

Sustainable Agriculture is Growing; Right and by Natureⁱ

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I am honored to be asked back to speak at the annual conference of the Ohio Ecological Food and Farming Association (OEFFA), one of the oldest sustainable agriculture organizations in the U.S. – if not the oldest. The first sustainable agriculture conference I attended was Columbus, Ohio in September of 1988. The conference was sponsored by The Ohio State University, and I’m confident that OEFFA had a significant role in laying the groundwork for that conference. At that time, we talked of sustainable agriculture as a “quiet revolution” that ultimately would transform American agriculture. Admittedly, the changes since have not been as revolutionary as some of us had hoped, but the movement is still growing. And, it will continue growing as long as it grows “right”—meaning in harmony with nature.

I still believe the sustainable agriculture movement eventually will bring about revolutionary change. I think the change will be at least as transformational as when tractors replaced horses in the early 1900s and perhaps as important as the beginning of privately-owned family farms. Fifty years from now, the supermarkets and large “factory farms” of today may seem as outdated as the “mom-and-pop” grocery stores and horse-powered farms of the past seem today. When I was growing up in south Missouri in the 1940s and early 1950s, our family’s food system was essentially local. I would guess close to 90% of our food either came from our farm or was produced and processed within less than 50 miles from our home. There were local canneries, meat packers, and flour mills to supply grocery stores and restaurants with locally grown foods. And at least during the 1940s, most local farmers still farmed with horses.

However, this was a time when the industrial revolution was beginning to revolutionize farming and food production. Over the years, the local canneries, meat packers, and flour mills were consolidated into the large agribusiness corporations of today. By the 1960s, farms that relied on draft horses were few-and-far-between. Today, I doubt there are many communities in the U.S. who get more than 10% of their foods from local sources; the average is far less. Estimates of the average distance that food travels within the U.S. range from 1200 to 1700 miles between producer and consumer. More than 30% of U.S. farm income is derived from agricultural exports to other countries.¹ More than 15% of the food sold in the U.S. is imported, which includes more than 50% of fruits and 20% of vegetables.²

Now, I believe we are on the cusp of another food and farming revolution that will again fundamentally changes current systems of farming and food production. I believe the sustainable food movement ultimately will transform the American food system from *industrial/global* to *sustainable/local* – if it continues to grow in ways that are “right” by nature.

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“Organic farming” is most frequently identified with the sustainable agriculture movement – perhaps because the growth in sales of organic foods is the most visible and measurable symbol of its growth. The modern organic food movement began in the U.S. in the 1960s as a rejection of the industrialization of agriculture. However, organics didn’t gain widespread popularity until the sustainable agriculture movement emerged in the 1980s. Sales of organic foods grew at rate of 20%-plus per year from the early 1990s until the economic recession of 2008, doubling every three to four years. Growth rates have since stabilized at around 10% per year, reaching \$36 billion in organic sales in 2014. Organics currently account for only about 5% of total food sales in the U.S., but organic fruits and vegetables and organic dairy products claim more than 10% of their respective markets.³

As organic food sales grew, organics moved into mainstream retail markets and organic farms grew larger and more specialized. Organic consumers who didn’t trust the industrial food system to maintain the ecological and social integrity of organics began looking to local farmers for *sustainably* produced foods. Local foods soon replaced organic foods as the most *dynamic* sector of the food market. The local food movement is most often linked with farmers markets and CSAs. USDA statistics indicate that farmers markets in the U.S. increased from 1,755 to 8,144 between 1994 and 2013 – a four-fold increase.⁴ The USDA 2012 Census of Agriculture placed the number of farmers selling through CSAs at more than 12,000 and the total number of farmers selling directly to consumers or local retailers at nearly 50,000.⁵ According to industry estimates, local food sales have doubled in recent years, jumping from \$5 billion in 2008 to \$11.7 billion in 2014⁶ -- replacing organics as the *fastest-growing* sector of the food market.

