

The Future of Food: Sustainable Agriculture is not Optional¹

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The American food system is the envy of the world, so we have been told by its promoters. After decades of praise, however, the American food system is coming under increasing public scrutiny and criticism. Questions of food safety and diet-related health problems are but the most prominent on a growing list of public concerns. Best-selling books, such as *Fast Food Nation*¹ and *Omnivore's Dilemma*,² have helped awakened millions of Americans to the growing problems associated with the ways today's foods are produced, processed, and marketed. Video documentaries, such as *The Future of Food*,³ *Broken Limbs*,⁴ *Food Inc*⁵ and *Fresh; The Movie*,⁶ have provided gripping images of the negative impacts of an industrial food system on nature and society, even threatening the future of humanity. They all tell the same story of a food system that is lacking in ecological, social, and economic integrity.

Americans are led to believe our modern food system reflects the natural evolution of a free-market economy. The market gives consumers what they want and need. Today's American economy, however, bears little resemblance to the free-market economy described by Adam Smith's in *The Wealth of Nations*.⁷ The variety, quality, and quantity of today's foods do not reflect the market's ability to accommodate evolving consumers' tastes and preferences but instead the food corporations' ability to maximize the value of their stockholders' investments at the expense of consumers, producers, and society. Adam Smith's *invisible hand* has been mangled by the machinery of industrial economic evolution. Today's food markets are no longer able to transform individual greed into the larger common good.

Perhaps the most significant aspect of this evolution has been the growing ability of food corporations to affect, if not outright dictate, public policies related to both food and farming. Virtually every significant program of the United States Department of Agriculture (USDA) since the early 1960s, by one means or another, has promoted the industrialization of American agriculture. Even those programs designed to conserve and protect soil and water resources have been modified to accommodate the economic interests of corporate agriculture. Many have been completely perverted to subsidize natural resource exploitation.

For example, farm programs designed to preserve family farms during the Great Depression of the 1930s have evolved into government programs that now subsidize about 40% of the cost of crop insurance, which virtually guarantees profits by insuring both yields and prices. Such programs encourage farmers to specialize in large-scale, resource-exploiting production of specific crops or livestock commodities – corn, soybeans, hogs, cattle, and chickens. As a

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consequence, farmers have largely abandoned the resource-conserving, diversified crop and livestock operations needed to sustain the productivity of agriculture. The Environmental Quality Enhancement Program has diverted millions of dollars intended for environmental protection to subsidize construction of giant confinement animal feeding operations, or CAFOs. More than 50 years of experience with CAFOs have proven them to be consistent offenders of environmental regulation designed to control them, and they now represent a growing threat to public health.⁸ These are but two examples among many.

Many farm programs have been well-intended. They were designed to serve the public good by providing food security rather than to serve the private interests of either farmers or food corporations. Taxpayers are told such programs are necessary to make safe and healthful food affordable for everyone by improving the productivity and economic efficiency of American agriculture. The current industrialization and corporatization of American agriculture are the unintended consequences of well-intended choices, unfortunately left largely unexamined and unbridled by the supposed protectors of the public interest.

Many people relate industrialization to the migration of people from farms and rural communities to manufacturing jobs in urban areas. However, the shifts to manufacturing and urbanization are only symptoms of the industrial model or paradigm of specialization, standardization, and consolidation of control. Specialization increases efficiency through division of labor. Standardization is then necessary to facilitate coordination and routinization of specialized production processes. Standardization and routinization simplify production and management processes, allowing consolidation of control into large-scale, corporately-controlled business enterprises. This is the basic industrial processes by which “economies of scale” have been achieved in both manufacturing and agriculture.

I believe I understand the industrialization of American agriculture better than most people, including most economists, because I have literally lived through it. I grew up on a small dairy farm in southwest Missouri. My brother made his living and still lives on that small farm. When I left the farm for college in the late 1950s, American agriculture was still dominated by small family farms, like ours, that produced primarily for local and regional markets. Commercial fertilizers and pesticides, developed from World War II technologies, were just coming on the scene. Fossil energy was abundant and cheap; a “dollar's-worth” of gasoline meant “five-gallons.” However, farming was about to be transformed from a way of life into a bottom-line, industrial economic enterprise.

