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BRAZILIAN COFFEE PRODUCTION: FROM ITS HEYDAY TO DECLINE, WITH A FOCUS ON THE PARANÁ SCENARIO

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ABSTRACT

This study aims to explore the history of coffee cultivation in Brazil and highlight the environmental, agronomic, and market-related factors that contributed to the decline of Brazilian coffee farming, with a focus on the state of Paraná. Coffee cultivation has played a significant economic and historical role in Brazil. It was introduced in the state of Pará in the mid-18th century and later spread throughout the national territory. One of the states that stood out the most in coffee production was Paraná, where coffee became the state's primary product for both production and export from the early 20th century until the early 1970s. The crop was responsible for the emergence and development of several cities, especially in northern Paraná, which attracted immigrants seeking land and better living conditions. However, this cycle was not solely marked by prosperity. Coffee farming suffered major setbacks over the years, such as the Great Economic Crisis of 1929 and the severe frosts that occurred after 1970, particularly the devastating Black Frost of 1975. These climatic events, combined with increasing competition from other crops such as soybeans and corn, ultimately led to the decline of coffee cultivation in the region.

Keywords: Coffea arabica. Coffea canephora. Black frost (1975). Economic crisis of 1929. Agricultural economy.

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INTRODUCTION

Originating on the African continent, specifically in the central region of Ethiopia, coffee cultivation expanded eastward through Arab traders. Since then, the practice of consuming coffee-based beverages has spread across the globe and remains widespread to this day. In Brazil, coffee was introduced in the northern region of the country, more precisely in the state of Pará, in the mid-18th century. It was brought from French Guiana by Sergeant-Major Francisco Mello Palheta, at the request of the governor of Maranhão and Grão-Pará, who had sent him to the Guianas with this mission. At that time, coffee already held significant commercial value (Martins, 2008).

Among the many Brazilian regions that became prominent in coffee production, the state of Paraná played a particularly important historical role. For several decades, Paraná was one of the country's leading coffee producers and exporters. However, determining the exact starting point of coffee cultivation in the state is challenging, since, during colonial times, the ports of Paranaguá, Antonina, and Guaratuba were administratively tied to the province of São Paulo, where coffee had been cultivated as early as 1807 (Carvalho, 2007).

By the late 19th and early 20th centuries, coffee cultivation had contributed significantly to the diversification of Paraná's economy, which had previously relied mainly on livestock farming and the exploitation of yerba mate. Coffee brought a new source of income and stimulated regional economic development. As coffee farming requires a considerable amount of manual labor—particularly during planting and harvesting—the expansion of plantations increased the demand for workers. This influx attracted immigrants in search of job opportunities and better living conditions, contributing to the development of numerous cities in the state.

In assessing coffee cultivation in Paraná, special attention must be given to the northern region, where territorial occupation progressed rapidly due to the expansion of coffee farming. This growth was driven by São Paulo producers seeking new agricultural lands, following the implementation of a 1902 policy in São Paulo that restricted coffee planting for five years due to overproduction and surplus supply (Priori et al., 2012; Piffer, 2024).

Reaching large-scale coffee production in Brazil involved navigating various historical challenges that were closely linked to the country's broader economic development. One of the most notable setbacks was the 1929 Economic Crisis, which

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severely impacted Brazilian coffee farming. At the time, the United States was the largest importer of Brazilian coffee. With the collapse of the global market, demand dropped sharply, leading to an oversupply and a dramatic fall in prices. In an attempt to stabilize the market and avoid further devaluation, the Brazilian government began purchasing and incinerating vast quantities of coffee.

Decades later, new challenges emerged. Until the mid-1970s, coffee remained the main agricultural product in Paraná's economy (Moro, 2000). However, this scenario began to shift due to several contributing factors. These included the modernization of agricultural practices, a new global coffee crisis caused by oversupply in the late 1960s and early 1970s, and the catastrophic frost of 1975. These events accelerated the diversification of agricultural production in the region, favoring the expansion of other crops such as oilseeds, wheat, and corn (Priori et al., 2012; de Castro et al., 2021).

Despite these historical adversities, coffee remains one of the most economically significant crops globally (Freitas et al., 2024). Today, it stands among the most valued, consumed, and traded commodities worldwide (de Souza et al., 2024). For the 2024/2025 harvest, Brazil continues to lead global production, accounting for 38% of total global output, or 66.4 million 60-kg bags. It is followed by Vietnam (17%), Colombia (7%), Indonesia (6%), Ethiopia (5%), Uganda (4%), India (4%), Honduras (3%), Peru (2%), and Mexico (2%) (USDA, 2025).

