

The Economics of Sustainable Farmingⁱ

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For decades, advocates of sustainability fought to bring questions of sustainable agriculture to public attention. They have succeeded. In fact, sustainability has become so popular that it risks becoming just another meaningless buzzword. Organizations ranging the political spectrum from Monsanto to the Sierra Club have sustainability initiatives and each seems to have its own definition of sustainable agriculture. However, there is no longer any real disagreement among those who advocate *authentic* sustainability. A sustainable agriculture must be able to meet the needs of the present without diminishing opportunities for the future. It must be capable of maintaining its productivity and value to society indefinitely – forever.

A sustainable farm must maintain the productivity of the land. It must be ecologically sound. A sustainable farm must also meet the needs of society, not just consumers but also farmers, rural residents, and citizens of civil society. It must be socially responsible. Finally, a sustainable farm must meet the individual economic needs of farmers, farm families, and farm workers. It must be economically viable. All economic value ultimately is derived from nature and society – from land and people. A farm that depletes the productive capacity of its natural and human resources is not economically viable. A farm that is not economically viable cannot maintain the productivity of its natural and human resources. Ecological, social, and economic integrity; each of the three is necessary but only *all three together*, in harmony and balance, are sustainable.

Farms that focus solely, or even primarily, on the economic bottom line are not sustainable. Economic value is inherently individualistic in nature. Economics places no value on relationships, unless something of individual economic value is expected in return. It makes no economic sense to produce things for people who have nothing of economic value to offer in return. In addition, it makes no economic sense to do anything solely for the good of society or to invest in anything if the rewards are expected to be realized after the investor is dead. Since life is inherently uncertain, economics places a premium on the present relative to the future. That's why people are willing to pay interest on borrowed money and demand interest on loaned money. At an interest rate of 7%, a dollar ten years from now is only worth fifty-cents today, because fifty-cents invested at 7% compound interest will be worth a dollar ten years from now.

As a result, the planning horizons of economic organizations are far too short to justify the kinds of investments in society and nature required for economic sustainability. Agribusinesses, including farm businesses, are economic organizations in that they give priority to economic value over social or ethical values. They focus on the economic bottom line, which means they are managed to maximize short-run economic returns rather than long-run ecologic, social, and

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economic integrity. Managers of agribusinesses may care deeply about the impacts of their operations on the land and on their community; but, many feel they are forced to minimize their economic costs to compete and survive. There may well be opportunities for profits that do not compromise sustainability. However, it's ultimately less costly and more profitable to extract natural resource and to exploit human resources than to make the long-run investments necessary to maintain their productivity. Most of the returns from such investments will accrue to someone else. A farm that is managed as an agribusiness quite simply is not sustainable.

Most business organizations attempting to manage for sustainability today, including farm businesses, are focusing on profitable opportunities for improving the efficiency with which they use non-renewable resources. Many such farmers are trying to reduce soil erosion and pollution of air and water with agrochemicals and animal wastes. They focus on increased efficiency in their use of fossil fuels, fertilizers, pesticides, and other non-renewable inputs. In general, these things can be more profitable as well as more ecologically responsible. While such things are *necessary* for sustainability, they are not sufficient. These farmers are only slowing the degradation of the natural resources that ultimately must support their productivity. If you are going in the wrong direction and merely slow down, you are still going in the wrong direction.

The insufficiency of efficiency is made apparent by the fact that sustainability ultimately is a matter of energy. Everything that is of use to us – our cars, houses, clothes, as well as our food – requires energy to make, energy to use. In fact, all things of economic value are simply concentrated forms of energy. All useful human activities – working, managing, thinking, – also require energy. In addition, humans are capable of being economically “useful” only after they have been nurtured, socialized, and educated, all of which require energy.

According to the laws of thermodynamics, energy can neither be created nor destroyed. However, each time energy is used to do anything useful, some of its usefulness is lost. Whenever energy is used to do something useful, which physicists call *work*, it inevitably changes in form. Specifically, it changes from more-concentrated, more-organized forms to less-concentrated, less-organized forms, as when gasoline explodes in the engine of a car. The energy isn't destroyed by use. But each time energy is used and reused, it becomes less concentrated, less organized, and thus less useful. This is the essence of the physical law of entropy.