A more recent and perhaps most important development in the local food movement has been the formation of multiple-farm networks of local farmers. The networks may be called local food alliances, cooperative, collaboratives, or food hubs. *Grown Locally*,⁷ *Idaho’s Bounty*,⁸ *Viroqua Food Coop*,⁹ *Good Natured Family Farms*¹⁰, and *the Oklahoma Food Cooperative*¹¹ are examples of successful food networks of which I am personally aware. These alliances range in size from a couple dozen to a couple hundred farmers. The *National Good Food Network* lists more than 300 “food hubs”¹² – although I cannot vouch for their success or authenticity. The local food movement is so decentralized and dispersed that it is impossible to accurately estimate the size or importance of the movement. Virtually everywhere I go, I discover new local foods initiatives.

The local food movement also is so diverse that it is difficult to distinguish between groups that are committed to ecological and social integrity and those who simply see an opportunity for profits. Food hubs are generally defined as organizations that allow farmers to aggregate their individual production to serve markets that are larger than they can serve alone. Admittedly, the future of the local food movement depends on being able to “scale up” to serve increasing numbers of consumers. However, if farmers compromise their ecological and social integrity in the process of scaling up, they will be little different from industrial farmers and will no longer be sustainable. In other words, if the local food movement is to be the path to agricultural sustainability, it must grow “right” – meaning it must grow with ecological and social integrity.

Many so-called experts see the organic and local food movements as aberrations – as niche markets created by an elitist “foodie fad” that will soon fade and revert to “business as usual.”

The tendency is to simply look at past trends and project them into the future as if they will continue forever. However, trends never continue indefinitely. At some point, all trends change course and move in fundamentally different directions. In fact, a few years back, a couple of scientists proposed a list of the top twenty "great ideas in science" in *Science* magazine, one of the most respected scientific journals in the world.¹³ They invited scientists from around the world to comment on the proposed list. Among the top twenty were such ideas as the laws of gravity, motion, and thermodynamics. The top twenty also included the idea: "Everything on the earth operates in cycles," including everything physical, biological, social, economic, – including farming and food production. Some scientists responding to the article suggested that things "tend" to cycle, but no one suggested removing "universal cycles" from the top-twenty list.¹⁴ So, we might logically conclude that organic and local food movements represent a natural reversal of the industrialization of agriculture; sustainable agriculture is "growing by nature."

I believe the pace of growth thus far is a reflection of the fact that sustainable agriculture is but one aspect of a far larger social movement that is transforming not just agriculture but the whole of society. I believe we are in the midst of a "great transformation" – at least as important as the Industrial Revolution of the late 1700s, perhaps as great as the beginning of science in the late 1600s. Today's great transformation in society as a whole, as in agriculture, is being driven by the basic question of sustainability: *How can we meet the needs of the present without diminishing opportunities for the future?* I believe this question will be the defining question of the 21st century – for agriculture, society, and for the whole of humanity.

Over the years, I have concluded that transformational changes don't take place unless three basic conditions are in place. First, people must conclude what they are doing is not meeting their needs and is not likely to do so in the future. Change always involves risks and uncertainties. Admittedly, some people are risks takers and like change. However, most people must have a compelling reason to make big changes in their lives. Second, people must have a reasonably clear idea or vision of something different that would meet their needs – or at least would work better than what they are doing now. They have to have something to "change to." And third, people must believe it would be *possible*, even if not quick and easy, for them to change from what they are doing now to what they need to do instead. They must have hope. Lacking any one of the three requisites, most people just keep on doing whatever they are doing.

The first and second requisites for revolutionary change in our food system appear to be already in place. American consumers are clearly losing confidence and trust in the American food system. For example, a 2015 *Fortune Magazine* article: "The war on big food," begins, "Major packaged-food companies lost \$4 billion in market share alone last year, as shoppers swerved to fresh and organic alternatives."¹⁵ The article identifies artificial colors and flavors, preservatives, pesticides, growth hormones, antibiotics, and genetically modified organisms among growing consumer concerns. All of these concerns are linked directly or indirectly to industrial food production, including industrial agriculture. The article explains how the giant food manufacturing and retailing corporations are trying to reposition their organizations to coopt the "fresh/organic" movement or at least to minimize their losses of market-share.