The production forecast for Brazil's 2025 coffee harvest, a low-yield year in the crop's biennial cycle, estimates a 4.4% decrease compared to the previous harvest, totaling 51.8 million processed bags. The physiological effects of the biennial cycle, combined with prolonged periods of drought and high temperatures before flowering, negatively affected productivity. When compared to the 2023 harvest—which was also a low-yield year but benefited from more favorable weather—production is expected to decline by 5.9%. Regarding cultivated area, there was a 0.5% increase for both *Coffea arabica* and *Coffea canephora*, totaling 2.25 million hectares: 1.85 million hectares in production (a 1.5% decrease) and 391.46 thousand hectares under development (a 10.7% increase) compared to the previous year (CONAB, 2025).

In summary, coffee remains an essential source of income for many municipalities and a vital sector for job creation within Brazil's agricultural economy. Its strong performance in both export and domestic markets ensures the economic sustainability of producers and the broader industry. Therefore, this study aims to explore the historical

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trajectory of coffee cultivation in Brazil and examine the environmental, agronomic, and market-related factors that have contributed to the decline of Brazilian coffee farming over time, with an emphasis on the state of Paraná.

ECONOMIC AND SOCIAL IMPORTANCE OF COFFEE IN BRAZIL

Coffee farming plays a prominent role as one of Brazil's main agricultural activities and is of paramount importance to the country's social and economic development (Bliska Júnior, 2020). For more than 150 years, Brazil has maintained its status as the world's largest coffee producer. As early as 1850, the country accounted for approximately 40% of global coffee production, establishing itself as a global leader in the sector (USDA, 2025).

Due to the wide range of regions suitable for coffee cultivation, Brazil benefits from a diverse set of climates, altitudes, latitudes, and topographies. This environmental diversity allows for the production of various coffee cultivars, enabling the industry to cater to different consumer preferences and purchasing power. Currently, it is estimated that 1.84 million hectares are dedicated to *Coffea arabica* and 409.7 thousand hectares to *Coffea canephora* (CONAB, 2025).

In 2024, Brazil exported 50.5 million 60-kg bags of coffee, setting a new record and marking a 28.8% increase compared to the previous year. Export revenues reached an all-time high of US$ 12.3 billion, representing a 52.6% increase from 2023. This exceptional performance was driven by increased international demand, the appreciation of the U.S. dollar against the Brazilian real, and a global supply-demand imbalance that raised prices in foreign markets (CONAB, 2025).

For the 2025 harvest, the national average productivity is estimated at 28 bags per hectare, reflecting a 3% decrease compared to the previous crop. Arabica coffee accounts for 82% of the total area under coffee cultivation in Brazil. Specifically for Arabica, productivity is projected at 23.4 bags per hectare, representing an 11% drop compared to the 2024 harvest. In contrast, Conilon productivity is expected to reach 46.3 bags per hectare—an 18.1% increase. The main coffee-producing states are Minas Gerais, Espírito Santo, São Paulo, Bahia, Rondônia, Paraná, Rio de Janeiro, Mato Grosso, and Goiás (CONAB, 2025)

From a social and environmental perspective, Brazilian coffee farming is considered one of the most responsible in the world. Brazil enforces some of the most stringent labor and environmental regulations among coffee-producing countries. Today, coffee cultivation

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remains a vital source of income for hundreds of municipalities and is a key sector in job creation within national agriculture, responsible for generating more than 8.0 million jobs across the country (MAPA, 2017).

By the end of the first half of 2024, coffee stocks in Brazil are expected to total approximately 13.7 million bags—a 24% decrease compared to the 18.0 million bags recorded at the end of 2023. This reduction is primarily due to the high volume of coffee exports, which is anticipated to drive stock levels to historic lows. In terms of export destinations, the leading importers of Brazilian coffee are the United States and Germany, accounting for 16.4% and 15.4% of total exports, respectively, followed by Belgium (9.1%), Italy (8.1%), and Japan (4.9%) (CONAB, 2025).

COFFEE HISTORY

There are several legends surrounding the discovery of coffee, but the most widely accepted is the legend of Kaldi, recorded in Yemeni manuscripts from the mid-6th century. According to this legend, Kaldi was an Ethiopian goat herder who observed the stimulating effects that the fruits of a particular bush had on his herd, making the animals more energetic and restless. This plant would later become known as the coffee tree (*Coffea*) (Martins, 2008).

Although coffee originated in Africa, it held great importance for the Arabs, who controlled both its cultivation and the preparation of the beverage throughout the 16th century. In Europe, the gateway for coffee beans was the city of Venice in 1615—a major center for spices and luxury goods—where coffee was then distributed to the European courts (Martins, 2008).

