GROWING AND EATING SUSTAINABLY

AGROECOLOGY IN ACTION

DANA JAMES & EVAN BOWNESS

With contributors: Natal João Magnanti, Fernando do Espírito Santo, Isadora Leite Escosteguy and Oscar José Rover, Erika Sagae, and Charles (Bagé) Lamb

Fernwood Publishing
Halifax & Winnipeg

Editing: Amber Riaz
Text design: Brenda Conroy
Cover design: John van der Woude
Printed and bound in Canada

Published by Fernwood Publishing
32 Oceanvista Lane, Black Point, Nova Scotia, B0J 1B0
and 748 Broadway Avenue, Winnipeg, Manitoba, R3G 0X3
www.fernwoodpublishing.ca

Fernwood Publishing Company Limited gratefully acknowledges the financial support of the Government of Canada, the Canada Council for the Arts, the Manitoba Department of Culture, Heritage and Tourism under the Manitoba Publishers Marketing Assistance Program and the Province of Manitoba, through the Book Publishing Tax Credit, for our publishing program. We are pleased to work in partnership with the Province of Nova Scotia to develop and promote our creative industries for the benefit of all Nova Scotians.

Canada Canada Council for the Arts Conseil des arts du Canada NOVA SCOTIA Manitoba

Library and Archives Canada Cataloguing in Publication

Title: Growing and eating sustainably: agroecology in action / by Dana James and Evan Bowness.
Names: James, Dana (Scholar), author. | Bowness, Evan, author.
Description: Includes bibliographical references and index.
Identifiers: Canadiana (print) 20210262559 | Canadiana (ebook) 20210262621 | ISBN 9781773634821 (softcover) | ISBN 9781773635101 (EPUB) | ISBN 9781773635002 (PDF)
Subjects: LCSH: Agricultural ecology—Brazil. | LCSH: Sustainable agriculture—Brazil. | LCSH: Food—Social aspects—Brazil.
Classification: LCC S475.B72 J36 2021 | DDC 338.10981—dc23

CONTENTS

ACRONYMS

AGRECO	Associação dos Agricultores Ecológicos das Encostas da Serra Geral (Association of Ecological Farmers of the Encostas da Serra Geral)
ANA	Articulação Nacional de Agroecologia (National Agroecology Alliance)
CAFO	concentrated animal feeding operations
CCR	Células de Consumidores Responsáveis (Responsible Consumer Cells)
CEPAGRO	Centro de Estudos e Promoção da Agricultura de Grupo (Centre for the Study and Promotion of Collective Agriculture)
CONSEA	Conselho Nacional de Segurança Alimentar e Nutricional (National Council on Food and Nutritional Security)
CSA	community-supported agriculture
EPAGRI	Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina (Company of Agricultural Research and Rural Extension of Santa Catarina)
FAO	Food and Agriculture Organization of the United Nations
FOM	mixed ombrophilous forest
FUNAI	Fundação Nacional do Índio (National Indigenous Foundation)
GHG	greenhouse gas
HHPS	highly hazardous pesticides
HLPE	High-Level Panel of Experts on Food Security and Nutrition
INCRA	Instituto Nacional de Colonização e Reforma Agrária (Institute for Colonization and Agrarian Reform)
IPM	integrated pest management
LVC	La Vía Campesina
MAB	Movimento dos Atingidos por Barragens (The Movement of People Affected by Dams)
MAPA	Ministério da Agricultura, Pecuária e Abastecimento (Ministry of Agriculture, Livestock, and Supply)
MMC	Movimento de Mulheres Camponesas (Rural Women's Movement)
MST	Movimento dos Trabalhadores Rurais Sem Terra (Landless Rural Workers' Movement)
NGO	non-governmental organization
NTFP	non-timber forest products
PACUCA	Parque Cultural do Campeche
PGS	participatory guarantee systems
PNAE	Programa Nacional de Alimentação Escolar (National School Feeding Program)
PSC	Planalto Serrano Catarinense (Santa Catarina plateau)
UBC	University of British Columbia

Preface

WHO IS THIS BOOK FOR?

This book is for people who want to learn about agroecology — about the concepts, themes, key writings, and grassroots struggles from which it has emerged to become an internationally recognized paradigm for building more sustainable and just food systems. It will be most useful to those who are generally interested in agroecology, food sovereignty, sustainable food systems, and similar topics but are still relatively new to them.

