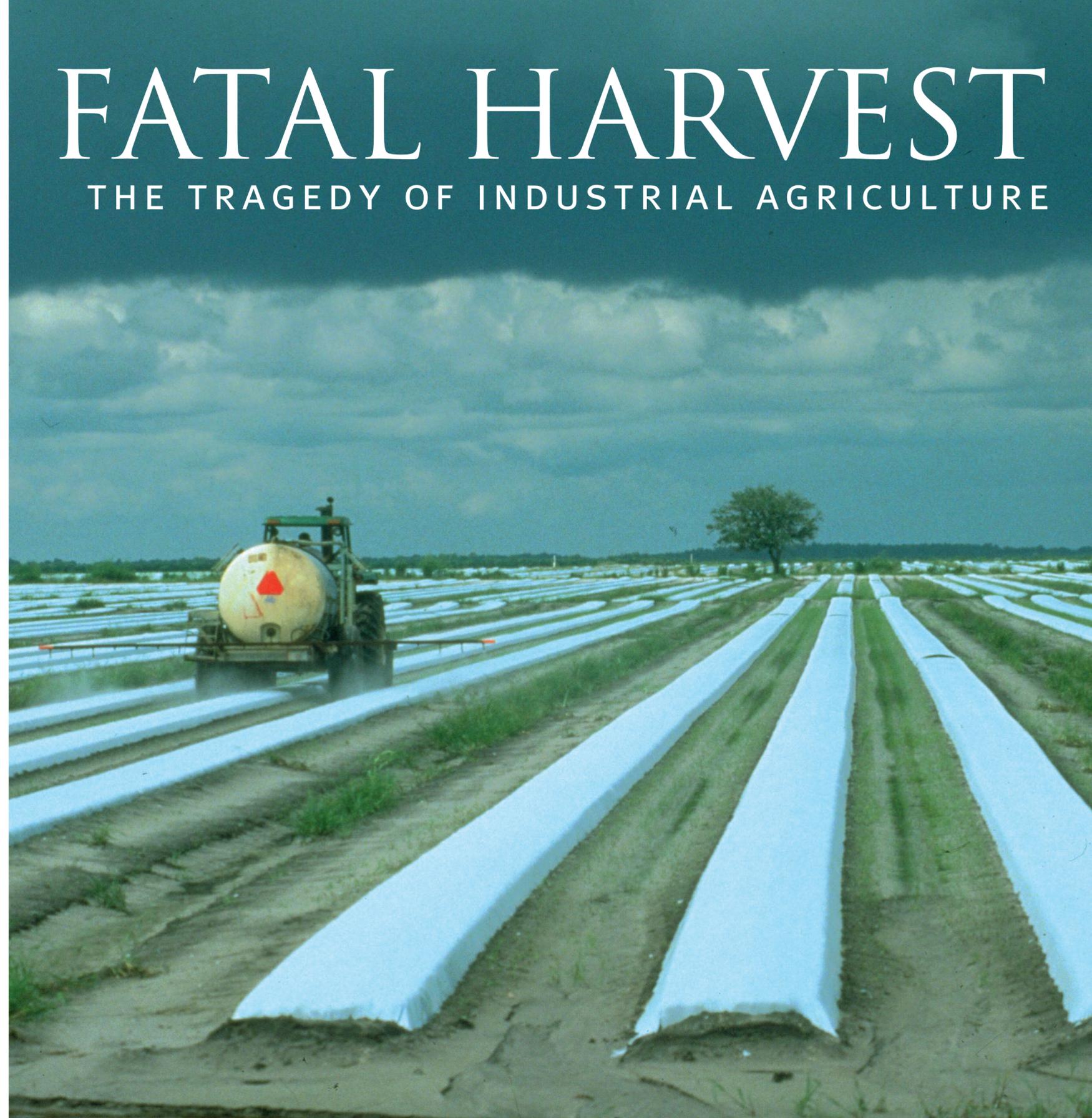


FATAL HARVEST

THE TRAGEDY OF INDUSTRIAL AGRICULTURE

These layouts are taken from the book “Fatal Harvest,” a 400 page critique of industrial agriculture. The book was four years in the making, with over 250 photos, many of which were taken specifically for this project.

I researched and directed the photography, and designed the layouts.