The historical trajectory of coffee is closely intertwined with the history of Brazil itself. For several decades, coffee was the country's main economic driver, accounting for 70% of the total value of Brazilian exports between 1925 and 1929 (Embrapa apud Fassio & Silva, 2007).

The first coffee seeds introduced into Brazil belonged to the *Coffea arabica* species and date back to the mid-18th century. They were brought from French Guiana to the state of Pará by Sergeant-Major Francisco de Mello Palheta. For much of the 18th century, the expansion of coffee cultivation remained limited to the North and Northeast regions of the country, where soils—especially in the Amazon—proved unsuitable for the successful development of the species introduced (Martins, 2008).

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In 1760, the Portuguese Empire faced economic difficulties as gold reserves dwindled and sugar struggled to remain competitive in global markets. This prompted João Alberto de Castelo Branco, a magistrate from Maranhão who had just arrived in Rio de Janeiro, to request *Coffea arabica* seedlings from Belém for cultivation in Rio. He was aware of the growing global demand for coffee (Martins, 2008).

Initially, coffee was not well received by Brazilian farmers, particularly by sugar mill owners in Rio de Janeiro who were accustomed to sugarcane cultivation. However, the government promoted coffee planting to counter declining sugar exports. The Southeast region of Brazil, with its favorable climate and soil conditions, along with abundant and low-cost labor, facilitated the spread of coffee cultivation. Still, it was only after Brazil's independence that coffee surpassed sugarcane in economic importance. By 1830, coffee had overtaken sugar as the leading export product (Martins, 2008).

The final decade of the 19th century marked a favorable period for the expansion of coffee cultivation in Brazil. International coffee supply suffered disruptions—particularly in Asia—where diseases devastated plantations in Sri Lanka. Additionally, the inflation of credit during this period benefited Brazilian coffee growers by providing financing for new plantations and inflating domestic coffee prices through currency depreciation (Furtado, 2005).

Brazil's exceptional conditions for coffee cultivation enabled domestic producers to control three-quarters of the global coffee market by the end of the 19th century. During the early decades of the 20th century, the Brazilian government implemented a series of regulatory policies to stabilize the market, intervening during periods of overproduction and price drops. These measures included purchasing surplus production and storing it, which helped sustain high prices and incentivized further cultivation (Furtado, 2005).

However, the 1929 Economic Crisis triggered a sharp decline in global demand, exacerbating Brazil's surplus and leading to a crisis of overaccumulation. In response, the government adopted policies throughout the 1930s and 1940s aimed at balancing supply and consumption, seeking to stabilize the coffee economy during a volatile period (Furtado, 1976).

COFFEA ARABICA × COFFEA CANEPHORA

The species *Coffea arabica* (Arabica coffee) and *Coffea canephora* (commonly known as Conilon or Robusta coffee) are responsible for nearly all the coffee consumed

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worldwide (Davis et al., 2011). These two species differ significantly in their agronomic, biochemical, and sensory characteristics, as well as in their market value and the uses of their respective products. Arabica coffee is known for producing a smoother beverage with a more pronounced aroma and flavor. In contrast, Conilon or Robusta coffee is considered a hardier plant with higher production potential. Its beverage is more neutral in flavor, with a more intense bitterness and higher caffeine and soluble solids content (Ferrão et al., 2007).

Africa is recognized as the origin and center of greatest diversity for coffee species. *C. arabica* originated in Ethiopia and was botanically classified in 1737. It is better adapted to cooler climates and higher altitudes. *C. canephora*, on the other hand—whose main varieties include Robusta and Conilon—originated in Guinea, in the Congo Basin, and was classified between 1895 and 1897. It is a cross-pollinating species with a genetic self-incompatibility mechanism, making it more rustic and tolerant to various diseases. *C. canephora* is better suited to tropical edaphoclimatic conditions, thriving at lower altitudes and higher temperatures (Ferrão et al., 2007).

GENETIC IMPROVEMENT OF COFFEE PLANTS

Plant genetic improvement involves methodologies for the creation, selection, and fixation of plants with superior phenotypes, aiming to meet farmers' specific needs in their production areas. This process is typically long-term, and often, when a new cultivar is developed, new challenges arise, making the search for improved cultivars a continuous effort for breeders.

