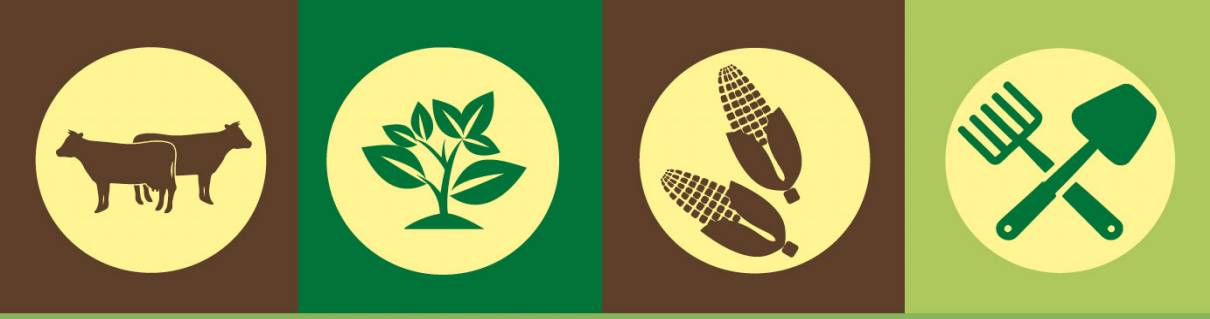

Ricardo Abramovay e Arilson Favareto (org.)

CAMINHOS PARA A TRANSIÇÃO DO SISTEMA AGROALIMENTAR

Desafios para o Brasil

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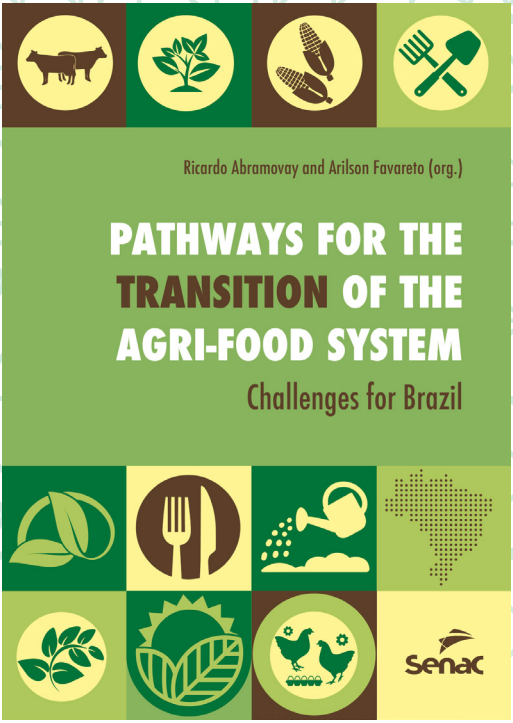

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SUMMARY

INTRODUCTION: OVERCOMING THE MONOTONY OF THE FOOD SYSTEM

Ricardo Abramovay and Arilson Favareto

The agricultural system that has managed to reduce world hunger from one-third to one-tenth of the world's population since the 1960s is at the root of what the United Nations (UN) refers to as the triple planetary crisis. Its productive success is not in decline, as shown by record harvests and the growing supply of animal products in Brazil year after year. However, food production (and, increasingly, industrial uses of biomass) accounts for one-third of global greenhouse gas (GHG) emissions. According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), agriculture and livestock are also considered the biggest drivers of global biodiversity loss. It is responsible for some of the most serious forms of pollution, both through the large-scale use of pesticides and the use of drugs in animal production, which are responsible for increasing antimicrobial resistance, one of the most important current concerns of the World Health Organization (WHO).

Brazil is one of the countries where Green Revolution technologies have been applied most efficiently. The country is now at the epicenter of the global agri-food system, with a dominant presence

in various products and, above all, in the supply of foods that are sources of plant and animal protein. This achievement was based on the most important agricultural revolution in the tropical world, with the expansion of soybean and corn production in the Cerrado, but also on a set of technologies that made it possible to increase supply from the Atlantic Forest.

Despite this success, these forms of production are now under threat because they rely on technologies that destroy soil life and require increasing amounts of synthetic fertilizers and pesticides, in addition to being integrated into food production that is harmful to human health, both through the increasing consumption of ultra-processed foods and the excessive intake of meat, far above human needs for a healthy life.