By the time I graduated from college in 1961 the industrialization of American agriculture was well under way. My college education had thoroughly indoctrinated me in the industrial paradigm of agriculture and I was committed to promoting it. I eagerly took a job with Wilson & Co. Inc., the fourth largest meat packer in the U.S. at the time. After three years, however, I had become disenchanted with the corporate world and decided to return to graduate school at the University of Missouri, a Land Grant University. The historic mission of Land Grant Universities, as well as for all government programs for agriculture, had been to provide food security for the nation. Agricultural policies had been designed to keep enough family farmers on the land, who were committed to caring for the land, to ensure Americans would always be well fed in times of peace as well as times of war.

By the mid-1960s, however, the public mandate for American agriculture had changed. The United States Department of Agriculture was no longer committed to saving family farms. Instead, government farm programs would make agriculture more efficient, by any means necessary, to make food cheaper for consumers. Cheaper food would make it possible for all Americans to afford enough safe and wholesome food to meet their needs for healthy, active lives. The goal was to achieve national food security through the marketplace, and agricultural industrialization seemed the most efficient means of achieving that worthy goal. When I left graduate school with a Ph.D. in Agricultural Economics in 1970, I was committed to doing my part to make agriculture more efficient.

During the first half of my 30-year academic career, I was a traditional, free-market, free-trade economist. I had been taught that a successful farm had to be managed as any other bottom-line business, if it was going to survive. The only economically sustainable farms would be those that became agribusinesses instead of ways of life. I told family farmers that their farms and families had to be treated as distinct and separate entities. Quality of life was something farmers bought with farm profits. What they bought was a personal matter that had no place in my vision of the economics of farming. I was teaching what I had been taught and what I thought was good for farmers as well as for society.

During the farm financial crisis of the 1980s, I was forced to rethink what I had been taught about the economics of agriculture. The more “progressive” farmers had borrowed heavily at record high interest rates to expand their operations during the export driven economic boom years of the 1970s. When the U.S. and global economies fell into economic recession during the 1980s, export markets collapsed, commodity prices fell, and many of these farmers were caught with large debts at high interest rates they simply couldn't repay. Stories of farm bankruptcies and foreclosures sprinkled the national network news programs. Occasional suicides by bankrupt farmers captured both local and national headlines. It wasn't just poorly managed farms that were failing. Those we economists had called *good* farmers were failing. Farming for the bottom line, for economic efficiency, had led to financial and personal failure for the *good* farmers.

I concluded there had to be a better way to farm and to live than the ways I had been promoting. Fortunately, the sustainable agriculture movement was emerging at about the same time as my professional crisis. The movement was born out of environmental concerns brought about by the widespread use of commercial pesticides and fertilizers. It was led by organic farmers and their customers who demanded their share of publicly funded research and educational programs. The farm financial crisis brought farmers with economic concerns into the movement. They wanted to reduce their reliance on agricultural chemicals, fossil fuels, and machinery, all of which had continued to rise in costs in spite of falling commodity prices. These two groups were joined by nonprofit organizations and other advocates for the rural communities that were being degraded by agricultural pollution and decimated by the financial failure of the farm families who had provided the socioeconomic foundation of many rural areas.

I spent the second half of my academic career as an unabashed advocate of sustainable agriculture. I wanted to help farmers who were committed to caring for their land and who cared about other people – the only sources of long-run economic viability. I came to understand that

the sustainable agriculture movement was but one aspect of the larger sustainable development movement. Both reflect a commitment to meeting the needs of the present without diminishing opportunities for the future. They reflect an understanding that everything of any use to us, including everything of economic value, is ultimately derived from the resources of nature by the way of society. Thus, a sustainable agriculture must be ecologically sound, socially responsible, and economically viable – the three cornerstones of sustainability. Sustainable farming is about farming for the “triple bottom line” – ecological, social, and economic.

During my 30-year academic career, I served on the faculties of four major Land Grant Universities: North Carolina State University, Oklahoma State University, University of Georgia, and University of Missouri. I eventually concluded that none of the large agricultural colleges were going to support sustainable agriculture. They were all committed to the industrial paradigm of agriculture – economically, politically, and philosophically – and they were not going to change. Virtually all have established token sustainable agriculture programs, but authentic sustainable agriculture represents a threat to industrial agriculture. Their goal is marginalize and neutralize the sustainable agriculture movement, not to support it.