Until the early 1930s, coffee cultivars grown in Brazil were the result of introductions, rare mutations, or natural hybridizations between existing plants (Carvalho, 2007). In 1932, with the involvement of the Agronomic Institute of Campinas (Instituto Agronômico de Campinas – IAC), the genetic improvement of coffee began to be based on scientific principles. This included foundational research in taxonomy, cytology, reproductive biology, evolution, anatomy, genetic analysis, and morphology. As a result, breeding programs began focusing on the selection of productive and uniform progenies, and on creating new cultivars through controlled crosses using novel genetic material (Carvalho, 1952).

The main objectives of these breeding programs were to develop cultivars with high productivity, vigor, longevity, and adaptation to various Brazilian regions. From the 1970s onward, with the emergence of coffee leaf rust (caused by the fungus *Hemileia vastatrix*), genetic improvement gained momentum, and new breeding programs were established

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across coffee-producing regions. Disease resistance, particularly to rust, became a primary goal of breeding programs. In parallel, cup quality also emerged as a crucial focus, especially in *Coffea arabica* programs, due to the increasing demand for high-quality and specialty coffees in both domestic and international markets. Therefore, researchers began selecting coffee plants not only for agronomic traits but also for the physical and sensory quality of the beans (Barbosa et al., 2019).

More recently, technological advancements in Brazilian coffee farming have driven the mechanization of several field operations. This has created a demand for cultivars adapted to mechanized systems. Consequently, traits such as plant architecture, size, and shape that facilitate mechanical harvesting and maintenance have become essential breeding targets (Dias et al., 2020).

Coffea canephora has also become a significant focus of breeding programs. Its cultivation and genetic improvement were likely accelerated by the high incidence of rust in *C. arabica* plantations, as *C. canephora* generally exhibits greater disease resistance. The growth in *C. canephora* cultivation was further driven by the rise of instant coffee and its increasing use in blends of roasted and ground coffee. The breeding strategies for *C. canephora* differ considerably from those of *C. arabica* due to differences in reproductive and propagation systems, chromosome number, and genetic diversity (Ferrão et al., 2019).

EDAPHOCLIMATIC CONDITIONS FOR COFFEE CULTIVATION

According to Mesquita et al. (2016), the establishment of coffee farming requires an analysis of essential parameters related to both the crop and the specific genetic materials used. Among these, one of the most critical is the edaphoclimatic condition of the region, a term that encompasses environmental factors such as climate, topography, temperature, air humidity, solar radiation, soil type, and rainfall, among others.

In Brazil, studies on coffee zoning have taken into account macroclimatic factors, particularly thermal and water-related aspects. For instance, Camargo (1977) established temperature thresholds for the cultivation of *Coffea arabica*, identifying regions with average annual temperatures above 23°C or below 17°C as unsuitable. Regions with temperatures between 17–18°C and 22–23°C were classified as marginal, while optimal areas were those with average annual temperatures ranging from 18–22°C. In general, areas with average temperatures below 18°C tend to experience an extended floral bud dormancy period and slower fruit development. This overlap between dormancy and new flowering

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can lead to asynchronous harvesting, particularly problematic for late-maturing cultivars (Camargo & Pereira, 1994).

Regarding water requirements, Camargo (1977) also defined cultivation zones for *Coffea arabica* based on annual water deficits. Areas with a deficit below 150 mm per year are considered suitable for rainfed cultivation, while those exceeding 200 mm are deemed unsuitable without irrigation.

From a hydric perspective, the state of Paraná does not present significant limitations for coffee cultivation. However, thermal constraints are relevant. The 17°C average annual isotherm is considered a critical threshold, below which regions are unsuitable due to the high risk of severe frost events (Matiello et al., 2020). Nonetheless, from a microclimatic perspective, certain areas above this thermal line may still present either suitable or unsuitable conditions depending on the specific local land configuration (Caramori & Manetti Filho, 1993).

TRAJECTORY OF COFFEE IN THE STATE OF PARANÁ

Dating the exact beginnings of coffee cultivation in Paraná is challenging, as during colonial times, the ports of Paranaguá, Antonina, and Guaratuba were linked to the territory of São Paulo—regions where coffee was already being cultivated by 1807 (Carvalho, 2007). In Paraná, territorial occupation and the development of economic activities occurred through various cycles, including the gold, yerba mate, timber, and coffee cycles. The coffee cycle, in particular, spanned from approximately 1860 to 1970. It was largely export-oriented, and the state's economy during this period was shaped by both national and international demands for coffee (Padis, 1981).

The northern region of Paraná played a fundamental role in the coffee cycle, becoming the epicenter of the crop’s expansion in the state. This area experienced a rapid process of territorial occupation driven by coffee farming. As early as the 19th century, lands in northern Paraná had attracted the attention of coffee producers from São Paulo and Minas Gerais due to their favorable conditions for cultivation (Chies & Yokoo, 2012).