Part One

FARMING AS IF NATURE MATTERED

BREAKING THE INDUSTRIAL PARADIGM



THE WHOLE HORSE

The Preservation of the Agrarian Mind

WENDELL BERRY

WE CURRENTLY LIVE IN THE ECONOMY AND CULTURE *of the “one-night stand.”* Industrialism has provided us innumerable commodities, amusements, and distractions, but these offer us little satisfaction. Instead we suffer ever-increasing alienation from our families, our communities, and the natural world. There is another way to live and think: it’s called agrarianism. It is not so much a philosophy as a practice, an attitude, a loyalty, and a passion — all based in a close connection with the land. It results in a sound local economy in which producers and consumers are neighbors and in which nature herself becomes the standard for work and production.

Wendell Berry is considered one of America’s greatest living men of letters, having achieved national recognition as a poet, novelist, and writer of non-fiction. He lives on a farm in Port Royal, Kentucky, where he and his wife raise sheep and grow home produce. His has written several books on agriculture and related topics including, among others, The Unsettling of America: Culture and Agriculture, Home Economics, The Gift of Good Land, and Another Turn of the Crank.

This modern mind sees only half of the horse — that half which may become a dynamo, or an automobile, or any other horsepowered machine. If this mind had much respect for the full-dimensioned, grass-eating horse, it would never have invented the engine which represents only half of him. The religious mind, on the other hand, has this respect; it wants the whole horse, and it will be satisfied with nothing less.

I should say a religious mind that requires more than a half-religion.

— Allen Tate, “Remarks on the Southern Religion,” in *I’ll Take My Stand*

One of the primary results — and one of the primary needs — of industrialism is the separation of people and places and products from their histories. To the extent that we participate in the industrial economy, we do not know the histories of our families or of our habitats or of our meals. This is an economy, and in fact a culture, of the one-night stand. “I had a good time,” says the industrial lover, “but don’t ask me my last name.” Just so, the industrial eater says to the svelte industrial hog, “We’ll be together at breakfast. I don’t want to see you before then, and I won’t care to remember you afterwards.”

In this condition, we have many commodities, but little satisfaction, little sense of the sufficiency of anything. The scarcity of satisfaction makes of our many commodities, in fact, an infinite series of commodities, the new commodities invariably promising greater satisfaction than the older ones.



Don Poggensee



Part Two

CORPORATE LIES

BUSTING THE MYTHS OF INDUSTRIAL AGRICULTURE

SEVEN DEADLY MYTHS OF INDUSTRIAL AGRICULTURE



Jared Lawson

Industrial agriculture is devastating our land, water, and air, and is now threatening the sustainability of the biosphere. Its massive chemical and biological inputs cause widespread environmental havoc as well as human disease and death. Its monoculturing reduces the diversity of our plants and animals. Its habitat destruction endangers wildlife. Its factory farming practices cause untold animal suffering. Its centralized corporate ownership destroys farm communities around the world, leading to mass poverty and hunger. The industrial agriculture system is clearly unsustainable. It has truly become a fatal harvest.

However, despite these devastating impacts, the industrial paradigm in agriculture still gets a free ride from our media and policy makers. It is rare to hear questioning, much less a call for the overthrow, of this increasingly catastrophic food production system. This troubling quiescence can be attributed, in part, to the enormous success that agribusiness has had in utilizing the “big lie,” a technique familiar to all purveyors of propaganda. Corporate agriculture has flooded, and continues to inundate the public with self-serving myths about modern food production. For decades, the industry has effectively countered virtually every critique of industrial agriculture with the “big lie” strategy.

These agribusiness myths have become all too familiar. Most farmers, activists, and policy makers who question the industrial food paradigm know the litany of lies by heart: industrial agriculture is necessary to feed the world, to provide us with safe, nutritious, cheap food, to produce food more efficiently, to offer us more choices, and, of all things, to save the environment. Additionally, when confronted with the indisputable environmental and health impacts of industrial agriculture, the industry immediately points to technological advances, especially recent achievements in biotechnology, as the panacea that will solve all problems. These claims are broadcast far and wide by way of industry lobbying efforts, product promotions, and multimillion-dollar advertising campaigns, including television, newspaper, magazine, farm journal, and radio ads. Moreover, as the industry becomes more consolidated — with biotech companies owning the seed and chemical businesses and a handful of companies controlling a majority

of seeds and food brands — the strategies for promulgating these myths become ever more concerted and the messages ever more honed. Archer Daniels Midland is now known to us all as the “supermarket to the world,” while Monsanto offers us “Food, Health, Hope.”