There are many excellent resources on agroecology and related topics, but this book aims to do something a little different in two ways: First, while this is an introduction to agroecology and "agroecological transitions," it is presented through stories comprised of vignettes and photos. Agroecology is a way of reorganizing food and agricultural systems, but it's also a way of life for people. And sometimes, when learning about such concepts and social issues, the real people doing the work on the ground can get lost in academic abstractions. We think that our use of stories and photographs helps to bring these ideas — and the people promoting them — to life in a more tangible way.

Second, this book prioritizes the voices and experiences of those working at the forefront of the agroecology movement. Academic theorizations take a back seat. We do draw on agroecological scholarship and critical food-systems analysis, but the focus is on making concepts relatable and understandable. This makes for a book that (we hope!) amplifies the work of those who so generously shared their stories with us, while also introducing the broader academic foundations of agroecology.

Since we as authors are accountable to the agroecological farmers, activists, policymakers, and movements that are working toward more equitable and sustainable food systems, we wrote this book with community groups and people working on these issues in mind. For us, this book facilitates what in the agroecology movement is called a *diálogo de saberes* ("dialogue of knowledges").[1] The *diálogo de saberes* refers to the flow and exchange of ideas and experiences across diverse cultural contexts. Central to agroecology is the sharing of knowledge from one local experience to another through farmer–grower networks and through larger social networks that include not only growers but also eaters, workers, researchers, activists, and organizers. This book provides one pathway through which food-systems students and activists in Canada and other English-speaking countries, particularly those in the Global

North, can learn from the real-life efforts of those working toward more just and sustainable food futures in one of the epicentres of the global agroecology movement: Brazil.[2] Brazil has a rich history of social movements that have contributed greatly to the development of agroecology in theory and in practice — it is where some of the most vibrant examples of agroecology can be found. Our intention is to celebrate and share knowledge from the agroecology movement in Brazil so that scholar-activists in North America/Turtle Island[3] can learn from their valuable experiences. To this end, some of the stories in this book are written by Brazilian colleagues to incorporate their expertise and in-depth knowledge of agroecology directly.[4]

Growing and Eating Sustainably both shows and tells how agroecological transitions unfold. While rooted in experiences and examples from Brazil, the stories reflect responses to issues that are widespread in the globalized industrial food system, which has contributed to multiple socioecological crises, including climate change, soil and water degradation, and social inequities. We hope you can draw inspiration from these stories to push for a change in food systems in your own communities.

FOREWORD

When I was a child growing up on a large farm and ranch in the Pacific Northwest of the United States, my first-hand experience of "growing and eating sustainably" seemed like just a natural way of life. We grew most of our own food and worked many chores, including taking care of animals, "picking rock" out of the fields, and getting up at 3:00 a.m. to pull invasive weeds from wheat seed crops. As I grew into my teenage years, my duties expanded to include bookkeeping for the farm, and I began to understand the serious impact of commodity price fluctuations — and unexpected summer hailstorms — on my family's livelihood. Money was scarce and I started taking extra work in town to prepare for getting off the farm as fast as I could. I have now come full circle and study the global food system, working with community and farmer organizations across the world to identify pathways for bridging the trade-offs and tensions between livelihoods, family well-being, job quality, environmental sustainability, and food security. Along with my students — including the authors of this volume, Dana James and Evan Bowness — I work to understand the challenges posed by the transformation from diverse, place-based food systems based on close relationships between farmers, eaters, and the natural environment, to a global food system that is now based on the flow of a few commodity crops largely controlled by multinational corporations. This transformation has contributed to a public health crisis through the "nutrition transition," leading to high levels of diet-related disease; climate and biodiversity crises; and the exploitation of farmers and farm workers.

In response to those challenges, agroecological transitions present a bright pathway toward more sustainable, equitable, and just food systems. Now recognized globally as an approach to agriculture that seeks to balance the metabolism between society and nature, agroecological approaches build on traditional and Indigenous knowledge and have proven to be adaptive in the face of climate change. Agroecology is also rapidly entering the policy, educational, and technical spaces, including the Food and Agriculture Organization of the United Nations, which recognizes agroecology as a rights- and equity-based approach that can support the participation of youth, women, and other marginalized social groups to achieve viable and thriving livelihoods and contribute to the restoration of working landscapes across the globe.