According to Cancian (1981), coffee cultivation in Paraná represented a continuation of the "westward march" of São Paulo farmers, motivated by the pursuit of higher profits. As land in São Paulo became scarce and less fertile, producers migrated in search of new, more productive areas. The "purple lands" of Paraná gained a reputation for their high productivity in coffee farming. Several factors led farmers to invest in land in northern

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Paraná, including availability, public incentives, and accessible payment conditions (Oliveira, 2020; Sesso et al., 2020).

The northern region of Paraná, delineated by the Itararé, Paranapanema, Paraná, Ivaí, and Piquiri rivers, covers approximately 100,000 square kilometers. It was historically divided into three sub-regions based on colonization timeframes and origins:

1. **Old North (Norte Velho):** Extending from the Itararé River to the right bank of the Tibagi River;
2. **New North (Norte Novo):** Stretching to the banks of the Ivaí River, with its western boundary marked by a line between the cities of Terra Rica and Terra Boa;
3. **Brand-New North (Norte Novíssimo):** Spanning from this line to the Paraná River, crossing the Ivaí River and encompassing the entire right bank of the Piquiri River (Dias & Gonçalves, 1999).

Coffee cultivation in Paraná unfolded in three distinct phases: the first in the Old North, beginning in the 19th century and ending with the 1929 crisis; the second in the New North, from 1930 to the end of World War II; and the third between the 1940s and 1960s, marking the final wave of expansion (Cancian, 1981).

By 1920, Paraná had become the seventh-largest coffee-producing state in Brazil, with 1,215 registered coffee farms. From that decade onward, the efforts of the Companhia de Terras do Norte do Paraná (CTNP) attracted a growing number of settlers, further boosting coffee production and settlement in the region. Coffee cultivation transformed Paraná's agricultural landscape, receiving government protection and incentives that contributed to the state's growth and development (Priori et al., 2012).

Following the Great Depression of 1929, major producing states implemented measures such as the burning of surplus coffee stocks, banning new plantings, and imposing export taxes. Paraná, however, did not adopt these restrictions, which resulted in the local coffee industry being more severely impacted by the crisis. In response, producers in Paraná began consolidating small- and medium-sized family-operated farms to reduce production costs (Priori et al., 2012).

In the early second half of the 20th century, the post–World War II economic recovery increased demand for coffee. Key government interventions, such as setting minimum price guarantees for coffee sales, helped stimulate new plantings and revive production (Priori et al., 2012).

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As a result of coffee farming, Paraná experienced a significant influx of migrants seeking land and employment opportunities. Between 1950 and 1970, the state had 1.8 million hectares dedicated to coffee cultivation, accounting for over 50% of Brazil's national production (Martins, 2008).

DECLINE OF COFFEE PRODUCTION

The decline in coffee's economic significance in Brazil began with the 1929 Economic Crisis, which marked a transition from an agro-export-oriented economy to an urban-industrial model. In the 1960s, national efforts to boost industrialization and agricultural output initiated a process of agricultural modernization across the country. In Paraná, this modernization brought structural changes commonly observed during the establishment of a technical base in rural areas. These changes were accompanied by a range of social challenges, including rural exodus, land concentration (starting in the 1970s), and rising unemployment in the countryside (Priori et al., 2012).

Until the mid-1970s, coffee was Paraná's leading agricultural product. The state accounted for half of Brazil's total coffee production and a third of global output, with the north and northwest regions serving as the main production hubs. These were also the areas most affected by modernization (Moro, 2000).

However, agricultural modernization, which accelerated in the late 1960s and early 1970s, coincided with a crisis in the international coffee market, largely due to overproduction, increased competition from African and Colombian producers, and declining global prices. Additionally, pests and diseases—particularly coffee rust—and climatic events such as frosts significantly contributed to the decline in production (Priori et al., 2012).

In response to the crisis in the coffee sector, the Brazilian government created the Executive Group for the Rationalization of Agriculture in the 1960s. The group proposed eradicating and renewing coffee plantations to increase production efficiency. Policies were also introduced to encourage agricultural diversification, promoting the cultivation of oilseeds and integrating crop production with the agro-industrial sector (Priori et al., 2012).

This shift was part of a broader modernization process in Paraná's agriculture, marked by mechanization, electrification, irrigation, soil conservation, and increased use of fertilizers and pesticides. These changes significantly transformed the technical aspects of agricultural production (Moro, 2000).