With respect to industrial agriculture, the "agricultural establishment is attempting to stem the tide of growing public concern by mounting a multimillion-dollar public relations campaign.

A stated purpose of the campaign is to “increase confidence and trust in today’s agriculture.”¹⁶ Funders and board members of the *U.S. Farmers and Ranchers Alliance*, include the American Farm Bureau Federation, John Deere, and several major commodity organizations. Monsanto and DuPont, corporate board members, have each pledged \$500,000 per year to a \$7 million annual budget. A study by *Friends of the Earth* documents a dozen similar “front groups” that have been spending more than \$25 million per year to defend industrial agriculture.¹⁷ The public relations campaign obviously is designed to obscure or gloss over the growing environmental and social concerns associated with today’s industrial agriculture. Corporations don’t spend millions of dollars on public relations unless they risk losing more millions by failing to do so.

The PR campaign also focuses on the need to “feed the world,” perhaps to obscure the fact that industrial agriculture has failed to provide *enough good food* for people in the U.S. More people in the U.S. are classified as “food insecure” than in the 1960s. More than 15% of all Americans and 20% of our children live in food-insecure homes.¹⁸ In addition, our healthcare system is burdened with an epidemic of diet related illnesses, such as obesity, diabetes, hypertension, heart disease, and a variety of cancers. Furthermore, U.S. food exports are not feeding the hungry people of the world but the increasingly affluent classes in countries such as China and India. Agricultural industrialization is no longer about producing food for hungry people, it is about producing profits for corporate investors. Our industrial food system isn’t working and will not work in the future. We have the first requisite for fundamental change.

The second requisite for change is apparent in the growing popularity of local foods. The local food movement not only represents a rejection of the industrial food system but also is creating a vision of a fundamentally better food system for the future. Organic obviously is a more meaningful label or descriptor than local because all industrial foods are local to someone somewhere. However, large industrial farmers, meaning commodity producers, know they can’t sell all, or even a significant part, of their total production locally. Commodity producers must sell to industrial processors and distributors that are too large to rely on local markets. Every farmer, processor, or retailer is local to someone, somewhere; but large industrial organizations are inherently dependent on non-local markets. Industrial producers simply cannot compete in diverse, dispersed, decentralized, *local* community-based food systems.

The most frequently mentioned motivations for buying locally grown or produced foods include freshness, flavor, and nutrition. People have learned that shipped-in foods generally are not as fresh and flavorful, and are probably not as nutritious, as fresh-picked, locally-grown foods at farmers markets, CSAs, or direct from local farms. Many people also consider local foods to be safer because they are more likely to be produced organically, or at least without pesticides or GMOs, or in the case of meat, milk, or eggs, without hormones or antibiotic. Most farmers understand the concerns of people who buy local foods and attempt to meet needs that are not being met by the industrial food system.

In return, people who buy local foods often mention their desire to support local farmers and to help build stronger local economies and communities. Estimates based on comparison of local and industrial food production in general indicate that foods grown for local markets contribute about four-times as many dollars to local economies as commodities grown for industrial food production. However, the popularity of local foods cannot be reduced to economics. People tend

to trust “their local farmers” to not only produce “good food” but also to be good neighbors, good community members, and good stewards of the land. Some experts may question the importance of social, ecological, and *unselfish* economic motives for buying local. However, the fact that local foods emerged in response to the industrialization of organics suggests otherwise. Many Americans are trying to restore trust and confidence in “their food system” by “buying local.” As a result, farmers motivated primarily by profits or economics simply do not have the “right” motives to be successful or sustainable in local markets.

I can envision a time when every community has its own local, community-based food system. Farmers would meet the needs of their local customers through personally-connected transactions made through a local food network. I think it is quite possible that food systems of the future will largely bypass corporate food processors, franchised restaurants, and supermarkets. Internet sales already are the fastest growing segment of retailing, with products ordered on the Internet delivered directly to our doors. It would seem to make far more sense for our foods to be produced and processed locally and delivered directly to our doors rather than us making multiple trips to supermarkets or even farmers markets. Periodic face-to-face contacts at farmers markets, on-farm sales, regular farm visits, or local food festivals would serve to punctuate the less-personal Internet transactions. The primary objective of community-based food systems would be assurance of food quality and integrity rooted in shared social and ethical values – a shared sense of “rightness” – sustained by a sense of personal connectedness.

