

Grains



BILL WINDERS

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First published in 2017 by Polity Press

Polity Press
65 Bridge Street
Cambridge CB2 1UR, UK

Polity Press
350 Main Street
Malden, MA 02148, USA

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ISBN-13: 978-0-7456-8803-9

ISBN-13: 978-0-7456-8804-6(pb)

A catalogue record for this book is available from the British Library.

Library of Congress Cataloging-in-Publication Data

Names: Winders, William, 1971- author.

Title: Grains / Bill Winders.

Description: Cambridge, UK ; Malden, MA : Polity Press, 2016. | Includes bibliographical references and index.

Identifiers: LCCN 2016016764 | ISBN 9780745688039 (hardback : alk. paper) | ISBN 9780745688046 (pbk.)

Subjects: LCSH: Grain trade--Political aspects. | Agriculture and state. | Agriculture and politics. | Food supply--Political aspects. | Geopolitics.

Classification: LCC HD9030.5 .W555 2016 | DDC 338.1/731--dc23 LC record available at <https://lcn.loc.gov/2016016764>

Typeset in 10.5 on 13pt Scala by
Servis Filmsetting Ltd, Stockport, Cheshire
Printed and bound in the UK by Clays Ltd, St Ives PLC

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For my mother and father,
Kathleen and David Winders
To whom I do not say "Thank You" enough.

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Acknowledgments

I am grateful to a number of people who helped me along the way to completing this project. Many people helped me work out the ideas in this book through numerous discussions and exchanges. A few of my colleagues at Georgia Tech regularly talk with me about this project, offering support and feedback: Dan Amsterdam, Doug Flamming, and Steve Usselman. As always, Rick Robinson was an important source of insight, suggestions, and encouragement. Elizabeth Ransom helped to get me writing in the early stages of my work on this book. I presented Chapter 4 about the connection between grains and world hunger at the Rural Sociological Society annual meeting in 2015 and got important feedback and support from JoAnne Jaffee, Phil Howard, Doug Constance, Alex McIntosh, among others. Also in 2015, I presented Chapter 3 about grains and economic conflicts at the American Sociological Association annual meeting, and I am particularly grateful for the feedback and encouragement that I received there from Ray Jussaume and Kathleen Schwartzman. At Polity Press, I appreciate the guidance and patience that Louise Knight and Nekane Tanaka Galdos showed me as I worked on this book. I am also grateful for the valuable and insightful comments and suggestions given by two anonymous reviewers. And I appreciate the work that Clare Ansell, Susan Beer, and Jane Fricker did in editing the manuscript.

Finally, I owe a deep debt of gratitude to Amy D'Unger, who bore the brunt of my focus on grains and need to share

my ideas and new findings. She read and edited the entire manuscript, encouraged me as I worked on this book, and graciously covered for me around the house when work on this book consumed most of my time. Samuel and Violet understood when I needed some extra time or a bit more quiet to get just a little more writing done. It gives me joy and inspiration to see Sam working so hard on his own writing.

In the end, the responsibility for any errors or omissions belongs solely to me.

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CHAPTER ONE

Grains for Food, Grains for Feed

The average supermarket has tens of thousands of items, including fresh fruits and vegetables, bakery items, dairy products, meats, and a wide array of processed foods such as crackers, cookies, condiments, boxed dinners, cereals, sodas, frozen foods, and alcohol. There are so many choices. Behind this diversity of products, however, are grains: barley, buckwheat, maize (corn), millet, oats, quinoa, rice, rye, sorghum, and wheat among others.¹ However, just three grains can be found in almost every grocery store aisle: maize, rice, and wheat. Maize pervades supermarket shelves under a variety of names: corn syrup, high fructose corn syrup, corn starch, decyl glucoside, dextrin, dextrose, ferrous gluconate, lactic acid, maltodextrin, xanthan gum, and zein among many others. Wheat can be found in thousands of grocery store items in the form of gluten or starch. Likewise, rice takes the form of rice milk and flour, and different forms of rice can be found in a variety of foods, from baby food to beer. Grains in these and other forms permeate most of the processed foods found in supermarkets. Grains are also fed to animals – particularly, cows, chickens, and pigs – that are slaughtered for meat. In short, grains are ubiquitous in supermarkets, belying the apparent variety of foods, which in some fashion are often either grains entirely or contain grains. Even the typical fast food meal in the US – a burger, French fries, and a soda – has far more grains in it than might be apparent at first: grains are in the bun, obviously, but they are also

very likely to be in the burger, soda, and ketchup, as well as the oil used to make the French fries. Put simply, grains are everywhere.²

Despite the pervasiveness of grains, we do not often think about their deep, underlying political implications, nor do we generally consider why some grains are more predominant than others. Instead, we tend to reflect on whether the amount and types of grains we eat are healthy for us. Maize is often, but not always, the focal point of such discussions. The various forms of maize that appear in foods, especially corn syrup, are argued to be important contributors to health issues, such as obesity. Some popular diets have centered on “low carb” (i.e., “low grains”) foods or even urged avoiding grains altogether. Many processed food labels now tout products as “gluten-free” for customers looking to avoid the protein in wheat, barley, and rye. Other public discussions of grains center on issues related to technology, such as genetically modified grains. Rarely do we move beyond these largely individual concerns, primarily about our health, to reflect on the more complex political and economic implications of grains.