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Data from the 1970s illustrate the extent of this transformation. For instance, from 1970 to 1980, Paraná experienced a 338.3% increase in the number of tractors, a 379.4% increase in mechanically operated plows, a 1,134.9% increase in farms using mechanical power, a 604.9% rise in diesel consumption, and a 687.6% increase in electricity use (between 1980 and 1985) (Melo, 2011). However, these developments were uneven across the state, with the most profound impacts occurring in the northern and western regions.

According to Moro (2000), the growing use of tractors and other agricultural machinery led to widespread job losses in rural areas, intensifying migration to urban centers. Many of those displaced relocated to the metropolitan region of Curitiba, São Paulo, and other regional urban hubs, including border areas.

It is important to note that rural-urban migration was not driven solely by mechanization. The replacement of labor-intensive, permanent coffee plantations with temporary crops—particularly oilseeds and rotations of wheat and soybeans, which require fewer workers—also played a significant role (Moro, 2000).

Between 1970 and 1985, coffee cultivation in Paraná declined by 59%, making way for short-cycle crops, especially the wheat-soybean rotation. Pasture areas also increased by approximately 32%, with the north and northwest regions being the most affected (Melo, 2011).

The process of modernization also led to significant land concentration. In the 1970s alone, the north of Paraná lost around 100,385 agricultural establishments. This consolidation reduced the number of landowners and tenants, even as the total cultivated area expanded. Between 1970 and 1991, Paraná's rural population declined by 49.7%, and in the north of the state, the drop was even more pronounced at 63.9%. By the mid-1970s, the urban population had surpassed the rural population, reaching 59.0% versus 41.0%, respectively (Melo, 2011).

Given that Paraná's agricultural economy was historically linked to coffee, climatic events such as frosts played a crucial role in the crop's decline, especially from the 1960s onward. These climatic challenges, combined with international supply crises, competition from other producing countries, unfavorable pricing policies, and government incentives for oilseed cultivation, severely impacted coffee production. Frosts were especially damaging during the 1970s and 1980s. The most devastating was the severe frost of July 17, 1975, which nearly wiped out coffee plantations in northern Paraná, accelerating their eradication and replacement with other agricultural activities (Moro, 2000).

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Between the 1960s and 1970s, Paraná accounted for approximately 50% of Brazil's coffee production. However, the "black frost" of 1975 deepened the crisis, rendering the costs of recovery prohibitively high (Robusti et al., 2017). From that point onward, the spatial distribution of coffee cultivation underwent major transformations. These were driven by both economic factors—such as the profitability of alternative crops like soybeans, corn, and wheat (Passos et al., 2012; Kohlhepp, 2020)—and environmental factors, as edaphoclimatic conditions rendered many regions unsuitable for coffee production.

CURRENT SCENARIO OF COFFEE GROWING IN PARANÁ

In 2016, the North Pioneiro mesoregion accounted for the largest harvested coffee area in Paraná, representing approximately 66% of the state's total coffee-growing area. This was followed by the North Central and Northwest regions. It is noteworthy that around 80% of coffee farmers in Paraná are classified as family farmers, with production systems typically developed on properties smaller than 25 hectares (Bliska et al., 2009).

In the 2022 coffee harvest, the state experienced a reduction in harvested area compared to the previous season. This decline was largely attributed to increased competition for land from annual crops such as soybeans, as well as the eradication of coffee plantations and intensive pruning carried out in response to the severe frosts that hit the state in July 2021. These factors also led to a 30.7% drop in average yield, which fell to 18.4 bags per hectare during the 2022 season (CONAB, 2023).

However, the 2023 harvest brought a positive reversal, with a 44.9% increase in productivity. This improvement reflected a return to normal performance levels following the adverse weather conditions experienced in the previous year (CONAB, 2023).

Looking ahead, coffee-growing areas in Paraná are expected to remain stable between 2024 and 2025, with a projected total of 25,281 hectares. Productivity is also forecast to hold steady, with an average of 26.7 bags per hectare. Consequently, processed coffee production in Paraná is expected to reach approximately 675,300 bags, maintaining the output levels seen in recent years. This projected stability indicates that, in the short term, no major changes are anticipated in either the area cultivated or per-hectare yield, thus reinforcing Paraná's position as one of Brazil's key coffee-producing states (CONAB, 2025).

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CONCLUSION

Coffee cultivation was one of the most significant pillars in the social and economic development of the state of Paraná. Historically, it played a central role in shaping the state's agricultural landscape and driving regional growth. However, this scenario began to change from the 1970s onward, when coffee production faced a sharp decline due to several interrelated factors. Among these were the instability of international coffee prices, and government incentives that encouraged the adoption of alternative crops such as soybeans and corn. These crops required higher levels of mechanization, which in turn reduced the demand for manual labor, contributing to a substantial rural exodus and leaving thousands of workers unemployed in rural areas.

