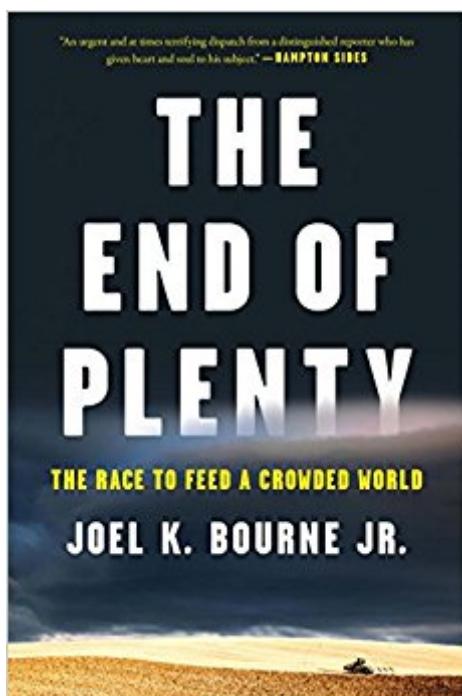


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# The End Of Plenty: The Race To Feed A Crowded World



## Synopsis

“An urgent and at times terrifying dispatch from a distinguished reporter who has given heart and soul to his subject.” Hampton Sides When the demographer Robert Malthus (1766–1834) famously outlined the brutal relationship between food and population, he never imagined the success of modern scientific agriculture. In the mid-twentieth century, an unprecedented agricultural advancement known as the Green Revolution brought hybrid seeds, chemical fertilizers, and improved irrigation that drove the greatest population boom in history—but left ecological devastation in its wake. In *The End of Plenty*, award-winning environmental journalist Joel K. Bourne Jr. puts our race to feed the world in dramatic perspective. With a skyrocketing world population and tightening global grain supplies spurring riots and revolutions, humanity must produce as much food in the next four decades as it has since the beginning of civilization to avoid a Malthusian catastrophe. Yet climate change could render half our farmland useless by century’s end. Writing with an agronomist’s eye for practical solutions and a journalist’s keen sense of character, detail, and the natural world, Bourne takes readers from his family farm to international agricultural hotspots to introduce the new generation of farmers and scientists engaged in the greatest challenge humanity has ever faced. He discovers young, corporate cowboys trying to revive Ukraine as Europe’s breadbasket, a Canadian aquaculturist channeling ancient Chinese traditions, the visionary behind the world’s largest organic sugar-cane plantation, and many other extraordinary individuals struggling to increase food supplies quickly and sustainably—as droughts, floods, and heat waves hammer crops around the globe. Part history, part reportage and advocacy, *The End of Plenty* is a panoramic account of the future of food, and a clarion call for anyone concerned about our planet and its people. 14 photographs

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## Customer Reviews

Ã¢ “[A] fascinating narrativeÃ¢ “Bourne brings a piercing eye to intransigent problems in food production and alleviation of hunger, leavened by notes of pragmatism and optimism.Ã¢ - Jean L. Steiner, ScienceÃ¢ “An important read for everyone.Ã¢ - Paul R. Ehrlich, co-author of The Dominant AnimalÃ¢ “One of the most informative, engaging books on the world food prospect I have ever read.Ã¢ - Lester R. Brown, president of Earth Policy Institute, and author of Full Planet, Empty Plates

Joel K. Bourne Jr. has a BS in agronomy from North Carolina State University and an MS in journalism from Columbia University. A contributing writer for National Geographic, he has written for Audubon, Science, and Outside, among others. He lives in Wilmington, North Carolina.