The final requisite for change, meaning the hope for realizing a positive vision for the future, lies in maintaining the integrity or “rightness” of the sustainable agriculture movement. The industrial agriculture movement was well intended, but the movement lost its sense of purpose and, without purpose, it lost its integrity. It began with a worthy mission of reducing the drudgery in farming, alleviating rural poverty, and providing domestic food security. The vision that motivated the movement was one of productive farms, prosperous rural communities, and society in which everyone had enough food to support healthy, active lifestyles. It was a noble experiment, I spent much of my professional career as a part of it, but it failed. It failed because the movement became preoccupied with the industrial process and lost sight of its humanitarian purpose. Humanity cannot afford a similar mistake by the sustainable agriculture movement.

Unfortunately, the roots of today’s sustainability movement often reach no deeper than the three-Rs of reduce, reuse, and recycle – in agriculture and elsewhere. Sustainable practices or processes typically are deemed acceptable only if they also are more profitable and alternatives. “Green technologies” are hyped as a means of protecting the planet, while creating jobs and sustaining economic growth. Most people seem to believe if we simply use energy and other non-renewable resources more efficiently and substitute renewable energy for fossil energy, we can continue with “business as usual” and live pretty much as we live today.

Sustainable farming, likewise, is often defined in terms of “best management practices” rather than ethical principles. Farmers who reduce tillage to limit soil erosion, use cover crops to reduce pollution, use crop rotations and organic fertilizers to replace synthetic pesticides and fertilizers, or put solar panels on their barns are pointed to as examples of sustainable farming. Such practices often are profitable – particularly with the aid of government subsidies.

Ecological and social integrity are treated as academic abstractions that threaten unnecessary regulation or government intrusions into the “business of farming.”

As Pope Francis observes in his Encyclical *Laudato Si, for Care of our Common Home*, “we can note the rise of a false or superficial ecology which bolsters complacency and a cheerful recklessness. Such evasiveness serves as a license to carrying on with our present lifestyles and models of production and consumption.”¹⁹ I would add, “superficial” sustainability today is “bolstering complacency and cheerful recklessness” in American agriculture and is being used as a “license” for blatantly unsustainable farming.

I believe the sustainability and growth of the sustainable agriculture movement depends on farmers who consider farming to be a “calling” or life’s purpose, rather than a job or occupation – who are guided by purpose rather than practices or processes. Making money certainly is an essential means of sustaining a farming operation, but there are many easier ways to make money than farming. More important, we now know that farming for the economic bottom line hasn’t met even the basic food needs of many, if not most, people of current generations and it most certainly is not leaving equal or better opportunities for those of future generation.

As a guide to sustainable living and working, including sustainable farming, I have proposed an Ethic of Sustainability: *A thing is right when it tends to enhance the quality and integrity of both human and non-human life on earth by honoring the unique responsibilities and rewards of humans as members and caretakers of the earth’s integral community. A thing is wrong when it tends otherwise.*²⁰

First, this ethic of sustainability goes beyond the current shallow approaches to sustainable procedures and practices. Meeting the needs of “all” of the present without diminishing opportunities for those of the future is ultimately an ethical or moral commitment. It simply applies the *Golden Rule* within and across current and future generations. With respect to farming, the ethic states that some things farmers might do are “right” and others are “wrong”. Sustainable farmers must do the “right” things.

Second, the ethic of sustainability reflects an “integral worldview.” All life, including human life, is integrally interconnected, and all living things are integrally connected with all non-living things on earth.²¹ Thus, human well-being is critically interdependent with the well-being of all other living and non-living things of nature. The ecological, social, and economic dimension of human well-being are also inseparable. In farming, the failure of industrial agriculture to provide food security or rural economic prosperity is inseparable from its failure to protect the natural environment. The basic food needs of all will be met only when we accept food security or sovereignty as a basic “human right,” not something to be left to the indifference of markets or the vagaries of charity.