Considering the geopolitics of grains is important, though, because people throughout the world consume grains as a central component of their diets. Grains are, therefore, a central factor in political stability, economic well-being, and even cultural heritage and traditions across the globe. Since grains are a central component of most people’s diets, one central issue concerning grains is food security: having enough access to grains to provide an adequately nutritious diet. When access to grains decreases, for example because of rising prices, social and political stability can be undermined as people may begin to question or even challenge their political and economic institutions, which have not provided adequate food. Grain production is so widespread that millions of people engage in it as farmers, which means that

grains not only provide food but also serve as an important basis for income as well as economic and social status around the world. And finally, grains and their production permeate life and culture around the world, including through music, art, poetry, holiday celebrations, rituals, and even language. For example, the cultivation of rice plays an important role in Japanese origin myths, and many Mexican cities hold festivals every year to celebrate maize. As the production of or access to grains is disrupted, a nation's social, economic, and political stability can also be undermined. Understanding the geopolitics of grains is, therefore, critically important.³

The same three grains that are most prevalent in the supermarket – maize, rice, and wheat – are also the grains of greatest political and economic importance across the globe today. One or some combination of these grains forms the basis of diets in every region of the world. Table 1.1 shows annual world grain production for several grains and conveys clearly the importance of maize, rice, and wheat to global food supply. In 2015, world maize production was 967 million metric tons (MMT), rice was 470 MMT, and wheat was 735 MMT. That same year, the total world production of barley, millet, oats, rye, and sorghum together was 277 MMT. This means that the production of all other grains combined

**Table 1.1 Annual World Production of Grains
(in million metric tons).**

	Maize	Wheat	Rice	Barley	Sorghum	Millet	Oats	Rye
1990	481	588	351	179	53	29	39	36
2000	591	583	399	133	55	27	25	19
2010	835	649	450	123	61	32	20	11
2015	967	735	470	145	68	30	22	12

Source: Foreign Agricultural Service, USDA, "PS&D Online Database," available at <http://apps.fas.usda.gov/psdonline/>.

totaled only 59 percent of rice production, 38 percent of wheat production, and a mere 29 percent of maize production. Put another way, of the eight grains considered in Table 1.1, maize, rice, and wheat account for almost 90 percent of world grain production. In considering the geopolitics of grains, then, we must focus to a greater extent on the influence of these three grains.⁴

Table 1.1 also shows the recent trends in production, further demonstrating the importance of these grains. Maize production has shown the greatest increase over the past 25 years, doubling from 481 MMT in 1990 to 967 MMT in 2015. While rice and wheat did not match maize's increase over this period, they nonetheless showed substantial growth in production: rice increased by 34 percent and wheat increased by 25 percent. None of the other grains matched this. World production of barley, oats, and rye decreased over this same 25-year period by a combined 75 MMT, or about 29 percent across these three grains. World millet production remained roughly unchanged. World sorghum production increased by 28 percent, but its total increase in production was only 15 MMT, which pales in comparison to the increases of more than 100 MMT for maize, rice, and wheat. Finally, it is also noteworthy that maize, rice, and wheat accounted for 81 percent of world grain production in 1990, but by 2015 these three grains accounted for almost 90 percent of world production. Thus, maize, rice, and wheat dominate world grain production, and this dominance has grown over the past 25 years.

These trends raise two important questions. First, why are maize, rice, and wheat so predominant among world grains? Second, why did the production of these three grains increase so substantially over the past 25 years? We will return to each of these questions, particularly the second one, as they go to the heart of issues examined throughout this book: shifts in the global food system, economic competition and conflicts

between grains, world hunger, the use of biotechnology in grain production, and access to land. But for now, our focus is the influence these three grains have on societies.

The distant and recent histories of maize, rice, and wheat reveal their importance not only in terms of feeding populations but also in their political, economic, and social influence. Each of these grains has shaped in various ways the political struggles and economic development of many nations. For example, the land tenure systems (i.e., the ways that landownership is organized) that have arisen around grain production have been linked to the economic and political structures found in societies. Some land tenure systems have been more favorable to the rise of political democracy, while other land tenure systems have inhibited democratic developments and contributed to dictatorships. Sharp reductions in people's access to these grains – which, again, are the basis of most diets around the world – can contribute to food riots and political instability. Economic competition between producers of different grains – or producers of the same grain in different countries – has led to trade wars and increased political tensions. Finally, large companies dominate the grain trade, seed industry, and processing of these grains. This market dominance often translates into significant influence over political institutions and the production and dietary trends in countries around the globe, as well as the exploitation of labor. Through these and other ways, these three grains have shaped the political, economic, and social histories of nations around the world.⁵