Nothing is more precious than balance, stability, and sustainability. Today, weÃƒÃ¢ “re hanging by our fingernails to a skyrocket of intense insane change, and itÃƒÃ¢ “s the only way of life weÃƒÃ¢ “ve ever known. Joel Bourne has spent his life riding the rocket. He grew up on a farm, and studied agronomy at college, but sharp changes were causing many farmers to go bankrupt. Taking over the family farm would have been extremely risky, so he became a writer for farm magazines. Later, he was hired by National Geographic, where he has spent most of his career. In 2008, he was assigned to cover the global food crisis, and this project hurled him into full awareness of the big picture. The Green Revolution caused food production to skyrocket, and world population doubled in just 40 years. Then, the revolution fizzled out, whilst population continued to soar. Demographers have told us to expect another two or three billion for dinner in 2050. Obviously, this had the makings of an excellent book, so Bourne sat down and wrote *The End of Plenty*. The subtitle of his book is ÃƒÃ¢ “The Race to Feed a Crowded World,ÃƒÃ¢ “not ÃƒÃ¢ “The Race to Tackle Overpopulation.ÃƒÃ¢ “A growing population thrills the greed community, and a diminishing herd does not. Overpopulation is a problem that can be solved, and will be, either by enlightened self-restraint, by compulsory restraint, or, most likely, by the vigorous housekeeping of Big Mama Nature. Feeding the current

population is thrashing the planet, and feeding even more will worsen everything, but this is our primary objective. We are, after all, civilized people, and enlightened self-restraint is for primitive savages who live sustainably in roadless paradises. As incomes rise, the newly affluent are enjoying a more luxurious diet. To satisfy this growing demand, food production must double by 2050.

“We all have to learn to produce as much food in the next four decades as we have since the beginning of civilization.” Meanwhile, agriculture experts are not bursting with brilliant ideas. “Producing food for more than 9 billion people without destroying the soil, water, oceans, and climate will be by far the greatest challenge humanity has ever faced.” Bourne’s book describes a number of gigantic obstacles to doubling food production — or even maintaining current production. Automobiles are more addictive than crystal meth. Europeans guzzle biodiesel made from palm oil. Americans are binging on corn ethanol. The 2005 Energy Tax Act mandated the addition of biofuels to gasoline. From 2001 to 2012, the ethanol gold rush drove corn prices from \$1.60 to \$8.28. Not coincidentally, in 2008 food riots erupted in twenty countries. The Arab Spring revolts began in 2011, a year of record harvests and record prices. Today, almost 40 percent of the U.S. corn crop is being fed to motor vehicles — enough corn to feed everyone in Africa. Experts predict that we will need four times more land for biofuels by 2030. Crops require cropland, and almost all places ideal for farming are already in use, buried under roads and cities, or have been reduced to wasteland. Every year, a million hectares (2.4 million acres) of cropland are taken out of production because of erosion, desertification, or development. So, 90 percent of the desired doubling in food production will have to come from current cropland. At the same time, the farm soils still in production have all seen better days.

Agriculture is an unsustainable activity that normally depletes soil quality over time. Another obstacle is yield, the amount of food that can be produced on a hectare of land. Between 1961 and 1986, cereal yields rose 89 percent, due to the Green Revolution. But per capita grain production peaked in 1986. Since then, population has been growing faster than yields. Crop breeding experts are wringing their hands. A number of indicators suggest that we are heading for

“agricultural Armageddon,” but the experts remain silent, praying for miracles. The biotech industry is focused on making huge profits selling seeds and poisons, not boosting yields. Agriculture guzzles 70 percent of the water used by humans. Irrigated fields have yields that are two to three times higher than rain fed fields. Demand for water is projected to increase 70 to 90 percent by 2050, but water consumption today is already unsustainable.