Third, the ethic of sustainability focuses on the quality and integrity of *life* – both human and non-human life on earth. Living things are the only possible means of sequestering the energy necessary to sustaining human life on earth. Our food, our clothes, our houses, and our cars all require energy to make and energy to use. Everything of any use to us ultimately comes from the earth or nature – air, water, soil, minerals. However, it’s the earth’s *energy* that makes

the other elements of nature useful to humans. According to a basic law of physics, the law of entropy, whenever energy is used to do anything useful, some of its usefulness inevitably is lost. Only *living things* have the capacity to use solar energy to offset the tendency toward entropy by renewing and restoring, the usefulness of nature. So humanity, and the agriculture that sustains humanity, ultimately must be sustained “by nature.” The emphasis on life also is important because farmers can’t see the loss of useful energy on their farms, but they can see the diminished quality of biological life in their soils, in their crops and livestock, and in the lives of the people who farm and live in rural communities. Sustainable farming must enhance life.

Finally, the ethic explains why sustainable farming is a “calling” or purpose rather than just an occupation. As Pope Francis states it: “The biblical texts are to be read in their context, recognizing that they tell us to ‘till and keep’ the garden of the world (Gen 2:15). ‘Tilling’ refers to cultivating, ploughing or working, while ‘keeping’ means caring, protecting, overseeing and preserving... Each community can take from the bounty of the earth whatever it needs for subsistence, but it also has the duty to protect the earth and to ensure its fruitfulness for coming generations.”²² The purpose of sustainable farming is to enhance the quality and integrity of life on earth, not just because it is more profitable in the *long run*, or a better way of life even in the short run, but because it is morally and ethically “right.” It respects life and honors the integrity of the whole of nature – including human nature.

I am hopeful, if not optimistic, about the continued growth in the sustainable agriculture movement because of the character of today’s young farmers. I meet these young people, including many young families, at sustainable agriculture conferences, such as the OEFFA conference, all across the country. Virtually every major sustainable agriculture organization now has an active and growing beginning farmer or young farmer program. There was a time a while back when there was great concern regarding the future of the movement because of the age of the farmers – many of which began farming for sustainability back in the 1960s. There was a growing sense that perhaps the sustainable farming was too difficult, that the work was too hard, and the economic rewards were too small to attract new farmers. There seemed to be far better opportunities elsewhere.

Today, however, sustainable agriculture conferences are characterized by a sense of hopefulness, if not outright optimism. The young farmers, and “wan-a-be” farmers, who attend these conferences tend to be intelligent, informed, often well-educated young people who could easily “find a job” almost anywhere. National organizations, such as the *National Young Farmers Coalition*²³ and the *Green Horns*²⁴ allow young farmers to share their experiences, insights, and inspirations with others from all parts of the country. They don’t soft-sell farming as an easy life. Most already have experienced the challenges of hard work associated with being caretakers of the “earth’s integral community.” However, they also know the rewards that come with the responsibilities. They aren’t looking for a job, they are responding to a “calling.” They are seeking a life guided by purpose rather than an occupation guided by profits.

We can all learn from and be inspired by the examples of these new farmers. As Pope Francis puts it: “We are led inexorably to ask: What is the purpose of our life in this world? Why are we here? What is the goal of our work and all our efforts? What need does

the earth have of us? It is no longer enough, then, simply to state that we should be concerned for future generations. We need to see that what is at stake is our own dignity.”²⁵ For these young farmers, the rewards are far more than just having a job or making a living. The rewards are a sense of dignity, self-respect, and self-worth – a knowledge that they are fulfilling their purpose by contributing to the *greater good*. These are the essentials of human well-being or happiness.

Those who are truly called to be farmers will find a way to make a living farming sustainably. It simply wouldn't make sense for us to be given a purpose that is beyond our inherent abilities. We obviously aren't all meant to be farmers, but some most certainly are. The rest of us need to support those who are, through our encouragement, our food purchases, and our public policy choices. The future of agriculture, food production, and humanity depend on those who answer a calling to farm “right, by nature.”