These myths about industrial agriculture have been, and are being, repeated so often that they are taken as virtually unassailable. A central goal of this book is to visually and conceptually debunk the myths that have for too long been used to promote and defend industrial agriculture. This myth busting is an essential step in exposing the impacts of current agriculture practices and educating the public about the realities of the food they are consuming.

Many people in the sustainable agriculture community have been instrumental in publishing and disseminating factual information to counter these myths. In particular, Peter Rosset and Frances Moore Lappé of the Institute for Food and Development Policy/Food First have taken the lead on dispelling myths about hunger by publishing numerous reports and the latest edition of their groundbreaking book, *World Hunger: Twelve Myths*; Pat Mooney, Hope Shand, and others at the Rural Advancement Foundation International have played an essential role in cataloging the loss of genetic diversity in agriculture; David Pimentel has conducted unprecedented research on the true ecological costs of industrial agriculture; and Margaret Mellon and Jane Rissler of the Union of Concerned Scientists, as well as Miguel Altieri at the University of California, Berkeley, have been invaluable in dispelling many of the myths currently being spread by the biotech industry.

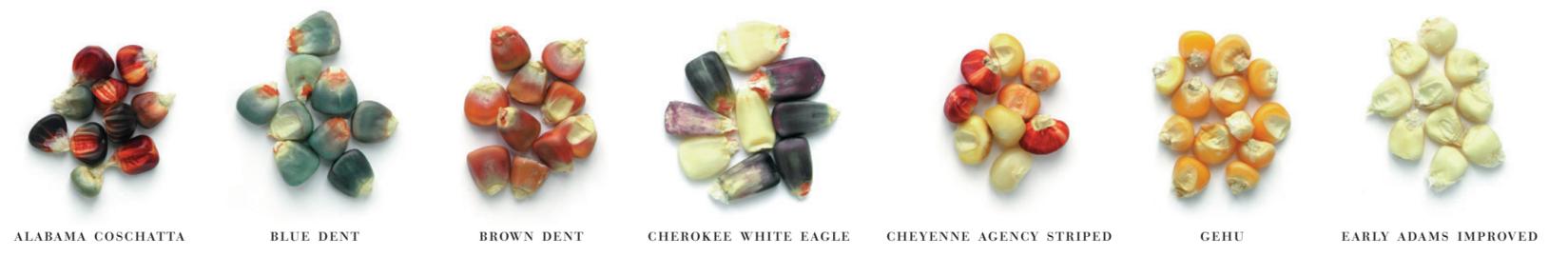
In this section, we identify the seven central myths of industrial agriculture, note their assumptions and dangers, and provide direct and clear refutations. This myth-busting section is specifically designed to provide consumers, activists, and policy makers with clear, compact, and concise answers to counter the industry’s well-funded misinformation campaigns about the benefits of industrial agriculture. We encourage you to utilize these seven short essays whenever you are faced with the “big lies” being used by corporate agribusiness to hide the true effects of their fatal harvest. ♦

Part Three

DIVERSITY, SCALE, AND BEAUTY

CONTRASTING AGRARIAN AND INDUSTRIAL AGRICULTURE





ALABAMA COSCHATTA BLUE DENT BROWN DENT CHEROKEE WHITE EAGLE CHEYENNE AGENCY STRIPED GEHU EARLY ADAMS IMPROVED



FALCONER DENT FAWN BROWN FORT TOTTEN GASPE CORWIN DAVIS COLORED GREEN DENT H & M YELLOW DENT HACKBERRY WHITE DENT



MOHAWK ROUND NOSE MOHAWK INDIAN WAMPUM MAC NARRAGANSETT WHITE WAMPUM NEAL'S PAYMASTER NORTHWESTERN DENT NORFOLK MARKET



HICKORY KING HOWARD CORY'S RED DENT INDIAN FINGERS JICARILLA WHITE KEMP YELLOW PROLIFIC LEGGS PROLIFIC WHITE DENT LENORE



OAXACAN GREEN ORANGE DENT PIAMONTE PIPESTONE PINK DENT PURPLE DENT PIGEON RAINBOW DENT



REID'S YELLOW RHODE ISLAND WHITE CAP SILVERMINE SHORTHORN DENT RUSTLER'S WHITE DENT TAMA FLINT TENNESSEE RED COB WAPSIE VALLEY YELLOW