Waste is simply energy that we don't use – perhaps don't know how to use. Pollution is negative energy in that it requires energy to mitigate its negative impacts or degrades the ability of nature to sequester solar energy. Improving the efficiency of energy use – including reducing wastes and pollution – allows farmers to get more usefulness or productivity from a given quantity of resources. That's why such things can be profitable. However, increasing efficiency cannot prevent the inevitable loss of energy to entropy. Farmers who are preoccupied with efficiency as a means of achieving sustainability are simply slowing the speed by which they are going in the wrong direction.

Other business organizations, including some farm businesses, have advanced their thinking beyond resource efficiency; they are substituting renewable for non-renewable resources. Solar energy is the only truly *sustainable* source of energy available to offset the inevitable loss of usefulness to entropy. Farmers who farm organically, use crop rotations to maintain soil

productivity, or rely on grazing systems for livestock production, for example, are substituting renewable solar energy for non-renewable fossil energy, which may or may not be more profitable. Again, while a shift from fossil energy to solar energy is necessary for sustainability, it is not sufficient.

There are no economic incentives to meet the food needs of people who lack the ability to pay the potentially higher economic costs of producing food with solar energy. The cheap food policies of the past fifty-years, including subsidies for industrial agriculture, have failed to reduce the prevalence of food insecurity or hunger in American. Economic value is determined by scarcity, not by necessity. Some basic necessities of life, such as air, have no economic value. Air is not scarce, at least as long as there is enough for everyone to breathe all they want. Scarcity means there is not enough of something for everyone to have all they want; so someone has to get by with less than they want, and possibly less than they need. The people who must go without food or settle for cheap, unhealthful foods are the poor.

Economic value is determined by people competing for scarce products in the marketplace, specifically by people who are both willing and able to pay the market prices for the things offered for sale. People of future generations are obviously incapable of competing in today's markets and thus can't vote with their dollars to encourage a solar powered economy to meet their needs. A solar-powered agriculture obviously would not deplete its primary source of energy. However, simply shifting to renewable energy does not address the challenges of food equity or economic security, either within or among generations. The substitution of solar energy for fossil energy will be *necessary*, but even a solar-powered agriculture will not *sufficient* to ensure agricultural sustainability.

Rather than focusing on the economic bottom line, sustainable farmers will have to focus on the triple bottom line – the ecological, social, and economic bottom line. Society is a part of nature and the economy is a part of society. Economies that fail to invest in continual regeneration and renewal of the productivity of nature and society are not sustainable. Farms that fail to regenerate and renew the long run productivity of the natural and human resources that must support them are not economically viable and thus are not sustainable.

Triple-bottom-line management has become a popular buzz word in the business world. However, a triple-bottom-line that gives priority to the economic bottom line will not have the capacities for *renewal* and *regeneration* necessary for economic sustainability. Furthermore, nature and society, as living systems, are always changing and evolving. Ever changing government policies, market opportunities, production technologies, and public expectations are all consequences of such changes. Meeting the challenges of sustainability ultimately will require a radical rethinking and redesign of farming and of the entire food system. A sustainable agriculture must be *responsive* as well as *renewing* and *regenerating*.

That said, farms obviously must survive the short-run if they are to be sustainable over the long run. Farming is a risky business. Nature is far too complex and interconnected to predict with any degree of accuracy. Farms depend on biological systems that are inherently self-making, dynamic, ever-changing, and thus, never precisely predictable. Thus, sustainable farms must be able to withstand unexpected shocks; they must be *resistant*. When their resistance

breaks down, as after natural disasters and major economic setbacks, they must be able to bounce back; they must be *resilient*. In the most severe cases, they must have a fall-back strategy or “plan B;” they must have built in *redundancy*. Sustainable farms must be resistant, resilient, and redundant.