End Notes:

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- ¹ American Farm Bureau Federation, “The Voice of Agriculture,” Fast Farm Facts, <http://www.fb.org/newsroom/fastfacts/> .
- ² Margaret A. Hamburg, Food Safety Modernization Act: Putting the Focus on Prevention, Food Safety.gov, <http://www.foodsafety.gov/news/fsma.html> .
- ³ Jeff Gelski U.S. organic food sales rise 11% in 2014, *Food Business News*, 4/15/2015, http://www.foodbusinessnews.net/articles/news_home/Consumer_Trends/2015/04/US_organic_food_sales_rise_11.aspx?ID=%7B0C1920D3-1822-4467-9FF0-F1EE00E53F54%7D&cck=1
- ⁴ USDA Agricultural Marketing Service, “Farmers Markets and Local Food Marketing,” <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateS&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth> .
- ⁵ U.S. Department of Agriculture, Census of Agriculture, 2012, Table 43, Selected Practices, 2012, http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_043_043.pdf .
- ⁶ Tom Vilsack, USDA Blog: “Tapping into the potential for economic potential for local foods through local foods and local places,” July 1, 2015. <http://blogs.usda.gov/2015/07/01/tapping-into-the-economic-potential-of-local-food-through-local-foods-local-places/#sthash.ZBUCi7BE.dpuf>
- ⁷ Visit the *Grown Locally* website at <http://www.grownlocally.com> .
- ⁸ Visit the *Idaho’s Bounty* website at <http://www.idahosbounty.org/> .
- ⁹ Visit Viroqua Food Coop website at <http://viroquafood.coop/> .
- ¹⁰ Visit Good Natured Family Farms website at <http://www.goodnaturedfamilyfarms.com/>
- ¹¹ Visit the *Oklahoma Food Cooperative* website at <http://www.oklahomafood.coop/> , list of other cooperatives: <http://www.oklahomafood.coop/Display.aspx?cn=otherstates> .
- ¹² National Good Food Network, “US Food Hubs, Full List,” <http://www.ngfn.org/resources/food-hubs> .
- ¹³ Robert Pool. "Science Literacy: The Enemy is Us," *Science*, American Academy of Science, March 15, 251:4991, 1991, p. 267.
- ¹⁴ Elizabeth Culotta, "Science's 20 greatest hits take their lumps," *Science*, American Academy of Science, March 15, 251:4999, 1991, p. 1308.
- ¹⁵ Beth Kowitt, “Special Report: The war on big food,” *Fortune*, May 21, 2015. Para 1, <http://fortune.com/2015/05/21/the-war-on-big-food/>
- ¹⁶ Food Dialogues, “About USFRA,” <http://www.fooddialogues.com> .
- ¹⁷ Kari Hamerschlag and Anna Lappé, “Spinning Food,” Friends of the Earth, <http://www.foe.org/projects/food-and-technology/good-food-healthy-planet/spinning-food#sthash.8Xhj3lqt.dpuf> .
- ¹⁸ USDA, “Household Food Security in the U.S.,” ERS, Economic Research Report No 125, Sept. 2011. <http://www.ers.usda.gov/Publications/ERR125/ERR125.pdf> .
- ¹⁹ Francis “Encyclical Letter *Laudato Si’* Of The Holy Father Francis On Care For Our Common Home”. . (2015, May 24). Retrieved from http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html , para. 59.
- ²⁰ John Ikerd, “Toward an Ethic of Sustainability,” *Journal of Agriculture, Food Systems, and Community Development*, forthcoming column, 2016, <http://www.agdevjournal.com/columnists.html> .
- ²¹ For a deeper discussion of worldview and sustainability, see John Ikerd, Lonnie Gamble, and Travis Cox, “Deep Sustainability: The Essentials,” 2015 <https://sites.google.com/site/sustainabilitydeep/>.
- ²² Francis, *Laudato Si*, para. 67.
- ²³ *National Young Farmers Coalition*, <http://www.youngfarmers.org/> .
- ²⁴ *Greenhorns*, <http://www.thegreenhorns.net/> .
- ²⁵ Francis, *Laudato Si*, para. 160.