CORN

The Illusion of Choice



STARLINK™

VARIETIES LOST FROM 1903 TO 1983: FIELD CORN, 90.8 PERCENT; SWEET CORN, 96.1 PERCENT

Over the centuries, a wide diversity of maize — with varying leaves, heights, colors, and kernels — was selected and protected to perform different purposes. Today, modern corn is little more than a sad remnant of its forebears. The vast majority of corn is grown for animal feed, ethanol, or sweeteners, and the majority of this corn — the most widely grown crop in the nation — comes from the same genetic stock. This lack of genetic diversity not only destroys the usefulness and aesthetic beauty of corn, it also makes the corn more vulnerable to disease. In 1970, the U.S. monocultured corn crop was decimated by a corn blight. Over \$1 billion of corn was lost, and yields were reduced by as much as 50 percent. Now, thanks to biotechnology, we may have even less choice and diversity. Corn has now been genetically engineered to withstand more herbicides and to contain its own bio-pesticide. And since corn is an open pollinated crop, there has been massive biological contamination of nonengineered seed by the gene-altered varieties. This includes contamination with the bioengineered StarLink™ variety, which was not approved for human use. This unapproved corn found its way into dozens of popular food products in supermarkets around the country, causing one of the largest food recalls in recent history.

THE INDUSTRIAL AND AGRARIAN VISIONS



Part Four

INDUSTRIAL AGRICULTURE

THE TOXIC TRAIL FROM SEED TO TABLE



TOXIC INPUTS

*Industrial Agriculture's
Killing Fields*



WATER

The Overtapped Resource



Zachary Griffin

FRESHWATER IS ARGUABLY OUR MOST PRECIOUS *and our most squandered natural resource. Nearly 40 percent of the world's food supply is produced using highly wasteful irrigation systems that are depleting nonrenewable groundwater, sterilizing the soil, and carrying carcinogens and other toxins into our drinking water. A quick glance at history reveals that civilizations dependent upon unsustainable irrigation practices, as is ours today, are ultimately doomed. If we are to save ourselves, it is vital that we choose sustainable means of food production and alternative water management strategies.*

Water, a simple compound of one oxygen atom and two hydrogen atoms, is fundamental to all life. Indeed, water and life are so intricately associated that we can scarcely conceive of a situation where the latter might arise without the former. The human body is 60 percent water, and water is essential to all of the body's physical processes, from the conduction of electrical nerve impulses to the maintenance of a steady body temperature. People can survive extended periods, up to several weeks, without eating food. But a person who fails to replenish water used by the body and lost to evaporation will die within a matter of days. Water, of course, plays similarly crucial roles in the life of plants and is therefore also integral to food production.

It is not surprising that water has been a determining factor in the development and history of human civilization and agriculture. The earliest agricultural societies were clustered in regions where rainfall was sufficient to produce adequate crops to feed their populations. Around the year 4000 B.C.E. all this changed, when members of an established farming society migrated into the Mesopotamian plain between the Tigris and Euphrates Rivers. There long, dry summers often ruined their crops before harvest time. Rather than move on to an area with a more hospitable climate, these farmers, known to us as the Sumerians, devised a means of diverting water from the Euphrates River to their fields — thereby developing the world's first irrigation system.

Irrigation greatly increased crop yields, and before long the Sumerians were producing food surpluses. This allowed some members of the society to devote themselves to pursuits other than subsistence agriculture. Archeological evidence indicates that the Sumerians became the first people to develop the wheel, the sailboat, and yokes that allowed them to plow their fields with the assistance of domesticated livestock. On top of these achievements, the Sumerians were the first civilization to employ writing.

A number of other irrigation-based societies arose in the centuries after the Sumerians — in Pakistan's Indus River valley, in China's Yellow River basin, and eventually in several different parts of North and South America, to name but a few. Almost all of these civilizations have two things in common. First, they rose to great heights of cultural and agricultural achievement. Second, with a single exception, they ultimately failed. History demonstrates that irrigation places great strain on the environment by depleting natural water sources and reducing the quality of the land. And, says director of the Global Water Policy Project, Sandra Postel, "The inherent environmental instability of irrigated agriculture can weaken seemingly advanced cultures, rendering them less able to cope with political and social disturbances."