The social and political influence of these grains is evident in recent global food crises. World grain prices reached historic heights in 2008, with wheat more than 200 percent higher and rice more than 250 percent higher than 2004–5 levels. The price of maize saw similar though less dramatic increases as well, as did prices for meat and dairy products,

for which maize is the main source of feed. This rise in prices made food less accessible for millions of people and world hunger increased. As food prices rose and the threat of hunger spread, more than 30 countries were struck by mass protests and riots. These protests contributed to political instability in a number of countries. In Mexico, tens of thousands of people joined "tortilla protests" in response to the sharp increase in maize prices. In Haiti, the prime minister was removed after a week of food riots in April 2008. Later in 2010, rising grain prices again played a role in protests in Tunisia and Algeria, which then spread across the Middle East as the Arab Spring shook the region. High food prices, particularly for grains, fueled food riots and general protests across the globe that ultimately contributed to violent confrontations and even to changes in political regimes. Grains have the power to transform societies.⁶

Even outside of periods of crisis and change, the political economic influence of grains is apparent. For example, wheat farmers in the US and Europe, rice farmers in Japan and South Korea, and other grain farmers around the world have exerted significant influence over their respective nations' trade and other national policies. Organizations representing maize farmers in the US were strong advocates of expanding trade with Mexico, China, and Cuba in the 1990s and 2000s. Rice farmers in Japan were important advocates of protectionism in the mid-twentieth century. Grain farmers in a variety of nations have influenced a whole range of policies from fiscal and banking policies to labor and social welfare policies.

Grain companies also have a long history of exerting political and economic influence. For many decades, for example, four companies have dominated the global trade in grains: Archer Daniels Midland (ADM), Bunge, Cargill, and Louis Dreyfus. These four agricultural trading firms are referred to as the "ABCDs," and their histories reach back to the 1800s or early

Table 1.2 The ABCDs of the Global Grain Trade in 2013.

Company	Founded	Revenue (US\$)	Number of Employees	Global Operation
ADM	1902	\$89 billion	39,000	75 countries
Bunge	1818	\$67 billion	35,000	40 countries
Cargill	1865	\$136 billion	142,000	66 countries
Louis Dreyfus	1851	\$63 billion	22,000	90 countries

Sources: Murphy, Sophia, Burch, David, and Clapp, Jennifer (2012), *Cereal Secrets: The World's Largest Grain Traders and Global Agriculture*, Oxford: Oxfam Research Reports; Clapp, Jennifer (2015), "ABCD and Beyond: From Grain Merchants to Agricultural Value Chain Managers," *Canadian Food Studies* 2(2): 126–35.

1900s with roots in North America and Europe – ADM and Cargill in the US, Bunge in the Netherlands, and Louis Dreyfus in France. Table 1.2 shows the size and geographic reach of these companies. The economic activities of these companies are widespread as well, as Jennifer Clapp has noted: "They buy and sell grain as well as a host of other agricultural and non-agricultural commodities, while they also undertake a range of activities from finance to production to processing and distribution."⁷ The ABCDs control about 70 percent of the global grain market, though they face growing competition from new companies in Asia, including Noble Group, Olam, and Wilmar, which are three Singapore-listed agribusinesses; Cofco in China; and Glencore Xtrata in Switzerland. Global agrifood companies like these and the ABCDs have used their economic power to shape the rules of the global food system, thereby influencing trends in the production, consumption, and trade of grains across the globe.

Why are these grains so dominant and ubiquitous? What political conflicts and economic processes underlie this dominance? Who controls the world's supply of grains? And, how important are the differences between grains? Many attempts to answer such questions focus on production levels,

technology, or the role of large-scale agrifood corporations. Whether trying to explain the contours of the global food system, the eruption of economic conflicts in grain markets, world hunger, the use of biotechnology in grain production, or access to land, the focus is often on production levels, technology, or agrifood corporations. These foci are important to answering these questions, but such explanations also miss the fundamental role that differences between grains can play in such issues.

This book traces the political and economic influence of grains and their role in geopolitical conflicts. In doing so, it examines how competition and conflicts *between different kinds of grains* shape the global food system, the emergence of conflicts in grain markets, trends in world hunger, the use of biotechnology in grain production, and access to land. The market positions and political contexts of different grains intimately shape the economic interests and policy preferences of producers – as well as agrifood corporations. Such differences frequently lead producers of one grain to advocate political policies opposed by producers of other grains. For example, the world wheat market is much more competitive than the market for maize, which is dominated by the US. These divergent market structures have led to different policy preferences for US wheat and maize producers regarding export subsidies, national regulation, and liberalization. Emphasizing such potential divisions brings a new focus to the geopolitics of grains.

Differences in Grains

Despite sharing important similarities, maize, rice, and wheat diverge in a number of important ways, including how they are consumed, where they are grown, and how they are traded. These differences can lead to political and economic conflicts