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Rossana Pacheco da Costa Proença [1,2]
Mariana Vieira dos Santos Kraemer[1,2]
Vanessa Mello Rodrigues[1,2]
Lúcio Costa Proença[3]
Rafaella Guimarães Moraes Camargo[4]
Semíramis Martins Álvares Domene[5]

[1] Universidade Federal de Santa Catarina, Centro de Ciências da Saúde, Programa de Pós-graduação em Nutrição. Florianópolis, SC, Brasil.

[2] Universidade Federal de Santa Catarina, Núcleo de Pesquisa de Nutrição em Produção de Refeições, Programa de Pós-Graduação em Nutrição. Florianópolis, SC, Brasil.

[3] Secretaria de Qualidade Ambiental, Ministério do Meio Ambiente, Departamento de Qualidade Ambiental e Gestão de Resíduos. Brasília, DF, Brasil.

[4] Universidade Federal de São Paulo, Programa de Pós-Graduação Interdisciplinar em Ciências da Saúde. Santos, SP, Brasil.

[5] Universidade Federal de São Paulo, Departamento de Políticas Públicas e Saúde Coletiva, Programa de Pós-Graduação em Nutrição. Santos, SP, Brasil.

**Correspondence**
Rossana Pacheco da Costa Proença
**rossana.costa@ufsc.br**

# Scenario and perspectives of the Brazilian food system in the face of the COVID-19 pandemic

## *Cenário e perspectivas do sistema alimentar brasileiro frente à pandemia de Covid-19*

## Abstract

***Introduction.*** Resilient food systems are strategic to a nation's sovereignty, especially during a health crisis. ***Objective***. To reflect on some aspects of the hegemonic food system in Brazil in the face of the COVID-19 pandemic. ***Development.*** On the basis of the description of the pre-pandemic scenario, we analyze and discuss aspects of quality of life and the environment that potentially determine the fragility of food systems and favor the emergence of a crisis such as the current one. Finally, the article deals with the possibilities of transition to a more just, inclusive, and regenerative food system. ***Final considerations.*** Fostering healthy food systems is not enough; it is necessary to disinvest from degenerative systems focused on benefiting private enrichment or the balance of trade. Such a change necessitates the reconfiguration and redirection of public policies and investments related to land use, liberating land and financial, political, and social resources to nourish food systems that result in more systemic benefits.

**Keywords:** SARS-CoV-2. Environmental Sustainability. Environmental resilience. Food consumption. Food and Nutrition Security.

## Resumo

***Introdução.*** Sistemas alimentares resilientes são estratégicos para a soberania de uma nação, especialmente em crises sanitárias. ***Objetivo.*** Refletir sobre alguns aspectos do sistema alimentar hegemônico no Brasil frente à pandemia de Covid-19. ***Desenvolvimento.*** A partir de uma descrição do cenário pré-pandemia, são expostos alguns desdobramentos conhecidos sobre a qualidade de vida e do ambiente, bem como as consequências que potencialmente levaram a tal condição de fragilidade dos sistemas alimentares, que é fértil para o desencadeamento de crises como a atual. Finalmente, o artigo trata das possibilidades de transição para um sistema alimentar mais justo, localizado, inclusivo e regenerativo. ***Considerações finais.*** Não basta fomentar sistemas alimentares saudáveis; é necessário desinvestir de sistemas degenerativos, focados em beneficiar a arrecadação ou a balança comercial. Isso implica reconfigurar e redirecionar uma parte maior das políticas e recursos públicos relacionados com o uso da terra, liberando espaço e recursos financeiros, políticos e sociais para nutrir sistemas alimentares que resultem em benefícios mais sistêmicos.

**Palavras-chave:** SARS-CoV-2. Sustentabilidade ambiental. Resiliência ambiental. Consumo alimentar. Segurança Alimentar e Nutricional.