Nonetheless, edaphoclimatic conditions were arguably the most decisive factors influencing the trajectory of coffee cultivation in Paraná—from its peak to its eventual decline. The recurring frosts that occurred from the 1970s, especially the devastating Black Frost of 1975, marked a turning point, severely damaging plantations and accelerating the transition to other agricultural activities.

Although coffee cultivation continues to exist in Paraná today, it no longer occupies the prominent position it once held. It has been largely surpassed by crops such as soybeans, corn, and wheat, which currently dominate the state's agricultural output. As a result, while coffee retains cultural and historical relevance, its economic impact has become considerably more limited.

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REFERENCES

1. Barbosa IP, Costa WG, Nascimento M, Cruz CD, Oliveira ACB. Recommendation of *Coffea arabica* genotypes by factor analysis. Euphytica 2019;215(178):2-10.

2. Bliska FDM, Mourão EAB, Afonso Júnior PC, Vegro CLR, Pereira SP, Giomo GS. Dinâmica fitotécnica e socioeconômica da cafeicultura brasileira. Informações Econômicas 2009;39(1):5-18.

3. Bliska Júnior A, Soares Júnior D, Turco PHN, Bliska FMM. Gestão das empresas cafeeiras no estado do Paraná. Informe GEPEC 2020;24(1):27-52.

4. Camargo AP. Zoneamento de aptidão climática para a cafeicultura de arábica e robusta no Brasil. In: Recursos, meio ambiente e poluição. IBGE, Rio de Janeiro, 68-76; 1977.

5. Camargo AP, Pereira AR. Agrometeorology of the coffee crop. World Meteorological Organization, Geneva, 102 pp; 1994.

6. Cancian NA. Cafeicultura Paranaense (1900-1970). Grafipar, Curitiba, 154 pp; 1981.

7. Caramori PH, Manetti Filho J. Proteção dos cafeeiros contra geadas. Circular técnica, 79. Iapar, Londrina, 28 pp; 1993.

8. Carvalho A. Histórico do desenvolvimento do cultivo do café no Brasil. Documentos IAC, 34. Instituto Agronômico, Campinas, 8 pp; 2007.

9. Carvalho A. Melhoramento do cafeeiro: VI - estudo e interpretação, para fins de seleção, de produções individuais na variedade Bourbon. Bragantia 1952;12(4-6):179-200.

10. Chies C, Yokoo SC. Colonização do norte paranaense: avanço da cafeicultura e problemas decorrentes desse processo. Revista GEOMAE - Geografia, Meio Ambiente e Ensino 2012;3(1):27-44.

11. Conab - Companhia Nacional de Abastecimento. Conab - Companhia Nacional de Abastecimento. Acompanhamento da safra brasileira de café, v. 12 – Safra 2025, n.1- Primeiro levantamento, Brasília, p. 1-48, janeiro 2025. Available from: https://www.conab.gov.br/info-agro/safras/cafe/boletim-da-safra-de-cafe/item/download/56677_79e87a15fa32943d3bf036a3691ed924. Acesso em: 15 mar 2025.

12. Conab - Companhia Nacional de Abastecimento. Boletim da safra de café. 3º levantamento de café - safra 2023. Available from: https://www.conab.gov.br/info-agro/safras/cafe/boletim-da-safra-de-cafe/item/download/49280_70cede3a45829b874482acb2ca1a1dd5. Acesso em: 15 mar 2025.

13. Davis AP, Tosh J, Ruch N, Fay MF. Growing coffee: *Psilanthus* (Rubiaceae) subsumed on the basis of molecular and morphological data; implications of size, morphology,

Revista ARACÊ
ISSN: 2358-2472

distribution and evolutionary history of *Coffea*. Botenical Journal of the Linnean Society 2011;167(4):357-377.

14. de Castro GHL de, Leocádio ALM, Ribeiro MR, Telles TS. Organização espaço-temporal da produção do café no Paraná. Informe GEPEC 2021;25:109-132.

15. de Souza JC, de Carvalho Couto C, Mamede AMGN, Valderrama P, Toci AT, Freitas-Silva O. Using volatile compounds for the identification of coffee adulterants: marker compounds and non-targeted analysis. European Food Research and Technology 2024;250:2639-2649.