The stories and photos in this volume beautifully illustrate how this can be done. Based on their close research engagement with social movement actors in southern Brazil, Dana James and Evan Bowness provide a window of inspiration into the elements of agroecological "system redesign" linking growers and eaters to build sustainable and just food systems for our collective future.

— Hannah Wittman
June 2021

Chapter 1

INTRODUCING AGROECOLOGY AND FOOD-SYSTEMS TRANSITIONS

The COVID-19 pandemic sent unprecedented shock waves through the global economy, threatening the foundations on which society depends for safety, security, and sustenance. Perhaps nowhere is this more visible than in our collective relationship to food. When travel and import bans were imposed due to COVID-19 and businesses were forced to stop operating, food supply chains were disrupted. Consumers panicked, as they fought over seemingly scarce products in grocery stores. Frontline food and farm workers were declared essential while also being forced to work in confined spaces at increased risk of contracting SARS-CoV-2, the virus that causes COVID-19. Tens of millions of people (estimates range between 83 and 150 million globally) have been driven into conditions of acute hunger due to a loss in livelihoods, incomes, and access to food[1] — in addition to the 135 million people who were already living with crisis-level hunger prior to the pandemic.[2]

These critical issues made headlines daily across the globe and highlighted the vulnerabilities of the modern *food system*. When we use the term "food system" (or "food systems"), we are referring to all of the institutions and people involved in producing, processing, transporting, selling, consuming, recycling, or otherwise managing the food upon which our societies depend. Food systems also include the environmental, social, economic, and political factors that shape these institutions and processes. Take agriculture, for instance. As a fundamental component of the broader food system (and as a system itself), agriculture involves farmers and workers who produce food. This process requires inputs — like seeds, and those farmers' and workers' labour — and is shaped by broader conditions, including biophysical conditions such as weather and climate, topography, and soil type, as well as social, economic, and political conditions, including human values, market access, and agricultural policy.

The contemporary global food system is often described as "industrial" because it can be characterized by some key features that emerged in full force during the Industrial Revolution — the period of time (roughly the mid-1700s to mid-1800s) marked by technological developments that allowed fossil fuels, particularly coal, to be burned to

harness energy at a scale never before witnessed. So, what are some of these key features of industrialization?

First, industrialization remains a very energy-intensive process. An enormous amount of energy is used today to produce, transport, process, and distribute food, with estimates that the food sector is responsible for 13 to 30 percent of energy consumption globally.[3] This includes, for example, the fact that industrial agriculture is heavily dependent upon agrichemicals, including synthetic fertilizers and pesticides. Producing these agrichemicals requires fossil energy inputs, with around 10 to 15 calories of fossil energy needed to produce 1 calorie of food. Yet despite all of the energy that goes into the industrial food system, around 30 percent of all food — and therefore, the energy and resources that were used to produce it — ends up being lost or wasted along the path from farm to fork due to factors like inadequate storage and spoilage.[4]

Second, industrialization includes and refers to certain processes, such as specialization (focusing specifically on doing or producing one thing) and homogenization (making elements similar to one another, or standardized and uniform). In agriculture, specialization and homogenization — coupled with access to fossil-fuel-based mechanization — have fuelled a tendency to produce food in large-scale monocultures (of one type of crop or animal), contributing to "economies of scale" (lowering the cost per unit of production as a result of efficiencies gained through mass production). In this way, industrialization created new possibilities for transforming nature at a tremendous scale by replacing human and animal labour with fossil-fuel-based technologies or otherwise reducing labour inputs.

Third, the industrial food system is also embedded within the larger neoliberal and global capitalist economy, which means that it treats food as a commodity to be produced and exchanged in a "free market," where the primary motivation is the creation of private profit. Neoliberalism as a concept and a political doctrine entails a shift away from state-led governance of social programming and markets through a devolution of power to the private sector. In the contemporary neoliberal food economy, the vast majority of profits are captured by a network of agrifood corporations (for example, farm input suppliers, food manufacturing conglomerates, and retail chains) that have become increasingly globalized (meaning that they operate across national borders). These corporations — or transnational or multinational corporations as they are often called — are able to accrue enormous profits because they have captured control of the market: for example, only four firms — Corteva, Bayer, BASF, and ChemChina/Syngenta — control 65 percent of the global agrichemical market; all of these firms are also major players in the seed sector.[5] Another example of corporate concentration in the food system is that of what turkey producers face. Those producers reliant upon animal genetics companies for artificial insemination virtually have only two "choices" available to them because "only two firms control 99 percent of turkey genetics."[6] As a result, the industrial food system is dominated by just a few corporations that wield an