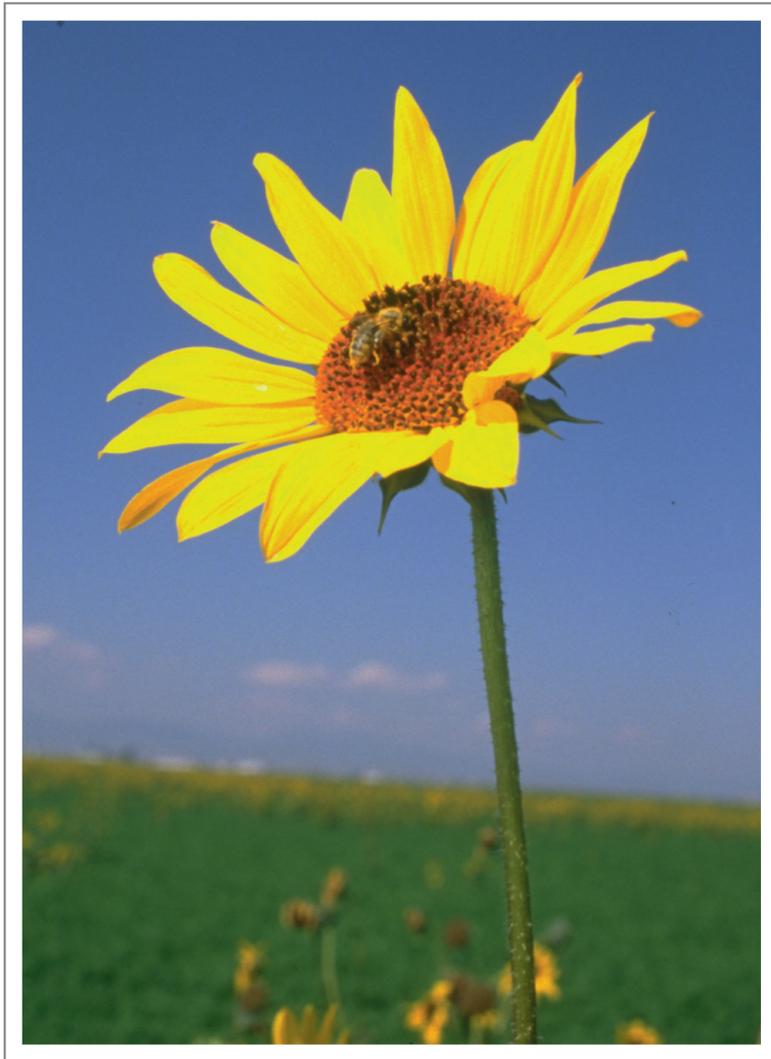
Today, approximately 40 percent of the world's food production comes from irrigated land. In the United States, some 21.4 million hectares of

An aerial photograph of a vast agricultural landscape. The foreground is dominated by large, rectangular fields in vibrant green and golden-yellow. A winding road or path cuts through the fields. In the distance, more fields are visible, along with some small structures and a few trees. The sky is a clear, pale blue.

Part Five

BIODIVERSITY AND WILDLIFE

THE OVERAPPROPRIATION OF
WILDLIFE HABITAT BY AGRICULTURE



Paul Bausper

OUR FORGOTTEN POLLINATORS

Protecting the Birds and the Bees

MRILL INGRAM, STEPHEN BUCHMANN, AND GARY NABHAN

POLLINATORS, INCLUDING BIRDS, BEES, AND ANIMALS, are critical to fruit and seed production. Without them, the ability to regenerate the biotic community would be lost. Yet worldwide, we are currently facing a pollination crisis, in which pollinators are disappearing at alarming rates as a result of habitat loss, pesticide poisoning, diseases, and pests. As a society, we must work together to confront this impending crisis and devise workable plans for protecting these pollinators that are essential to healthy functioning of wild and agricultural communities.