## INTRODUCTION

The rapidly evolving coronavirus disease 2019 (COVID-19) was declared a pandemic in March 2020, when the World Health Organization (WHO) defined it as the "biggest global health crisis of our time."[1] The Food and Agriculture Organization of the United Nations (FAO) issued a report in April 2020 warning of the consequences of the COVID-19 pandemic in Latin America and the Caribbean. Among other recommendations, FAO called on governments to declare food and agriculture as strategic activities, given that the region produces and has sufficient reserves to adequately feed its inhabitants during the coming months. The organization also predicted that a major challenge will be the guarantee of access to food for populations complying with health security measures, especially those that have lost their source of income. FAO placed special emphasis on the development of family farming, promotion of access to inputs and infrastructure (for food transportation, processing, and packaging), and the need to solve logistic problems in regional production chains.[2]

A food system is understood as the set of processes and resources necessary for food production, consumption, disposal, and all stages in between.[3] Scientific journals have published articles on specific aspects of the impacts of the COVID-19 pandemic on the food and nutrition of Brazilians, including food and nutrition security,[4-10] extinction of the National Food and Nutrition Security Council,[11] healthy[12,13] and sustainable[14] eating, family farming,[15] agroecology,[16] food supply,[17,18] school feeding,[19-20] health, and environmental sustainability.[21] This is a complementary study that aims to reflect on some aspects of the hegemonic food system in Brazil in the face of the COVID-19 pandemic.

## THE HEGEMONIC FOOD SYSTEM IN BRAZIL

A recent report of the *Lancet* Commission[22] highlighted the need to reformulate food systems to ensure the maintenance of life on the planet. In the early 1970s, the economist E.F. Schumacher, a pioneer of the environmental movement, described and questioned the economic paradigm consolidating at the time, in particular the idea that economies of scale[1] were an "irresistible trend" derived from modern technology. According to the author, this basic assumption was justified by the main socioeconomic currents of the time, which have intensified since then: mechanization of the countryside, increased rural exodus, intensification of industrialization, centralization, and, shortly thereafter, dominance of global logistic chains by multinational corporations. The author systemically analyzed the socioeconomic and environmental distortions that resulted from what he called "idolatry of gigantism." He considered the question of scale[2] to be of utmost importance to human affairs and stressed the need for technologies "with a human face." Special attention was paid to the relationship between humans and agriculture, given that "among material resources, the greatest, unquestionably, is the land."[23]

In Brazil, the trend that Schumacher described five decades ago remains relevant, with its own historical and economic characteristics. The country's history of colonialism, slavery, land concentration, and an economy based on agricultural production for export still influences the hegemonic food system. This food production model is based on large properties, technological development, and commodities, monopolizing most of the land and public resources directed to agriculture.[24] The model leads to what some researchers call a "monotonous diet" and intensifies the concentration of food distribution by a few large groups of hyper- and supermarkets to the detriment of free markets and small retailers.[25] Furthermore, this model is in line with the global dynamics of capital accumulation that, especially since the Green Revolution of the 1970s, have been subjecting food systems to a

[1] Economy of scale is a concept according to which an increase in the scale of a process can lead to productivity gains and a consequent reduction in unit production costs.

[2] Schumacher[23] discusses the term "scale" broadly, covering, for example, from reflections on the appropriate scale for educational activities to the minimum and maximum size of cities and nations.

market logic, considering food as a commodity.[26] Such dynamics occur at the expense of local, better distributed, small-scale production systems, often managed within a family context and connected with regional diversities,[27] which, in general, offer more systemic benefits to the communities in which they are inserted.[28,29]

Short food supply chains (SFSCs) create connections, generate value and trust between consumers and producers,[30] and provide sustainable alternatives to industrialized and globalized food markets.[31] SFSCs are alternative food systems focused on reducing or eliminating intermediates and minimizing the distance between centers of food production and final consumers.[32] Other benefits include greater transparency in buyer–supplier relationships, traceability, reduction of environmental pollution and cost through shorter transport distances, increased employment opportunities for the local population, support of small producers, and increased consumer autonomy regarding food decisions. In this manner, SFSCs can potentially contribute to making the food system more sustainable in the economic, social, and environmental dimensions,[33,34] in line with the Brazilian National Food and Nutrition Security Policy[35] and opposed to the agro-hegemonic food system.

Data from the latest Consumer Expenditure Survey (2017–2018 POF) indicate that food accounts for 14% of the total expenditures of Brazilian families. The survey also revealed that most of the calories consumed by Brazilians are derived from fresh foods, mainly cereals, legumes, and dairy products; however, this trend has decreased, as evidenced by comparison with 2002–2003 POF data. By contrast, there was an increase in the contribution of processed (from 8.3% to 9.8%) and ultra-processed foods (from 12.6% to 18.4%) to total calorie intake between 2002 and 2018.[36]

This worrisome trend opposes the recommendations of the Brazilian Ministry of Health[37] with regard to healthy eating. High consumption of processed and ultra-processed foods is associated with the development of non-communicable diseases such as obesity, diabetes, and cancer, among others.[38-40] Furthermore, increased consumption of processed and ultra-processed foods is contrary to what the EAT-*Lancet* Commission proposed to combat the global syndemic of obesity, malnutrition, and climate change.[22] It also goes against distributive and localized economic dynamics.[28,29] Whereas fresh foods are primarily produced locally or regionally, processed and ultra-processed foods are characterized by high rates of industrialization, centralization, and commodification.

