process, which culminated in obtaining the label of a GI (Giácomo, 2022).

5.3 Colônia Witmarsum cheese

Colônia Witmarsum geographical area, which is delimited in the indication of origin of the region, is located in the municipality of Palmeira, Paraná, and is known for its strong German culture, characterized by ethnicity, history, and trajectory. In this place, cheese production is mainly carried out by Cooperativa Witmarsum, which produces eleven types of cheese, among which there was GI recognition for colonial cheese that has a mild flavor, a semi-soft consistency, and closed mass (Medeiros et al., 2018).

The regulation of indication of origin brings the possibility of using refrigerated raw milk, without the need of being freshly expressed. However, the milk produced must be delivered to the cooperative within 24 h after milking and, after this period, the milk is no longer valid for cheese production, losing its characteristic of temporal specificity (Meirelles, 2021).

There is also a requirement that all cattle in the herd, composed exclusively of dairy breeds, must be born in the Witmarsum Colony, although there is no specific crossbreeding (in general, Holstein and Brown Swiss breeds are used). Animal feeding also does not have a specific model and can be carried out in pastures or in a conserved or concentrated form (Meirelles, 2021).

Unlike the other GIs, the one at Colônia Witmarsum has a hybrid structure, in which all production takes place centrally at Cooperativa Witmarsum. It was noted that the cooperative began to obtain greater returns after the implementation of the GI; however, there was no change in the price paid for milk. What happens is that the capture of the generated value is concentrated directly on the cooperative and indirectly on the producers, since there is a greater demand for milk (Meirelles, 2021).

5.4 Serrano cheese

The cheese called Serrano has been produced for over 200 years in Campos de Cima da Serra, in the Rio Grande do Sul state, and in Planalto Catarinense in the Santa Catarina state. Although the two regions are distinct, with different dairy production systems, climatic and processing conditions, and maturation periods, there are sociocultural and economic similarities that allow these cheeses to be placed side by side (Ceolin et al., 2020).

This cheese production began with the first settler's occupation and is based on extensive livestock farming, managed on a natural vegetation of native fields, where sugarcane grass (*Andropogon lateralis*) and mimoso grass (*Schizachyrium tenerum*) predominate, among others, surrounded by thickets, where araucarias (*Araucaria angustifolia*) stand out. It is known that cattle feed can influence milk composition and quality, and the botanical diversity of a pasture can be a determining factor for a quality cheese production, providing high concentrations of essential fatty acids and antioxidants to the human health (Trabaquini et al., 2019).

Serrano cheese is the main type of livelihood for a significant number of families in the region, being a producer's heritage, closely linked to cultural identity and local know-how. This cheese recognition goes beyond legal and marketing issues related to the product, as it represents a relationship between affective memory and the preservation of local history (Ceolin et al., 2020).

5.5 Marajó cheese

For Marajó cheese, made from raw buffalo milk, the history goes back to the end of the 19th century after the beginning of buffalo farming insertion in the region, after a crisis in traditional cattle ranching. Despite this, cheese production in Marajó had already taken place since the 18th century, using bovine milk. It is pointed out that the first to explore buffalo milk for cheese production was Colonel Francisco Soares de Mello, owner of Fazenda Santana, currently known as Fazenda Tucumã, in the 1920s. The colonel was a great connoisseur of the cheese-making art, and his specialty was butter-type cheese production. He disseminated his knowledge among the population, teaching production techniques, and disseminating the product on Marajó Island (Nascimento et al., 2019). Marajó cheese has a soft and compact texture, semi-hard and slimy consistency, a slightly sour and salty taste, color described as *branco-palha* (which might be equivalent to cornsilk white) and may have a cylindrical or rectangular shape, being a butter-type cheese (ADEPARÁ, 2013).

Nowadays, this production takes place on a small scale in farms, characterizing itself as a rural agro-industry, in an artisanal and family way and using local know-how acquired over two centuries. Despite this, the economic, historical, cultural, and social importance of the cheese for the region is such that its sale is capable of funding the entire buffalo production on some farms, even with legal obstacles due to the production informality (Cruz et al., 2015).

6 PROCESS FOR OBTAINING PDO IN BRAZIL

The recognition of GIs can be requested by unions, associations, institutes, or any other legal entity with a legitimate interest in the matter and located in the corresponding territory, capable of making a collective representation, as a procedural substitute for the collectivity that is entitled to use the requested geographical name. In addition, the GI registration, according to the legislation, does not have an established validity period, unlike other patents, as it is understood that its validity will last as long as the reasons for the registration granted persist (Froehlich et al., 2010).

In order to be successful with the adoption of the DO, it is important to have a solid organizational and institutional structure; an equal participation between local producers and companies; good trading partners; and effective legal legislation, in order to avoid fraud that reduces and compromises the credibility of the product (Puig, 2012). In the implementing process of a GI, it is essential to build an actors network acting in an integrated and structured way, as it will be necessary to define a geographical area, proof that the region has become known for that service or product that has its qualities or characteristics arising exclusively or essentially from the geographical environment, including natural and human factors.

According to the Instituto Nacional da Propriedade Industrial (INPI, 2022), in order to register a PGI it is necessary that the geographical area in question is proven to be known as a center for the extraction, production or manufacture of a certain product, as well as the provision of a certain product. For a PDO, it is required that the qualities or characteristics of the designated product or service are exclusively or essentially due to the peculiarities of the geographical environment, whose included factors may be natural or human.

Regardless of the registration type wished, in the application for a GI recognition, the product must be defined in an objective and direct way, named as it is called. In the Technical Specifications Notebook, it is necessary to briefly describe the type of product, what it is made of, and its specific characteristics or qualities. In the case of IP, the production process and extraction or manufacture of the product whose geographical origin is to be protected must be elucidated, while in the case of PDO, the influences that the geographical environment, including human and natural factors, have on the product (INPI, 2022).

7 CONCLUSION

Knowing the origin of a given product provides the consumers with the guarantee that they are purchasing a quality item, with a renowned characteristic, and even with a known origin. As for the producer, there is the advantage of adding value with a consequent boost in the development of the region where they are produced.

Obtaining GI in Brazil, in most reported cases, was an arduous process to reconcile the tradition of tens or even hundreds of years of manufacturing a certain type of cheese with more modern standards of hygiene and production, but the label served to take many properties out of hiding and provided greater development for less-favored regions.

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