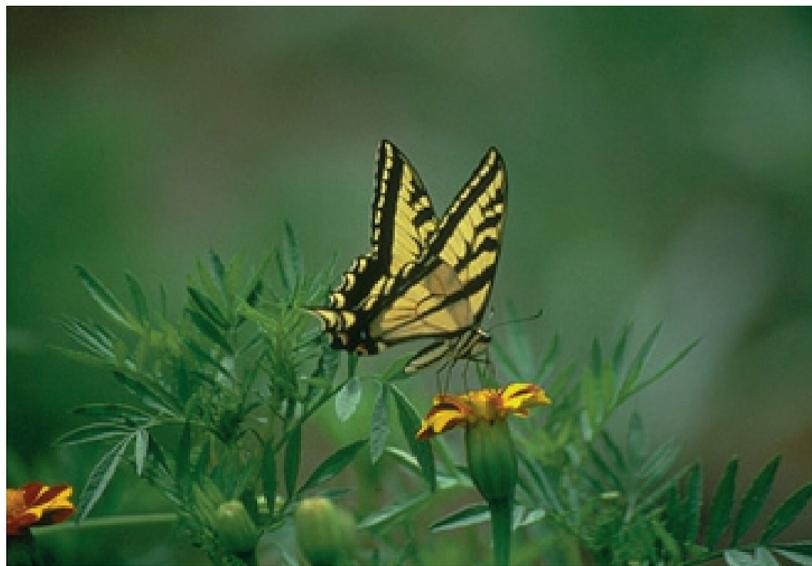
Mrill Ingram is currently working at the University of Wisconsin, Madison on a project exploring the potential of environmental management systems to improve environmental performance on farms. She is also a Ph.D. candidate in geography at the University of Arizona, and is focusing on alternative knowledge in U.S. agriculture. Her larger interests include community-based research and food security.

Stephen Buchmann, Ph.D. runs The Bee Works, LLC, out of Tucson, Arizona. He is coauthor of The Forgotten Pollinators (Island Press), and has written 3 books and 150 scholarly articles. Dr. Buchmann is active in global pollinator conservation efforts, and currently serves as a steering committee and founding member of the North American Pollinator Protection Campaign of the Coevolution Institute in San Francisco.

Gary Nabhan, Ph.D. is director of the Center for Sustainable Environments, Northern Arizona University, and cofounder of the Migratory Pollinators Project at the Arizona-Sonora Desert Museum. He is coauthor of The Forgotten Pollinators (Island Press), and has written 12 other books, including the forthcoming Coming Home to Eat: The Sensual Pleasures and Global Politics of Local Food (Norton, 2001).

Pollination — the transfer of pollen from one flower to another — is critical to fruit and seed production and is often provided by insects and other animals on the hunt for nectar, pollen, or other floral rewards. Insect pollination is a necessary step in the production of most fruits and vegetables that we eat and in the regeneration of many forage crops used by livestock. In fact, animals provide pollination services for over three-quarters of the staple crop plants that feed humankind and for 90 percent of all flowering plants in the world.

Recent surveys document that more than 30 genera of animals — consisting of hundreds of species of floral visitors — are required to pollinate the 100 or so crops that feed the world. Only 15 percent of these crops are serviced by domestic honeybees; at least 80 percent are pollinated by wild bees and other wildlife. Who are the pollinators? Our recent analyses of global inventories of biodiversity indicate that more than 100,000 different animal species — perhaps as many as 200,000 — play roles in pollinating the 250,000 kinds of wild flowering plants on this planet. In addition to countless bees (the world contains an estimated 40,000 species of bees), wasps, moths, butterflies, flies, beetles, and other invertebrates, perhaps 1,500 species of vertebrates such as birds and mammals serve as pollinators. Hummingbirds are the best-known wildlife pollinators in the Americas, but perching birds, flying foxes, fruit bats, opossums, lemurs, and even geckos function as effective pollinators elsewhere in the world.



Clockwise from upper left: Paul Bousquet; Paul Bousquet; Don Burgett; Don Burgett; Don Burgett; Don Burgett; Don Burgett; Don Burgett

We must recognize that pollinators are not providing a free service. Economic assessments of agricultural productivity should account for the “cost” of sustaining wild and managed pollinator populations. Investment and stewardship are required to protect and sustain them, and we are failing in this crucial task. According to the U.S. Department of Agriculture (USDA), there is an “impending pollination crisis,” in which both wild and managed pollinators are disappearing at alarming rates owing to habitat loss, pesticide poisoning, diseases, and pests. For the first time ever, local bee shortages in 1994 forced many California almond growers to import the bulk of the honeybees they needed from other states to ensure that their \$800-million-a-year crop would be pollinated. Recent monitoring of pumpkins in New York State determined that their blossoms were still laden with pollen five hours after they opened in the morning, long after they are typically stripped of all pollen by bees.