POF data illustrate the unequal dynamics of this trend among social classes, with the popularization of processed and ultra-processed foods and elitization of fresh foods. Consumption of fresh foods showed the lowest change in all income quintiles, with a decrease of 5.2% among the richest and 6.4% among the poorest. Ultra-processed food consumption had the highest change in all quintiles, increasing by 27.3% among the richest (lowest increase) and 62.3% among the poorest (highest increase).[36] These findings show that low-income classes are the most likely to increase the consumption of foods with high degree of processing and reduce the consumption of fresh foods, enhancing the health risks associated with this dietary pattern. The 2018 Integrated Food and Nutrition Security System (SISAN) survey, as cited by Belik,[25] estimated that 7.9% of street food markets have an agroecological character in Brazil; when analyzing capital cities alone, the percentage increases to 19.6%, corroborating the hypothesis of elitization of fresh foods.

This scenario is supported by the model of expansion of industrial monocultures that produce commodities focused on national- and global-scale industrialization chains, linked to intensification of socio-environmental conflicts, such as deforestation,[41] forest fires,[42] water crisis,[43] and increased pesticide use.[44,45] Despite the advances in traceability and production standards in Brazilian agribusinesses, recent data have evidenced the structural limitations of this model. Up to 20% of soybean and meat exports are from the Amazon and Cerrado biomes, being potentially related to illegal deforestation.[46] Also of concern are the effects of mechanization and pesticide use on the health of rural workers,[47] as well as the precariousness of work conditions.[48] Loss of biodiversity by deforestation and the approximation of humans to wild environments are dangerously associated with the emergence of diseases such as the one we now face. Contrary to the trend observed in several nations committed to international protocols

aimed at mitigating the effects of climate change, Brazil is estimated to increase its greenhouse gas emissions during the COVID-19 epidemic, resulting from an increase in Amazon deforestation.[49]

## HEALTH AND NUTRITION IN BRAZIL: WHAT ABOUT THE PANDEMIC?

The decline in the prevalence of malnutrition in Brazil, from 11.9% to less than 2.5% between the end of the 1990s and 2010, accompanied the fall in food insecurity and social inequality observed in the rest of the world until 2014, taking the country off the Hunger Map.[50] The recent scenario of economic and political instability, however, led to an increase in poverty, from 25.6% in 2016 to 26.5% in 2017; globally, the number of people experiencing food insecurity has increased since 2015. Early projections estimated that the COVID-19 pandemic alone would be responsible for placing an additional 132 million people into a state of malnutrition in 2020.[50-52] At the end of the first year of the pandemic, in March 2021, Brazil ranked among the three countries with the highest number of deaths in the world (nearly 260 thousand people); the other two countries were the United States of America and India.[53]

Brazil is the fourth largest food producer in the world and has had successive yield records; however, it is paradoxical that the country has not sustained the trend of reduction (34.9% in 2004 to 22.6% in 2013) in the prevalence of families experiencing food insecurity. The reversal observed from 2014 onward represented a setback of at least 15 years. In 2019, 36.7% of Brazilian households were experiencing food insecurity, at which time the COVID-19 pandemic arrived.[54]

The political/economic decision of directing the agri-food system toward foreign markets is at the root of the contradictory increase in both food production and food insecurity. Let us analyze this scenario. Most of the food consumed in Brazil is produced by family farms, which occupy only 23% of the total cultivated area in the country.[15] The amount of public financing (a source highly dependent on the current political–economic orientation) is another fact that reveals the focus on foreign markets: from 2017 to 2020, R$ 30 billion of credit was made available to family farmers, whereas, for medium- and large-scale producers, more than R$190 billion was made available in a year. With the precariousness of rural work and lack of state support, the preservation (or creation) of SFSCs has been spontaneous but also fragile, although there are some examples of success, demonstrating their viability. These experiences, notably in the agricultural sector, prove that the approximation of production and consumption, as well as the strengthening of local producers ("rooting"), are associated with the promotion of food security and sovereignty and organization of the food system.[47]