A "McDonaldized" grocery store in Florianópolis, Santa Catarina, Brazil. Everything is ordered, uniform, and convenient.

incredible amount of power over farmers, workers, and eaters. These corporations are able to put pressure on governments to relax regulations that moderate their ability to accumulate profits, including those that are intended to protect the environment and enforce standards for working conditions.[7]

There are a variety of ways to describe how logics of industrialization and neoliberal capitalism have permeated the food system and our everyday lives. George Ritzer came up with the term "McDonaldization" to refer to how people and institutions today are increasingly characterized by features that are most evident at fast food chains: control, calculability, efficiency, and predictability.[8]

Ritzer's analysis was based on the work of a classical sociologist, Max Weber, who argued that the determining force that shaped modern society was *rationalization*.[9] While the common-sense use of the term rationalization means "to justify" or "to explain" one's actions, sociologists use the term in a specific way. Rationalization describes a pattern where people and societies become characterized by a preoccupation with finding technologies and forms of social organization that allow for more precisely controlling, systematizing, and extracting value from the world, in pursuit of better lives for people (at least theoretically). This tendency became pervasive during the Industrial Revolution and resulted in radical changes to nature and all aspects of society.

IS THE INDUSTRIAL FOOD SYSTEM SUSTAINABLE?

We've established that the global food system currently relies on energy-intensive technologies and industrial processes to produce food, and is largely controlled by highly concentrated and powerful agrifood corporations that distribute food commodities at a global scale. So, what are the implications of this? On the one hand, it is thanks to the industrial food system that we see an incredible selection of cheap food on the shelves at a grocery store or on the menu at a restaurant. In Canada and the United States, for example, people on average now spend only about 5 to 10 percent of their income on food — a historic low and much lower than in many other countries around the world. And indeed, we are often told by the agrifood corporations that control so much of the food system that they play a key role in "feeding the world."

However, despite the "efficiencies" of the industrial food system and the seemingly countless options we now have at the store, there is still persistent hunger around the world, including in high-income countries like Canada and the United States. So, while globally there is now more than enough food to feed the world, the major bottleneck in realizing food security (or stable and regular access to food) for the world's approximately two billion food insecure people[10] is less a problem of yield and production and more about the inequitable distribution of and access to food as a result of poverty, wealth inequality, and inadequate infrastructure and social programming (including safety nets and social welfare). In other words, the reason we have persistent hunger is not because there is not enough food but because the capitalist market restricts access to it.

Also critical to this discussion is the fact that these supposedly "cheap" foods are not really all that cheap — there are many hidden costs to this "efficient" system that need to be taken into account. At first glance, the relatively low prices of the bewildering selection of foods available at the market seem to benefit us as consumers, but at closer examination, it becomes clear that this is only because we are not paying the true cost of our food up front. However, we do pay for it later — cheap foods (typically featuring a roster of corn, wheat, and soy derivatives) have contributed to low-quality, highly processed diets that have made society's healthcare costs skyrocket. And, ironically, what appears to be a diversity of options at the grocery store masks the fact that there has been a steep decline in crop and animal diversity globally.[11] As a result of this declining biodiversity, we have also lost many of the cultural traditions that were developed around local plant and animal varieties. Put another way, the world is losing "biocultural heritage," and the culprit is largely industrial food production. In addition to the loss of diversity, other environmental effects of industrial agriculture include deforestation (when trees are cleared to make space to grow/raise more food) and pollution (especially when agrichemicals make their way into surrounding ecosystems). It is increasingly clear that these environmental damages are contributing to ecological catastrophes at a global scale, including mass extinction and climate change, which

in turn threaten the very foundations upon which agriculture depends. And these are only some of the social and environmental problems associated with industrial agriculture. So, ultimately, the environment and our communities do pay the costs (otherwise known as "negative externalities") of artificially cheap food many times over — but the large agrifood companies that are responsible for the damage too often do not.[12]

IS THE INDUSTRIAL FOOD SYSTEM RESILIENT?