I retired from the University of Missouri in early 2000, so I could continue to speak out and write about issues related to both agricultural and economic sustainability. Slowly over the years, I have come to the conclusion that the economic industrialization of agriculture has been an absolute failure. Admittedly, industrial agriculture succeeded in making food cheap, as is loudly and widely proclaimed by its promoters. Americans spend less than 10% of their disposable incomes on food, less than in any other nation. Each farmer feeds 50, 100, or 150 Americans, depending on who is counted as farmers. However, it is long past time to confront the truth about the “success story” of American agriculture. In truth: the cheap food strategy of the past 50-years has failed dismally, not only in terms of its high ecological and social costs, but even in its most fundamental mission of providing national food security.

A larger percentage of Americans are hungry today than were hungry during the 1960s, before the industrialization of agriculture. The latest USDA statistics, for 2010, places total “food insecurity” at 15% with more than 20% of American children living in food insecure homes.⁹ Without generous government programs, such as food stamps, the hunger statistics would be far more dire. This is not just a reflection of the recent recession. The only time significant progress has been made in food insecurity over the past 30 years was during the unsustainable economic boom of the 1990s. People are not hungry because food prices are too high. They are hungry because they are poor and because they don't know how to either produce or prepare their own food. The industrial food system doesn't address these problems, in fact makes them even worse.

Equally important, those who can afford to buy enough food to satisfy their hunger, too often end up buying foods that destroy their physical health. While their percentage of incomes spent for food has dropped by more than half since the 1950s, the cost of American health care has more than doubled.¹⁰ Health care costs currently claim more than 17-percent of the GDP, more than twice as much as the food sector.^{11 12} For decades, organic food advocates have been calling attention to health problems associated with the widespread use of agricultural chemicals,^{13,14} growth hormones and antibiotics,¹⁵ and more recently, genetically modified organisms or GMOs. The associated health risks include reproductive problems, various forms of

cancers, heart disease, attention deficit disorder, and a variety of food allergies. More recently, foods recalled for contamination with E-Coli O157:H7, Salmonella, and various other food contaminants have raised growing concerns for food safety. The tipping point of public concern, however, may well be the growing epidemic of obesity in America. More than two-thirds of adults and nearly one-third of American children and teens are obese or overweight.¹⁶ Since 1970, the number of obese adults has doubled, obese adolescents have tripled and obese children have quadrupled.¹⁷

Obesity is not simply a matter of personal inconvenience or embarrassment; it is closely linked to a whole host of diet related diseases, including diabetes, heart disease, hypertension, and several types of cancer. A 2010 report by the Robert Wood Johnson Foundation, *F As In Fat; How Obesity Threatens America's Future*, documents how the growing prevalence of obesity has continued unabated, in spite of a host of public and private programs mounted to address it.¹⁸ Obesity related illnesses are projected to claim about one-fifth of the money spent for health care in America by 2020 – erasing virtually all of the gains made in improving public health over the past several decades.¹⁹ If recent trends continue, total health care costs will claim more than one-third of total U.S. economic output by the year 2040. Americans simply cannot afford the high and growing costs of cheap food. Change is no longer an option; it is a necessity.

Perhaps the most compelling argument for change is the absolute dependence of the American food system on cheap fossil energy for fuels, fertilizers, mechanization, and transportation. The U.S. food system claims about 20% of all fossil energy used and requires about 10 calories of fossil energy for each calorie of food energy produced. About one-third of this total is used at the farm level. The food system contributes a similar share of environmental problems, as greenhouse gasses inevitably are released through the use of fossil energy. Farming also poses an added threat to global climate change through the release of methane, a powerful greenhouse gas, from livestock operations. Carbon dioxide is also released from soil organic matter by cultivation and by clearing of forests and grasslands for crop production.

The industrial era, including industrial agriculture, was made possible by an abundance of cheap fossil energy – first the old growth forests, then surface mining of coal, and for the past 100-years, by shallow reservoirs of oil and natural gas. But the old growth forests are gone, we are blowing the tops off mountains to get the remaining coal, the remaining oil is deep beneath the ocean floors, and we are fracturing and poisoning the crust of the earth to squeeze out the last natural gas. We are not out of fossil energy, at least not yet, but we are quickly running out of abundant and cheap energy. The remaining sources of affordable fossil energy, mostly coal, are major contributors to greenhouse gasses and other pollutants which are threatening the ability of the earth's natural ecosystems to support human life.