THE PLIGHT OF THE HONEYBEE

The decline in pollinators is vividly demonstrated in the current plight of the honeybee. The number of commercial U.S. bee colonies plummeted from 5.9 million in the late 1940s to 4.3 million in 1985 and 2.7 million in 1995. The loss of one-quarter of all managed honeybee colonies since 1990 signals one of the most severe declines U.S. agriculture has ever experienced in such a short period. There are fewer bee hives in the United States today than at any time in the last 50 years.

This decline has been brought on by the spread of diseases and parasitic mites, the invasion of Africanized honeybees, exposure to pesticides, climatic fluctuations, and the elimination of government subsidies for beekeepers. And an increasing number of places around the United States are reporting pollinator scarcity. Studies of cucurbit pollination in Arizona, Alabama, and Maine revealed that honeybees are in fact frequently absent from fields and that bumblebees and ground nesting squash bees are doing the majority of the pollination. In recent years, some wildland habitats have lost 70 percent of their feral honeybees, which make hives in rocky outcroppings and other cavities.

The arrival of Africanized bees in 99 U.S. counties since 1990 has forced some beekeepers to abandon apiaries in highly populated areas for fear of liability suits from neighbors. In addition, Africanized bees are among the carriers of parasitic mites infecting thousands of U.S. apiaries, killing off additional colonies.

To minimize further losses, honeybee colonies need better monitoring and management. Yet the USDA is currently considering closing bee research laboratories. Bee research must be strengthened and expanded to include research on management of pollinators other than honeybees. Increasingly,

other pollinators will have to be deployed to take up the slack created by the decline of honeybee colonies. Orchard growers and farmers need to ensure that neighboring wild habitats remain suitable for wild pollinators if they are to secure pollination services for their crops.

U.S. policy makers responsible for the recent cut in long-standing subsidies to beekeepers for honey production have further jeopardized the pollination services provided by honeybees, estimated to be 60 to 100 times more valuable than the market price of honey. Policy makers must begin devising programs that reward farmers for implementing practices to protect habitats of wild pollinators and provide incentives for those who wish to manage a wider variety of pollinators to assist farmers and orchard growers.

For such reasons, government agencies such as the USDA, SARH/Mexico, and Agriculture Canada should invest more resources in programs to manage a diversity of pollinators, to stabilize remaining apiaries, and to reward farmers for setting aside cropland and retaining hedgerows or windbreaks where wild pollinators nest and forage.

PESTICIDES AND POLLINATORS

As noted, a major contributor to the decline in honeybees and other pollinators is exposure to toxins. Whether managed or wild, pollinators need protection from pesticides and other chemicals that can poison them or impair their reproduction. These chemicals can also eliminate nectar sources for pollinators, destroy larval host plants for moths and butterflies, and deplete nesting materials for bees.

Few people realize the United States now applies twice the amount of pesticides as when Rachel Carson published *Silent Spring* in 1962. In Canada during the mid-1970s, aerial spraying of coniferous forest pests so reduced native bee populations that blueberry yields fell below the norm for four years.

A large number of insecticides used in agriculture are toxic to pollinating insects, but only honeybee colonies can be moved away from fields prior to spraying. Even so, it has been estimated that 20 percent of all losses of honeybee colonies involve some degree of pesticide exposure. According to a study on economic costs of pesticide use, honeybee poisonings result in an annual loss of \$13.3 million in the United States. Wild insect pollinators such as small solitary bees are even more vulnerable than honeybees to organophosphate pesticides that have largely replaced organochlorines like DDT. Field studies in U.S. deserts have found that pollinators remaining in small fragments of natural habitat are particularly susceptible to insecticide spraying on adjacent croplands.

Moreover, many crops that would benefit in quality and quantity from more thorough pollination are not sufficiently pollinated because of heavy pesticide



Part Six

A CRISIS OF CULTURE

SOCIAL AND ECONOMIC IMPACTS OF INDUSTRIAL AGRICULTURE

THE GROWING EPIDEMIC OF HUNGER IN A WORLD OF PLENTY

ANURADHA MITTAL

ACCORDING TO PROPONENTS OF INDUSTRIAL AGRICULTURE, *increased mechanization and the use of chemical inputs and biotechnology are the only hope of feeding our growing population. For decades, these proponents — and most governments — have failed to address the real cause of hunger. Hunger is caused not by food scarcity, but rather by unequal access to food. If governments really want to eradicate hunger, they must stop looking to industrial agriculture as the answer and begin promoting access to land, a livable wage, and sustainable farming alternatives.*

Anuradha Mittal, a native of India, is the codirector of the Institute for Food and Development Policy (also known as Food First), called one of the country's "most established food think tanks" by The New York Times. She served previously as the institute's policy director and coordinated "Economic Human Rights: The Time Has Come!" This national campaign to challenge increasing poverty, hunger, and economic insecurity in the United States organized several congressional hearings on the increase in hunger and poverty and the loss of family farms.