As we previously mentioned, the globalized and industrialized food system is deeply intertwined with other systems, such as the energy system (which largely involves the production, trade, and consumption of fossil fuels) and the economic system (which provides financial resources, or capital, to the food system). Because of these interdependencies, disruptions to any one system or component of a system can have ripple effects that pose risks to environmental sustainability, economic and political stability, and human health and well-being. Because of the industrial food system's dependency on other unsustainable systems and because there is a lack of redundancy in the system due to corporate concentration and control over food supply chains, we can generally say that the food system is not very resilient. "Resilience" refers to the capacity of a system — in this case, the food system — to adapt to shocks and stressors, and an associated ability to continue functioning — in this case, by producing and distributing healthy foods — in the face of those shocks and stressors.

So, while some problems may not seem directly related to food — like changes in oil prices or economic recessions, for example — there are many examples of how disruptions to one of these systems has contributed to disruptions in another. At a global scale, the COVID-19 pandemic was one reminder of this; another was the food price crisis of 2007–2008, when food prices — particularly of staples such as rice, wheat, and maize — sharply increased. The price spike was triggered by a confluence of factors, including financial speculation, rising oil prices, an expanding biofuel market, environmental events such as droughts, and protectionist food policies (among others).[13] And in May 2018, another example of a shock occurred in Brazil — this time at the national level. As a country, Brazil is highly dependent on trucking: almost 70 percent of goods within Brazil, including food, materials, and fuel, are moved by truck. And, of course, truck drivers are dependent upon affordable and accessible diesel fuel. For a long time, Brazil's national government had set oil price measures that subsidized oil and gas. But in 2016, the state-owned oil company, Petrobras, ended these measures in order to bring domestic oil prices more in line with the international market.[14] As a result, diesel prices in Brazil climbed, squeezing truck drivers' already small margins, which, in part, led them to go on strike in 2018. As a result of the strike, supermarket shelves went empty, tonnes of perishable produce were lost, and millions of farm animals died of starvation or had to be slaughtered prematurely. Many cities ended up facing major food, water, and health supply shortages.

Just as with COVID-19, the disruption caused by the strike made visible the fragility of Brazil's national food system. Paulo Petersen, an international leader in sustainable food scholarship and policy advocacy in Brazil asserts:

> [The trucking] crisis revealed the degree of vulnerability of [our current] model. A few days of a truck drivers' strike were enough for the system to collapse. This is a demonstration of the infeasibility of a food system that depends on transport at great distances and that drives territories to import more of what they consume and export more of what they produce. Whether for environmental, energy, or economic reasons, this pattern is unsustainable because it is structurally dependent on the consumption of fossil fuels.[15]

These disruptions are a result of how the industrial food system is organized. Because it is highly dependent on other unsustainable systems, the food system is just as vulnerable to threats to those systems. In addition, because the industrial food system lacks redundancy and diversity, it is less resilient and at potentially greater risk of system collapse.[16] In today's world, pandemics and other unfolding crises (such as climate change) pose global-scale threats to the food system as we know it. Considering all of this, it is essential that the food system be reorganized in a way that maximizes resilience. This brings us to an alternative approach based on diversity — an approach known as "agroecology."

ENVISIONING AGROECOLOGY

Agroecology, or the design and management of agrifood systems according to ecological and social justice principles, emerged "to respond to the mounting problems resulting from an increasingly globalized and industrialized agri-food system."[17] Agroecological scientists were originally interested in seeing how insights from ecology could be used to improve farming systems; if growers could model their farms on ecological systems and work with rather than against nature, they could become more sustainable and resilient in the long run. But beyond being motivated by ecological sustainability, peasant farmers from the Global South have long been at the forefront of advocating for agroecology as part of broader demands for "food sovereignty," or the rights of people to produce food and define and control their own food systems.[18] While ecologically based farming practices have the potential to improve agricultural sustainability across farms of various sizes and production systems, the key role that agrarian movements have played in promoting agroecology has led to it often being associated with the "traditional" farming sector (small-scale, peasant, and Indigenous agriculture), in large part because traditional farming practices are rooted in deep, place-based ecological knowledge and experiences. In addition, the promotion of small-scale farming is grounded in concerns about social justice, as many smallholders have been displaced,

outcompeted, and marginalized as a result of neoliberal agrifood policy, which has favoured large landowners and corporations and contributed to the consolidation of land and power in the agrifood sector. Social justice — or the fair distribution of opportunities, benefits, and risks to different social groups along intersecting lines of race, gender, class, and other social markers of identity — is, therefore, a key concept in agroecology.