16. Dias RB, Gonçalves JHR. Maringá e o norte do Paraná: estudos de história regional. Eduem, Maringá, 474 pp; 1999.

17. Dias REBA, Dias RAA, Botelho CE, Abrahão JCR, Rezende TT, Carvalho GR. Genetic determination of characteristics related to semi-mechanized coffee harvests. Crop Breeding and Applied Biotechnology 2020;20(1):e218820116.

18. Fassio LH, Silva AES. Importância Econômica e Social do Café Conilon. In: Ferrão RG, Fonseca AFA, Bragança SM, Ferrão MAG, De Muner LH (Eds) Café Conilon. Incaper, Vitória, 38-40; 2007.

19. Ferrão LFV, Ferrão RG, Ferrão MAG, Fonseca A, Carbonetto P, Stephens M, Garcia AAF. Accurate genomic prediction of *Coffea canephora* in multiple environments using whole-genome statistical models. Heredity 2019;122(3):261-275.

20. Ferrão RG, Fonseca AFA, Bragança SM, Ferrão MAG, De Muner LH. Café Conilon. Incaper, Vitória; 2007.

21. Freitas VV, Borges LLR, Vidigal MCTR, dos Santos MH, Stringheta PC. Coffee: A comprehensive overview of origin, market, and the quality process. Trends in Food Science & Technology 2024;146:104411.

22. Furtado C. Formação econômica do Brasil. Companhia Editora Nacional, São Paulo; 2005.

23. Furtado C. Prefácio a nova economia política. Paz e Terra, Rio de Janeiro; 1976.

24. Kohlhepp, G. Transformações da paisagem natural no norte do Paraná entre as décadas de 1930 e 1980: da monocultura do café à modernização agrária e suas consequências ecológicas, econômicas e sociais. Historia Ambiental Latinoamericana Y Caribeña (HALAC) 2020;10(2):255-283.

25. Mapa - Ministério da Agricultura e Pecuária. Café no Brasil e ementário do café. 2017. Available from: https://www.gov.br/agricultura/pt-br/assuntos/politica-agricola/cafe/cafeicultura-brasileira. Acesso em: 15 mar 2025.

26. Martins AL. História do Café. Editora Contexto, São Paulo, 320 pp; 2008.

Revista ARACÊ
ISSN: 2358-2472

27. Matiello JB, Santinato R, Almeida SR e Garcia AWR. Cultura de café no Brasil - Manual de recomendações. Fundação Procafé, Varginha, 728 pp; 2020.

28. Melo NA. Do complexo rural à modernização agrícola brasileira: A modernização da agricultura paranaense e os impactos na vida rural - Uma análise do programa vilas rurais no norte do Paraná. Revista Geografia em Atos 2011;1(11):58-76.

29. Mesquita CM, Melo EM, Rezende JE, Carvalho JS, Fabri Júnior MA, Moraes NC, Dias PT, Carvalho RM, Araújo WG. Manual do café: implantação de cafezais (*Coffea arábica* L.). EMATER-MG, Belo Horizonte, 50 pp; 2016.

30. Moro DAA. Modernização da agricultura paranaense. In: Villalobos JUG Geografia social e agricultura. Programa de Pós-Graduação em Geografia, Maringá, 27-60; 2000.

31. Oliveira AN de. Cultura cafeeira no norte do Paraná e suas marcas nas paisagens: potencialidades para o turismo. Geografia (Londrina) 2020;29(2):29-49.

32. Padis PC. Formação de uma economia periférica: O caso do Paraná. Ipardes, São Paulo, 307 pp; 1981.

33. Passos M, Sant'Ana L, Bueno M. O Norte do Paraná: do café à cana do açúcar. Revista de Geografia e Ordenamento do Território 2012;1(1):181-206.

34. Piffer, M. A formação da base econômica no Paraná: um texto crítico. Informe GEPEC 2024;28(1):312-324.

35. Priori A, Pomari LR, Amâncio SM, Ipólito VK. História do Paraná: Séculos XIX e XX. Eduem, Maringá, 234 pp; 2012.

36. Robusti EA, Zapparoli ID, Santoro PH. Café arborizado no estado do Paraná, Brasil: Indicadores financeiros e interferências ambientais, 2012-2014. Agroalimentaria 2017;23(44):79-91.

37. Sesso PP, *Pereira LFP, Sesso Filho UA, Zapparoli ID.* Análise exploratória de dados espaciais da produção de café no estado do Paraná, 1980-2018. Cadernos de Ciência & Tecnologia 2020;37(3):e26768.

38. USDA - U.S. Department of Agriculture. Production - Coffee. 2025. Available from: https://www.fas.usda.gov/data/production/commodity/0711100. Acesso em: 15 mar 2025.