The results of the Vigitel survey, carried out by the Brazilian Ministry of Health, showed an increase in the prevalence of non-communicable diseases over the years. In 2019, the prevalence rates of diabetes, hypertension, and obesity were, respectively, 7%, 24%, and 20%.[55] Obesity is present in 25.9% of people over 18 years of age, accounting for 60% of overweight individuals.[56] This context is worrying, as these diseases are risk factors for the aggravation of COVID-19 symptoms, mainly acute respiratory complications, as demonstrated by WHO.[57] A retrospective cohort study conducted in Wuhan, China, found that 48% of patients hospitalized for COVID-19 had some comorbidity, with hypertension (30%), diabetes (19%), and cardiovascular diseases (8%) as the most prevalent.[58] Similar results were found in a meta-analysis that included seven studies with 1,576 patients diagnosed with COVID-19 in China. Of these cases, 21% had hypertension, 10% diabetes, and 8% cardiovascular diseases, and the presence of these comorbidities was associated with disease worsening and progression.[59]

Thus, indirectly, excessive consumption of ultra-processed foods can contribute to the aggravation of COVID-19 symptoms. As highlighted by José Graziano, former director of FAO, people seem to prefer to buy packaged foods, given the longer shelf-life of such products and the need for physical distancing and hygiene practices. Furthermore, Graziano underscored that the greater demand for packaged foods in supermarkets may impair the activity of small farmers by decreasing customer traffic in street markets and other SFSCs.[60]

In Brazil, the NutriNet cohort study compared the eating behavior of 10,116 people before and during the COVID-19 pandemic. The results demonstrated an increase in the consumption of fruits and vegetables by the population as a whole; there was, however, an increase in the consumption of ultra-processed foods in less economically developed regions and by people with lower education levels.[61] This perception reinforces our discussion about the predominant view of foods as commodities and targets of marketing strategies, as evidenced during the pandemic by the trend in the distribution of basic food baskets composed mainly of processed foods.

## SCENARIO AND PERSPECTIVES ON THE PANDEMIC

Graziano stated that "the coronavirus will impose productive restructuring. Not just because of the pandemic, but because it questions the economic model on which we were basing globalization . . . To believe that in Brazil food security will be guaranteed only by market mechanisms is to admit that the poor will continue to go hungry."[48]

We highlight the delicate situation of Brazil in facing two crises. On the one hand, a political and economic crisis generating a "decline in the population's income and depletion of families' capacity for indebtedness." On the other hand, the health crisis caused by the COVID-19 pandemic imposing physical distancing and uncertainty of the future. "The immediate consequence of this scenario is the advance of food and nutritional insecurity, promoted by income restrictions that hinder access to food."[62]

The Brazilian federal government took measures to cope with these crises, especially in relation to the working class, by offering emergency aid and easing labor relations. However, such actions have been criticized because of the low value and slow transfer of financial aids and the worsening of already weakened labor ties. We highlight that one of the main challenges of the post-pandemic period will be to establish a solid social protection system to mitigate the effects of current crises.[63]

As previously mentioned, stimulated by the physical distancing measures in the country, changes have been observed in food consumption, with a reduction in the intake of fruits and vegetables and an increase in that of ultra-processed foods in low-income regions.[61] POF data revealed a certain elitization in the consumption of fresh food: fresh food consumption in the fifth-highest income level was twice that in the fifth-lowest income level. Although the POF survey does not consider the origin of foods, the difference becomes even greater when considering organic or agroecological foods, which, in the current hegemonic food system, tend to be more expensive.