These various threads have led to agroecology being commonly described as a science, a practice, and a social movement.[19] It is a science because it is rooted in ecological approaches to studying and understanding agricultural systems — agroecology is a way of thinking holistically about the relationships between soil, plants, animals, and their natural contexts and for conducting research on how to harmonize agricultural production with ecological processes. One of the key academic texts[20] on agroecology describes it as "participatory" (in that it engages and includes real people and their experiences), "transdisciplinary" (in that it transcends academic disciplines and prioritizes collaborations across sectors), and "action-oriented" (in that the knowledge produced through agroecological research is first and foremost practical, focused on problems and solutions). While we do not focus deeply on describing or advancing the science of agroecology, we have taken a scientific approach to agroecology (valuing participation, transdisciplinarity, and action-oriented research) in the creation of this project.

Beyond being a science, agroecology can also be considered a practice because it refers to the things that people do to make the world "more agroecological" — both in terms of farming methods but also in terms of social relations. In contrast to an industrial food system, agroecological food systems translate ecological principles (for example, diversification and the recycling of nutrients and biomass) into agricultural management practices (for example, intercropping and composting) in order to enjoy and enhance ecosystem services, or the services provided to people by nature. An agroecological food system also incorporates social justice principles (for instance, the right to dignified work) and puts them into practice (for example, by ensuring farmers and farm workers are fairly compensated).

Agroecology also refers to a social movement, or a collection of people who organize outside of formal political channels to pursue (or resist) social change. We refer to the groups of people demanding a food system based on agroecology as the "agroecology movement." This movement is global in scope and is made up of many smaller organizations, institutions, and communities that collectively mobilize in pursuit of progressive social, political, economic, and environmental changes in the food system. Broadly, the agroecology movement aims to challenge dominant and inequitable power relations by connecting with and nurturing those at the heart of the food system — growers, workers, eaters, and the land. As such, transitioning from an industrial food system toward an agroecological one requires a radical shift in our institutions, relationships, and values.[21] This will necessarily entail large-scale changes to how we grow, process, distribute, consume, and dispose of food.

Our aim in this book is to envision the transition from industrial to agroecological food systems. We use the word "envision" for two reasons: first, we intend to not only introduce agroecology, but to also show what the agroecology movement in southern Brazil is doing on the ground. We use photos where possible, allowing a glimpse into the real experiences of those in the agroecology movement as they enact food-systems change and breathe life into the concept of agroecology.

Second, we bring this work into conversation with the work of late critical sociologist Erik Olin Wright, whose Envisioning Real Utopias project[22] involves proposing solutions to social problems that "embody emancipatory [or utopian] ideals" while remaining focused on the need to create "viable" or pragmatic institutional changes.[23] To that end, we highlight "cases of institutional innovations that embody in one way or another emancipatory alternatives to the dominant forms of social organization"[24] in the food system. Through this book, we provide a collection of place-based examples of agroecology in action that can help to envision alternatives to the industrial food system. These examples are presented as "vignettes" — introductions to people/groups that capture ethnographic or cultural details about their lives, using story as a means of explaining or exploring a broader theme or issue — that showcase different aspects of, and highlight key themes within, agroecological transitions. Hopefully, these vignettes can serve to build solidarity across borders and inspire food activists, scholars, farmers, and workers pushing for change in their own communities.

A few final notes are warranted on the visual element of "envisioning." Photography can provide valuable data for social science researchers. When visiting different actors in the agroecology movement in Brazil, we brought along cameras and a drone. We took photos during our visits (with consent) and shared them with the participants after. These photos are not professional works of art; they are real depictions of people living their lives — working, talking, eating, gathering, protesting, sharing, and learning. The photos that accompany the vignettes were all taken by the authors, who explained to the participants exactly why the photos were being taken (with the exception of photos taken in public places with many people present, such as a protest or event) and received their authorization to share them.