Ms. Mittal is the coeditor of America Needs Human Rights (Food First Books, 1999). Her articles and opinion pieces on trade and food security have appeared in numerous national and international newspapers and journals including The New York Times, The Los Angeles Times, Chicago Tribune, Washington Post, Bangkok Post, The Times of India, Economic and Political Weekly, Seattle Times, and The Nation.

Before coming to the United States, Ms. Mittal was with Society for Participatory Research in Asia (PRIA), a major development group in India. There she worked on issues of commons and people's access to and control over natural resources.

For thousands of years, small farmers everywhere grew food for their local communities. For those farmers, growing food meant planting diverse crops in healthy soil, recycling organic matter, and following nature's rainfall patterns. Good farming relied upon the farmer's accumulated knowledge of the local environment. Through long-standing practices and use of selected resistant varieties, farmers had achieved effective balances that prevented or reduced crop losses.

In the last few decades, however, industrial agriculture has severed the link between farming and the environment — ecological principles have been lost and ignored. Industrial agriculture has replaced farms with corporations, farmers with machines, mixed crops with monocultures, and has traded local food security for global commerce. This shift has led to massive environmental destruction and has torn apart the social fabric of rural communities. Not surprisingly, this human and ecological toll has ignited massive resistance to industrial agriculture.

WILL INDUSTRIAL AGRICULTURE FEED THE WORLD?

The industrial agriculture lobby claims that increased mechanization of agriculture and use of external inputs such as synthetic fertilizers and chemical pesticides provide the only hope of feeding the burgeoning population,



Frans Lanting/Alinari Pictures

Part Seven

ORGANIC AND BEYOND

REVISIONING AGRICULTURE FOR THE 21ST CENTURY



THE ETHICS OF EATING

Why Environmentalism Starts at the Breakfast Table

ALICE WATERS

JUST AS THERE IS AN ETHIC TO GROWING FOOD, *there is also an ethic to eating. As we continue to be more aware of what we are eating, we must also think about how we eat. The ritual of coming together to break bread was once the basis of community; yet with the onset of instant dinners and television, fewer and fewer meals are eaten together; more often than not we now consume our food alone and "on the run." This disrespects food and ourselves. Let us reclaim the family and community meal where values are taught and senses are heightened.*

Alice Waters, award-winning chef, author, and food activist, opened Chez Panisse restaurant in Berkeley, California, in 1971. The set menu that changes daily features only the highest-quality products, only when they are in season. Over the past three decades, the restaurant has developed a network of local farmers and ranchers whose dedication to sustainable agriculture assures a steady supply of pure and fresh ingredients. Ms. Waters is also actively involved in the development of the Edible Schoolyard, an edible garden and kitchen classroom at Berkeley's Martin Luther King, Jr. Middle School. Her publications include Chez Panisse Menu Cookbook, Chez Panisse Cooking, Chez Panisse Vegetables, and Chez Panisse Café Cookbook, among others.

Doug Coaling



The choices we make when we buy food are *serious* choices. More and more people understand this. They no longer see themselves as passive food “consumers.” Rather, they embrace their roles as “creators,” knowing that the foods they decide to grow or purchase will create a different future for themselves, their families, generations to come, and the natural world. As an obvious example, we all know that when people choose organic foods and avoid mass-produced and fast foods, they are voting for a sustainable future and against a network of supply and demand that destroys human health, local communities, traditional ways of life, and the environment.

But there is another ethical choice we make about food which is equally important. It’s not just what food we are purchasing, but also how we decide to eat our food. Just as there is an ethic to growing or obtaining food, there is also an ethic to eating.

Perhaps the first step in eating ethically is to eat together, with each other and our children. When you eat together, and eat a meal you cooked yourselves, you are involved with the process in a different way. You shelled the peas, you peeled the potatoes, and you want everyone to enjoy every last bite. These are the kind of meals we should be eating with our children. To paraphrase Wendell Berry, such meals honor the materials from which they are made; they honor the art by which they are done; they honor the people who make them and those who share them.