This book has three main objectives. First, it seeks to bring together, in a coherent way, evidence demonstrating the workings of what we do not hesitate to call the global agri-food system — a system in which Brazil plays a decisive role. Of course, there are countless ways of producing, distributing, processing, obtaining, preparing, and eating food. However, it is around an agri-food system that the overwhelming majority of land use and the use of chemical inputs, machinery, seeds, plant and animal genetics, and, increasingly, food preparation and consumption are organized.

This is where the most striking feature of this agri-food system originates: its triple monotony. The gigantic grain fields, the impoverishment of biodiversity — both in crops and, above all, in soils — and the systematic attack on insects, fungi, spontaneous plants, and microorganisms are parallel to the genetic homogeneity of concentrated animal farming, which is highly dependent on antibiotics. Added to this double monotony is a third, coming from the growing supply of ultra-processed foods (including ultra-processed animal products), which are occupying an increasing share on supermarket shelves.

Of course, this model has been contested since its emergence in the 1960s. However, and this is the second objective of this book, over the last twenty years, this contestation has been expressed in a set of socio-technical innovations that have gone beyond the scientific community and have been incorporated into the practices of producers. In the sphere of consumption, ultra-processed foods and excessive meat consumption are already the subject of alternatives in a series of public policies. The increase in grain production costs, derived from the growing need for chemical inputs per unit of product obtained, is giving rise to a movement focused on the emergence of regenerative tropical agriculture, whose growth potential is immense. Public (and also private) research offers globally pioneering alternatives to address the degradation caused by the technologies established by the Green Revolution, which are still dominant today. In the supply of bovine animal products, research by the Brazilian Agricultural Research Corporation (Embrapa) already incorporates production practices responsible for moderate intensification, paving the way for a reduction in the area occupied by animals, improvement in their welfare, and regeneration of the ecosystems with which they interact. In agriculture, the use of bio-inputs to replace agrochemicals (or fertilizers and pesticides) is growing. In terms of consumption, the Brazilian Dietary Guidelines has a strong influence on public policies aimed at promoting the diversification of the current Brazilian dietary pattern.

The third objective of this book is to offer a theoretical framework and an initial survey of the agri-food transition process. Projecting the positive impacts that may result from the adoption of socio-technical innovations into the future is important, but insufficient. The agri-food system is made up of millions of farmers, industrial units, commercial establishments, and consumers, economic actors whose relationships are stabilized around patterns that are not altered either by hierarchical decisions or market stimuli. It is a

matter of exploring the ways in which niche innovations can reach such a large number of agents, in order to modify the very institutional environment in which their practices are developed.

The chapters of this book seek to demonstrate how the triple monotony of the Brazilian agri-food system takes shape in each of the specific domains to which this idea applies—crops, animal production, distribution circuits, and forms of consumption—pointing out the innovations that are already being tested to address the problems presented by the conventional model. They indicate paths for innovations to be freed from their current niche status and become the dominant standard, thus paving the way for healthy and sustainable eating.

In the chapter "The Agri-Food Transition: Between Rupture, Gradualism, and Reconfiguration," Ricardo Abramovay and Arilson Favareto argue that the most striking feature of the social changes required to address the socio-environmental challenges of the Anthropocene lies in their urgency, yet nothing suggests that they will occur abruptly or in a disruptive way. On the contrary, drawing on contemporary literature on this topic, the authors maintain that contemporary transitions are processes and demonstrate that the socio-technical foundations on which the phenomenal capacity of Brazilian agriculture and livestock have been based over the last few decades are exhausted. In addition, they list a set of practices that are already being implemented in response to this exhaustion, whose main foundation is the reintroduction of diversity within agriculture and livestock production itself, and show the ambiguities, tensions, twists, and turns of this process, highlighting that it is not and will not be linear or merely gradual. "Reconfiguration of the agri-food system" is the expression used to characterize this ongoing process and its contradictions. In order for it to be faster, as the current urgency demands, and less limited by the ambiguities pointed out in the chapter, the authors conclude by indicating a

small set of critical areas that will need to be addressed by scientific research, practical experimentation by economic agents, or public policy makers.