WHY BRAZIL?

Many farmers, food workers, researchers, community organizers, and activists across the world, particularly in the Global South, have been working to create more sustainable food systems by farming *with* nature and forming new social networks to support a transition to agroecology. We highlight some of those efforts in southern Brazil and show how agroecology can help mitigate or prevent the risks and harms associated with the industrial food system.

In many ways, Brazil can be considered a microcosm of the global food system: It is one of the most climatically, biologically, and socio-culturally diverse countries in the world, and is home to some of the most well-known and influential agrarian social movements that

mobilize against a backdrop of deeply entrenched agribusiness interests. These two factions — radical food movements pushing for more sustainable and equitable food systems, and the agribusiness sector pushing for continued industrialization — are engaged in a struggle over the future of food in a country that is recognized as a globally important agricultural powerhouse. Many of the key elements of this struggle (the state-supported agribusiness sector on one side, and social movements on the other) are vibrant in Brazil, making it a strong case study from which to learn.

This is especially the case when it comes to the agroecology movement. One of the best-known radical food movements in Brazil is the Landless Rural Workers Movement (Movimento dos Trabalhadores Rurais Sem Terra, MST), which was a founding member of the international peasant organization La Vía Campesina (LVC), the largest agrarian social movement in the world. Another is Rede Ecovida, a decentralized network of around 4,000 farm families that has been operating in southern Brazil for more than twenty years. Rede Ecovida is known as one of the world's first "participatory guarantee systems," meaning that the members of the network certify one another as agroecological "based on active participation of stakeholders … built on a foundation of trust, social networks and knowledge exchange."[25] The south of Brazil is also home to a community group by the name of CEPAGRO, based in Florianópolis, Santa Catarina, which is a member organization of Rede Ecovida. CEPAGRO was instrumental in connecting us with the people and topics covered in this book, and several organizers and researchers within CEPAGRO's network contributed stories to this project. Due to the visibility and success of groups like Rede Ecovida and the MST, as well as the networking that happens at more local levels through organizations like CEPAGRO, southern Brazil has become known as a promising place for agroecology. Food movements in the Global North and other parts of the world could greatly benefit from learning more about the agroecological initiatives taking place in Brazil.

Brazil is also an important place to consider the barriers to food-systems transitions. The agriculture sector is economically important for Brazil in a number of ways. About 9 percent of Brazil's labour force works in agriculture.[26] Soy, raw sugar, poultry, and beef are among Brazil's biggest exports (soybeans alone represent 14 percent of all Brazilian exports in terms of monetary value),[27] and Brazil is the world's largest importer and consumer of pesticides and fertilizers. Brazilian agribusinesses are also dominant players in the global food economy; for example, the Brazilian company JBS is the largest beef producer in the world.[28] However, while agriculture is important to the Brazilian economy, it is also a driver of major environmental problems, such as deforestation and biodiversity loss. For example, more than 50 percent of the biodiversity hotspot known as the Brazilian Cerrado (a savanna ecosystem) has been converted into crop and pasture land, particularly for large-scale soybean plantations.[29] This tension between the economic importance of agriculture and its environmental effects makes the transition to sustainable agrifood systems politically contentious, because such a transition

threatens powerful economic and political interests. Despite this larger policy environment that still heavily favours agribusiness and industrial agriculture, there is a lot to learn from grassroots movements in this key frontier in the struggle for sustainable and just food.

AGROECOLOGICAL TRANSITIONS

So far, we have been referring to the industrial food system and agroecological food systems as if there is a binary. While doing so can be useful to draw out the differences between these two approaches when it comes to growing, distributing, and consuming food, the reality is not so stark. Rather, these two systems can be viewed as ends of a spectrum, and our current food system(s) fall somewhere on that spectrum. Even the global "industrial food system" to which we have been referring is not entirely industrial; within this dominant system we still see lots of variability — think of your local organic farmers, or the fair trade movement, or Indigenous food trading practices. What we're interested in exploring is the gradient between industrial (often referred to elsewhere as "conventional") and agroecological farming, and how more industrial farms — and the industrial food system in general — can transition toward agroecology.