The only sustainable source of energy is solar energy. However, energy from all the sustainable sources combined – wind, water, solar panels, biofuels – will be less plentiful and far more costly than fossil energy. The days of cheap, abundant energy are over – period. Certainly, we can use energy more efficiently, but we simply cannot sustain the economic growth of the industrial era, and we can't feed the growing populations of future generations by relying on an industrial agriculture. Change is no longer an option; it is an absolute necessity.

Admittedly, change is a normal and usual part of life. The world is always changing. However, some changes are not normal and usual; some changes are truly revolutionary. In fact, every couple of hundred years throughout human history society has gone through great transformations. Such transitions result from changes in our understanding of how the world works and our place within it and eventually change virtually every aspect of life. I believe we are currently living such a time of change. I believe the changes we are experiencing now are at least as important as those of the Industrial Revolution of the late 1700s and perhaps as important as the beginning of science in the early 1600s. As a result, the American food system ultimately will change in ways that are unimaginable by most Americans today.

Today's great transformation is being driven by questions of sustainability. How can we meet the needs of the present without diminishing opportunities for the future? Since retiring from the University of Missouri more twelve years ago, I have had the privilege of speaking at 25-35 different venues a year, and most of those were conferences attended by people who in one way or another share my hopes that we can meet today's challenges of sustainability and can create a fundamentally better future for agriculture and for humanity – beyond sustainability.

People ask me if I am optimistic about prospects for achieving sustainability. My answer is that I am not necessarily optimistic but I am hopeful. Hope comes from the realization that something makes sense, regardless of how it turns out. Hope also comes with the knowledge that something is possible, even if it's not going to be quick and easy, or even certain to succeed. My hope is kept alive by my continuing involvement with the sustainable agriculture movement. The movement includes farmers who call themselves organic, ecological, biodynamic, holistic, practical, innovative, or just plain family farmers. They all share a common commitment to balancing the ecological, social, and economic aspects of farming to move toward sustainability. These thoughtful, caring farmers are proving a sustainable agriculture is possible, even though it most certainly will not be easily or quickly achieved.

The sustainable agriculture movement is not just about selecting a set of best management practices that minimize the negative ecological and social impacts of industrial agriculture. It is about creating a fundamental different paradigm for agriculture. It relies on nature's principles of holism, diversity, and interdependence to achieve productivity rather than the industrial strategies of specialization, standardization, and consolidation of control. It arises from a fundamentally different worldview: Farms and communities are treated as living organisms rather than inanimate mechanism. Eventually, every aspect of farming and food production will be transformed into a fundamentally different system, a sustainable food system.

Celebrity farmers, such as *Joel Salatin*²⁰ (*Polyface Farms, Inc.*) of Swope, VA and *Will Allen*²¹ (*Growing Power Inc.*) of Milwaukee, WI tend to get the most attention in the mass media. While celebrities farmers help gain public attention, even more important are the tens of thousands of other farmers who are finding ways to create a good life for themselves and their families by farming sustainably. At least eight “sustainable agriculture” conferences in the U.S. and Canada each draw more than 1,200 participants each year, with a few reaching 2,500 to 3,000. The larger conferences typically are organized by grass-roots organizations and the vast majority of those attending are farmers and their customers. Sustainable agriculture conferences drawing 500-700 are far from rare and conferences drawing 100-250 people per year are too

numerous to attempt to count, including conferences in virtually every state in the U.S. The size and numbers of such conferences is growing each year.

The local food movement is perhaps the most publicly visible aspect of the sustainable agricultural movement. Numbers of farmers markets and community supported agriculture organizations have been more than doubling every ten years since the early '90s.²² In a 2008 food industry study, sales of local foods were estimated to have grown from \$4 billion in 2002 to \$5 billion in 2007 and were projected to reach \$11 billion by 2011.²³ Organic food sales are still far larger than local sales, at almost \$30 billion.²⁴ Organics now account for more than 10% of the fruits and vegetables consumed in the United States. Organic, local, natural, and similarly labeled products probably make up only 7% to 10% of all foods sold today. However, various food industry studies indicate approximately one third of American consumers are willing to pay premium prices for healthful and nutritious foods that have ecological, social, and economic integrity.²⁵ These are hopeful signs for the future of food.