This reconfiguration process involves global connections within the agri-food system. The chapter authored by Ludmila Rattis, Álvaro Maia Batista, Bárbara Guedes, Filipe Arruda, Vanessa Ribeiro, André Andrade, Taiza Lopes, Isabela Filgueira, Elisângela Rocha, Antônio Silveiro, Marília Lourenço, and Bianca Rebelatto, entitled "Monotony in Agricultural Production," shows that the demand for vegetable proteins for concentrated animal production systems in Asia is the most important driver of agricultural monotony in Brazil, with fundamental consequences for land use and for the infrastructure installed and planned in the country, both by the public and private sectors. Most of the soybeans imported by China come from Brazil, with three-quarters of Brazil's soybean production destined for China, primarily for pork feed. This creates a highly interdependent and unique commodity complex between the two countries. The chapter addresses the economic and environmental costs of this integration but also shows how the sharp slowdown in Chinese growth, rising production costs, and the increasing visibility of problems such as deforestation and water scarcity are leading to changes in production. Crop rotation and the use of bio-inputs and their benefits are concrete examples of practices that are increasingly being adopted. Finally, the chapter examines ways to reverse the current strong dominance of soybeans in Brazilian agriculture.

The impressive increase in the supply of poultry and pork in Brazil and globally is based on industrial farming models in which genetic monotony and the concentration of animals in confined spaces, often without light, predominate, which in itself causes them suffering, and which also rely on the large-scale use of medication. The chapter by Rita Albernaz-Gonçalves and Maria José Hötzel,

"Monotony in Poultry and Pork Production Systems: Implications for Animal Welfare and the Risk of Antibiotic Resistance," describes these animal farming methods, showing the risks to human health derived from the contribution of these drugs to the advancement of antimicrobial resistance, one of the WHO's greatest current concerns. The work also points out some of the most interesting alternatives to these methods.

The chapter by Judson Ferreira Valentim, "Monotony in Cattle Production Systems in Brazil: Historical Roots and Paths to Sustainable Diversification," addresses one of the most controversial topics in the agri-food system: cattle farming, presenting a counterintuitive conclusion. Cattle farming accounts for half of global GHG emissions and, in Brazil, it ends up being implemented in newly deforested areas as a way to legitimize often illegal occupations, which accentuates its link to biodiversity erosion and GHG emissions. Valentim, however, shows that the introduction of forage legumes and tree planting in pastures, an innovation led by Embrapa, drastically reduces the need for chemical inputs and captures GHG in proportions that can neutralize emissions from cattle farming. The chapter also provides a typology of the production systems used in different Brazilian biomes, some consequences of the technologies used in each of them, and ideas on how to promote the expansion of systems that reduce the destructive impacts of livestock production.

Walter Belik, in the chapter "Monotony in Diets: The Role of Food Distribution and Marketing," shows the subordinate nature of agriculture and livestock farming in relation to the sectors upstream and downstream of their activities, on which they depend entirely. This dependence is one of the biggest obstacles to the transition of the agri-food system to sustainable forms of production and consumption. The chapter also presents a historical analysis of the transformation of supermarkets into the main outlet not only

for industrial products but also for fruits, vegetables, legumes, and meat, with the purchase of ultra-processed foods becoming an important driver of the concentration of fresh produce purchases in these establishments. The author also emphasizes the loss of diversity resulting from the power of this large food distribution outlet.

The term "ultra-processed foods" enshrines the profound scientific revolution that nutrition science has undergone since the second decade of the millennium and is the basis for the chapter "The Scenario of Food Transition in Brazil: More Ultra-Processed Foods, More Meat, and Less Biodiversity," which concludes this book, authored by Maria Laura da Costa Louzada, Fernanda Helena Marrocos-Leite, Marcos Anderson Lucas da Silva, and Patrícia Constante Jaime, researchers affiliated with the Center for Epidemiological Research in Nutrition and Health at the University of São Paulo's School of Public Health (Nupens/USP). The analysis uses data from three editions of the Family Budget Survey (POF) to show that the consumption of ultra-processed foods is growing in Brazil. The chapter also shows the increase in meat consumption, even among the poorest segments of the population, and the reduction in food biodiversity. It also presents a set of policies and initiatives, based on the Brazilian Dietary Guidelines, aimed at promoting healthy eating in the country, while pointing out aspects that still need improvement in the institutional environment of public policies.

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