“Over the next few decades, groundwater depletion could cripple agriculture around

the world. Crop production is already being affected by climate change. Research indicates that further warming will take a substantial toll on crop yields. If temperatures rise 4°F (2°C), maybe half the world's cropland will become unsuitable for agriculture. Rising sea levels will submerge large regions currently used for rice production. Meanwhile, population continues to grow, and some predict it will grow until 2100. In a nutshell, our challenge is to double grain, meat, and biofuel production on fewer acres with fewer farmers, less water, higher temperatures, and more frequent droughts, floods, and heat waves. This must be done "without destroying the forests, oceans, soils, pollinators, or climate on which all life depends." Ladies and gentlemen, this is an outstanding book, and easy to read. Most people have blind faith that innovation will keep the supermarkets filled forever. Those who actually think a bit are focusing on stuff like solar panels, wind turbines, and electric cars. Food is something we actually need, and it gets far less attention than it deserves. By the end of the book, it's impossible to conclude that everything is under control, and that our wise leaders will safely guide us through the storm. Surprisingly, a few additional super-threats were not discussed in the book. Bourne mentions that insects and weeds are developing resistance to expensive GMO wonder products, but stops there. Big Mama Nature is the mother of resistance. She never tires of producing new forms of life that are resistant to every toxin produced by science: insecticides, herbicides, fungicides, rodenticides, antibiotics. Every brilliant weapon we invent will only work temporarily. In terms of breeding new varieties of plants that are resistant to the latest biological threat, there are only so many tricks available. The low-hanging fruit has already been used. Just three plants enable the production of 80 to 90 percent of the calories we consume: corn, rice, and wheat. The global food system is heavily dependent on petroleum fuels, which are finite and nonrenewable. There is no combination of biofuels or alternative energy that will come anywhere close to replacing oil. In the coming decades, we will be forced to return to a muscle-powered food system. We are entirely unprepared for this, and the consequences will be very exciting for people who eat food. There is a similar issue with fertilizer. Of the three primary plant nutrients, reserves of mineral phosphorus will be depleted first, and this will blindside conventional agriculture • no phosphorus, no life. A hundred years ago, Chinese farmers used zero commercial fertilizer. Every morning, long caravans of handcarts hauled large jugs of sewage from the cities to the fields. In the end, readers are presented with two paths to the future. One path looks like a whirlwind of big trouble, and this is not just a comic book doomer fantasy • it's already blowing and rumbling. The other path is happy and wonderful. Humans will discover their legendary big brains,

turn them on, shift industrial civilization into reverse, speed down the fast lane to genuine sustainability, and live happily ever after. Place your bets.

As a non-agricultural person I found this book informative and easy to follow. The author is fairly balanced in his comments about the gains and ill effects on various techniques regardless of country.

a candid view of the world population growth and the limitation on yield growth. The author, without preaching, points out the changing landscape due to climate change and the relationship between food shortage, war, political instability, and migration. At the same time, he points out some places for hope like aquaculture which is dependent on finding ways to stabilize its relationship to weather. It should be a must read for those in political leadership who unfortunately have little time for reading because they're busy fundraising.

This book is a great read. Mr. Bourne's writing style is captivating as he shares his information about the history of farming and feeding the world. The subject matter was much more interesting than I expected and really made me consider food options more carefully. The folks Mr. Bourne interviews are terrifically interesting too . I highly recommend this book!

Great book. It really made me think about the impacts of food and farming and how changing what I feed my family (especially trying to eat less meat) can have a positive affect on the planet. Highly recommend to anybody. Easy to read and very compelling.

This is an excellent, and sometimes scary, treatise on the recent history of agriculture and the challenges it faces in the near and long term. Well written, well documented, and fascinating. It does not bode well for feeding a rapidly expanding population in the future given the lack of land and water resources, and the effects of global warming and environmental degradation.

Refreshingly unbiased and non-political, Joel Bourne presents a well researched fact based assessment of the history and future of food production and the past and future obstacles to feeding the now integrated requirements of humanity. The book is written in a stimulating manner and is quite enjoyable to read. Dan

I loved this book which takes the position that we have too many people to feed by 2050 and we must do it with fewer farmers, less acreage, not harming the environment or animals, with more droughts, less water, less pesticides and fertilizer, and we will fail. very interesting book and a good read.

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