Sustainable agriculture is often labeled by critics as an elitist movement. They argue that lower-income people simply cannot afford to eat organic or locally grown foods. My first response is: "We now know that making food cheap can't solve the hunger problem; it's time to try something else." In addition, the actual cost of food amounts to less than 20 cents of each dollar spent for food. The rest goes for processing, packaging, transportation, advertising, and other things that make foods more convenient or convince us to buy it. This means that lower income consumers could easily afford to pay higher cost for actual food, if they were able to buy minimally-processed, unpackaged, unadvertised foods from local farmers rather than in convenience stores and fast-food restaurants. This means locally-grown foods would have to be accessible to low-income consumers. It also means low-income people would need to know which foods to select and how to prepare them. The industrial food system has created these problems; sustainable agriculture is at least a part of the solution.

Industrial agricultural advocates also claim organic and other sustainable farmers can't possibly feed a growing global population. My standard answer is that I don't know if sustainable agriculture can meet the needs of a growing global population, but I do know that we can't feed the world with agriculture that depends on fossil energy in a world that is running out of fossil energy. I freely admit that Americans of the future may well eat less meat and other calorie dense foods. For many people, this might be an improvement, rather than detriment, to their health and well-being. I then go on to point out that many organic and sustainable farmers have yields just as high and costs just as low as their conventional farming neighbors. The primary difference is that sustainable farming is more "management intensive" than industrial farming, meaning that will take more thoughtful, caring farmers to feed the world sustainably. So, what's wrong with having more thoughtful, caring farmers?

The typical next question is: "How can we convince more thoughtful, caring young people to choose farming as their profession? Today's young people are too lazy to farm." My response is many of today's young people aren't lazy; they just need something to inspire them. First, we need to create widespread public understanding that a sustainable agriculture will require more thoughtful, caring farmers. Only then will we have the widespread public support necessary to return agricultural policy to its legitimate public mandate to ensure food security through

agricultural sustainability. The first task will be to dismantle current programs that subsidize the extraction of natural and human resources through the continued industrialization of agriculture. This will free up public funds to support a range of public policies that will provide incentives for the best and brightest of the younger generations to choose a career in sustainable agriculture.

It might cost American food consumers a bit more for food produced sustainably, at least initially, because by one means or another we ultimately must pay the ecological and social costs, as well as the economic costs, of our food. However, food prices have likely risen more as a consequence of diverting about 40% of the U.S. corn crop to ethanol production than would result from a transition to sustainable agriculture. Furthermore, some of the most credible global food studies indicate that sustainable farming practices are in fact the best hope for hungry people in the poorest and most densely populated areas of the world.²⁶

The corporate defenders of the status quo are politically and economically powerful and will try to convince us that real change is impossible. However, one advantage of being old is that I can remember when things were different. I can remember when we had a very different food system. When I was teenager, most food in America was still locally grown. Construction on the interstate highway system had just begun and supermarkets and franchise restaurants were just beginning to catch on. By the 1960s, supermarket chains had replaced the local “mom and pop” grocers, by the 1970s, fast food franchises were “freeing housewives from their kitchens,” and by the 1990s industrial agribusinesses had replaced family farms as the nation's major food producers. During the early 2000s, the food system was transformed from national to global. All of this happened during my adult lifetime, in a period of little more than fifty years. Equally important, the change happened one consumer, one retailer, one farmer, and one voter at a time.

The transition from an industrial to a sustainable food system will not be quick or easy, but we are not at the mercy of the markets nor the corporations that currently control them. Just as public policies have been used to promote and perpetuate the industrialization of agriculture in the past, public policies can be changed to promote the transition to a sustainable agriculture in the future. The economy will not ensure food security but by working together we in society can. That's the basic purpose of government. Everyone has a fundamental human right to enough good food to meet their basic nutritional needs. We need only a public consensus of commitment to meet the needs of all in the present without diminishing opportunities for those of the future.

It seems quite logical that changes in the food system over the next fifty years will be at least as great as those of the last fifty. With the growing ecological, social, and economic challenges of today, changes in the future almost certainly will be in a direction very different from those of the past. The sustainable food movement is at least as advanced today as the industrial food economy was fifty years ago. There is every reason to expect the movement will continue until it becomes the new mainstream American food system – and the change will take place one consumer, one retailer, one farmer, and one voter at a time. That's the way change has always happened and always will – one person at a time. We can change the markets for food and we can change farm and food policies – one person at a time. Change is no longer optional; it is a necessity. The necessity for change creates an opportunity to build a new and better food system for the future – one person at a time.

End Notes

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