During the pandemic, civil society initiatives that recognized this type of phenomenon were launched to make fresh food from small local producers accessible to communities experiencing food insecurity. Such initiatives were made by social movements, solidarity campaigns, and profit and nonprofit entities. *Orgânico Solidário*, *Mutirão do Bem-Viver*, *Alimentos Agroecológicos para Todos*, and *Campo Favela* are examples of actions aimed at raising financial resources to benefit rural producers and families experiencing social vulnerability.[64-67] *Campo Favela* raised more than R$ 1 million for the purchase of 300 tonnes of food directly from farmers, benefiting more than 250 farmer families and providing fresh, high-quality food to 23 thousand low-income households in urban peripheries. The company Frexco[68] is a private for-profit entity working in partnership with *Campo Favela*. It handles the logistics between rural producers and final consumers by providing food delivery, thereby contributing to a more sustainable short supply chain and promoting conscious consumption. The Landless Workers' Movement had the initiative to promote campaigns for the donation of basic food baskets, produce, and prepared meals. Their actions are spread throughout the Brazilian territory.[69]

Strategies of the third sector have been improved with the aim of strengthening the purchase of food from family farmers and small producers during the pandemic. Some examples of important actions made by nonprofit institutions include the mapping of organic markets by the Brazilian Institute of Consumer Protection, the interactive

map proposed by Slow Food, and the list of agroecological farmers made available by Greenpeace.[70-72] Of a similar essence, the initiative CSA - Community-supported Agriculture (*Comunidade que Sustenta a Agricultura)* is carried out in several Brazilian cities.[73,74]

Despite the importance of these civil society initiatives, which potentially provide access to healthy and local foods, unfortunately, they go against the prevailing trend of the current food distribution systems in Brazil, especially in urban areas. In the last decades, supermarkets and hypermarkets have become the major suppliers of food to the population, responsible for 93% of the turnover of food retail, to the detriment of traditional retail establishments (butchers, outlets, grocery stores, and street markets), which today cover only 7% of the turnover in the sector. These dynamics are a reflection of the concentration of power and capital in a few large networks: three multinational groups account for 41% of this turnover.[25] Reversing this trend requires public policies that favor the redistribution and revaluation of local retailers, especially for the marketing of fresh foods.

Also noteworthy are the high inflation rates observed in the first half of 2020 in basic food groups of the Brazilian diet, such as rice (13%) and beans (27%). Tubers, roots, and vegetables accumulated almost 50% inflation in the period, and fruits 9%. Such an inflationary pressure was caused by the strong devaluation of the Brazilian real against the US dollar and increased external demand for some products, such as rice.[75] Although Brazil is one of the largest food producers in the world, the weaknesses of the country's food system, highly linked to the foreign market, become evident; the system has low resilience to ensure food security in the face of external challenges, such as those arising from the COVID-19 pandemic.

By 2050, the planet's population is expected to grow from the current 7 billion people to almost 10 billion.[76] To reverse the increase in food and nutritional insecurity and, at the same time, cope with the demand for food, it is essential to recognize that food systems that promote social equity depend on consistent intersectoral public policies to strengthen distributed production and marketing chains that are more resilient to unexpected events, as the COVID-19 pandemic has revealed. Discussion of the resilience of food systems in Brazil and other countries is urgent, so that nations may be prepared to face new health crises. Brazil occupies a central role in the geopolitics of food production, given its contribution to global volumes and its hosting of 20% of the planet's biodiversity.[3,16]

## FINAL CONSIDERATIONS

Ensuring funding for the monitoring of food production and preservation of biomes, building and strengthening legal support and regulatory mechanisms, and periodically studying the implementation of trade restrictions on initiatives that hinder the strengthening of food production focused on domestic supply are some of the lessons taught by the current health crisis.[77]

The perspectives that we intended to point out in this article are supported by the defense of biodiversity and fight against monocultures, valorization of local production through governance mechanisms that guarantee financing and de-bureaucratization of the formalization of family farmers, and distribution of real, agroecological foods accessible to the population as a whole.

It is not enough to promote healthy food systems; it is necessary to disinvest in degenerative systems focused on benefiting revenue or the balance of trade. This implies reconfiguring and redirecting a greater part of public policies and resources related to land use, thereby freeing space and financial, political, and social resources to nourish food systems that result in more systemic benefits, such as the promotion of health, resilient and distributive economic dynamics, agroecological interactions, and cultural heritage.

Social, economic, and environmental aspects of food systems are not isolated from each other; rather, they are interdependent and part of a coherent whole. It is not possible to think of ways to improve food systems by trying

to optimize problematic aspects in an isolated and reductionist way. In this sense, we sought to analyze Brazilian food systems from the perspective of what Schumacher[23] called "idolatry of gigantism." This exercise illustrated that the prevailing large-scale trend of concentration of capital and power in the hands of few groups coexist with more localized, distributed, distributive, and ecological dynamics, whose greater social value is evident, but which suffer from disadvantages in the context of public policies and the dispute of narratives in society.

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