One of the best models for thinking about and understanding the concept of agroecological transitions is Stephen Gliessman's five-step framework for assessing food-systems change.[30] Gliessman classifies systems in transition according to five levels, where transitions across Levels 1 to 3 are mostly applied at the level of agroecosystems (encompassing the relationships between farmers, plants, animals, and inputs on farms), and Level 4 is at the level of regional food systems. Changes at these levels lead to an entirely transformed global food system at Level 5.[31] An overview of these levels follows:

- Level 1: "Increase the efficiency of industrial and conventional practices in order to reduce the use and consumption of costly, scarce, or environmentally damaging inputs."
- Level 2: "Substitute alternative practices for industrial/conventional inputs and practices."
- Level 3: "Redesign the agroecosystem so that it functions on the basis of a new set of ecological processes."
- Level 4: "Re-establish a more direct connection between those who grow our food and those who consume it."
- Level 5: "On the foundation created by the sustainable farm-scale agroecosystems achieved at Level 3, and the new relationships of sustainability of Level 4, build a new global food system, based on equity, participation, democracy, and justice, that is not only sustainable but helps restore and protect earth's life support systems upon which we all depend."

These levels are meant to draw our attention to how a transition to agroecology from an industrial food system is a process that takes place on specific farms, across landscapes, and throughout the food system, including in policy fora, in cities, in kitchens, and on individuals' plates. It is also important to note that while Gleissman's framework implies a linear shift from Level 1 toward Level 5, transitions are often nonlinear. More often than not, they are dynamic processes that involve trial and error, experimentation, and shifts back and forth along the spectrum.

With this caveat in mind, we have organized the stories in this book loosely in tandem with Gliessman's model. The history and problems of the industrial food system demonstrate why the world needs agroecology and point to some of the practices that are to be reduced in Level 1 and substituted in Level 2. Showing where agroecological food comes from, with a major focus on agroecological food production in rural areas corresponds roughly with Levels 2 and 3. Building new relationships in the food system, both in and between the city and the countryside, corresponds roughly to Levels 4 and 5. While organized according to Gliessman's framework, all of the stories featured here are unfolding at the same time, again illustrating how context-specific initiatives contribute to nonlinear transitions toward agroecology at larger scales.

This book is organized around a few key concepts. The food system encompasses all of the processes, resources, technologies, people, and institutions involved in growing, harvesting, storing, transporting, processing, distributing, consuming, wasting, and recycling food. The industrial food system relies on fossil fuel-based industrial processes and technologies, including agrichemical inputs like synthetic fertilizers and pesticides, to produce food at a massive scale. The industrial food system is environmentally unsustainable since it depends on finite resources (like fossil fuels), results in high levels of pollution, and reduces biodiversity. This system is also economically and socially unsustainable, because large-scale farms, retailers, and neoliberal policies (like deregulation and free trade) have displaced many farmers and rural workers and undermined their right to live on the land and produce food with dignity. The agrifood corporations and industrialized states that benefit from this system at the expense of others rely on a "feed the world" narrative to justify and maintain their role within the global food system. Yet, this claim belies the fact that there is already more than enough food in the world; the problem is that many people do not have access to it, primarily because of a lack of income, inadequate social safety nets, and the globally uneven distribution of food and power.[32] In the words of renowned economist Amartya Sen, "the problem of nourishment … in fact, belong[s] to political economy and to political science. There is, indeed, no such thing as an apolitical food problem."[33]

The problems associated with the industrial food system shine a light on the need to transition to alternatives. In general terms, a transition simply refers to a change from one state to another. But this raises some questions: what is changing, how is it changing, and what is it

becoming? It is no longer radical to argue that the industrial food system is harmful to people and the planet. Therefore, what is needed is a large-scale shift from the industrial food system to more place-based food systems that respect planetary boundaries and planetary health;[34] in other words, food systems that are based in the science, practice, and social movement of agroecology. In Brazil, farmers and organizers articulate agroecology as encompassing "a way of life" guided by ethics of respect and care that disrupts the status quo. This stands counter to the industrial food system, which takes a production-oriented approach to growing and distributing food (meaning that the focus is on producing or yielding more in pursuit of profit, to the detriment of other important functions and outcomes). Instead, agroecology requires us to think about the many relationships that make up the food system, recognizing the multiple benefits provided to humans by the food system *beyond* yield and profit — for example, dignified work, stewardship of crop and animal diversity, and resilience to shocks like natural disasters, social unrest, and pandemics.