The “six Rs” of sustainability are: *renewal, regeneration, and responsiveness, resistance, resilience, and redundancy*. Economic efficiency conflicts with each of these characteristics of sustainability. As farms move toward greater economic efficiency, they will closely synchronize their increasingly specialized functions, removing all economic redundancies. However, critical dependencies are created among the specialized functions of farming systems as they increase in complexity and connectivity to achieve efficiency. Such systems become vulnerable to collapse if any component of the system fails to perform its function effectively. Such systems can be highly efficient, but they lack the resistance, resilience, and redundancy needed for sustainability. As investments become more narrowly focused on economic returns, such farming systems also lose their capacities for renewal and regeneration and the responsiveness needed for radical redesign. Such farms may be productive and profitable, but they are not sustainable. The need for economic efficiency must be balanced with the need for ecological and economic integrity.

Ironically, the demise of many full-time, family farms is a symptom of their overemphasis on economics. This is commonly referred to as the disappearing middle of agriculture. In their efforts to survive economically, they sacrificed the six-Rs of sustainability. The large specialized farm businesses that have survived have been protected from the shocks and vagaries of nature and society by a variety of generous government subsidies and protective market stabilization schemes. More recently, many such operations have been forced to turn to comprehensive corporate contracts to reduce their growing vulnerability as food systems become even more complex and internally dependent. As these larger operations come under corporate control, the contract producers no longer have a choice between extraction and exploitation to maximize profits or the alternative of renewal and regeneration to ensure sustainability. These large corporations are purely economic organizations; they survive and thrive by maximizing economic returns to their stockholders.

The other group of survivors is made up of smaller independent farms that, to one degree or another, still characterized by the six-Rs of sustainable farming. Many aren't particularly efficient economically, because they still value farming as a social and ethical way of life as well as a business. A new breed of sustainable farmers is emerging among these small to mid-sized farms. These new farmers have a different vision of the future of agriculture and a fundamentally different approach to farm management. These farmers may call themselves organic, ecological, holistic, or biodynamic; they may market their products as natural, organic, GMO-free, grass-based, hormone & antibiotic free, humane, or local; or choose any number of descriptions that distinguish them and their products from the mainstream food system. Regardless of what they are called or what they sell, their success is defined by their ability to distinguish themselves from the unsustainable mainstream food system by producing foods with ecological, social, and economic integrity.

The reasons for their growing numbers are documented in best-selling books, such as *Fast Food Nation*¹ and *Omnivore's Dilemma*,² *The End of Food*,³ and *America's Food*.⁴ These

American farmers are featured in video documentaries such as *Future of Food*,⁵ *Broken Limbs*,⁶ *Food Inc*.⁷ and *Fresh; The Movie*.⁸ The stories tend to focus on a few *Celebrity farmers*, such as *Joel Salatin*⁹ (*Polyface Farms, Inc.*) of Swope, VA and *Will Allen*¹⁰ (*Growing Power Inc.*) of Milwaukee, WI. However, there are tens of thousands of these new farmers scattered across the continent. At least six “sustainable agriculture” conferences in the U.S. and Canada draw 1,500 to 2,500 people each year. Those attending include farm families and their customers and friends. Conferences drawing 500 to 1,000 people are becoming almost commonplace and virtually every state in the U.S. has an organic or sustainable agriculture organization, with conferences that draw 100 to 250 people a year.

The local food movement is perhaps the most publicly visible aspect today of this new sustainable food movement. 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 2011.¹¹ Organic food sales are still far larger, more than \$20 billion, but local foods have replaced organic foods as the most dynamic sector of the retail food market. 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.¹² A “good food revolution” is emerging in America, as more and more consumers are demanding food with *integrity*. This revolution is creating new economic opportunities for small and mid-sized farmers who are willing to think differently and to radically redesign their farms for sustainability.

Economic viability is one of the cornerstones of sustainability. Thus, sustainable farms must be profitable. It's just that profits can't take priority over everything else. Profitability is not synonymous with maximum profits. That said, sustainable farms must be able to cover their costs of production and leave enough profit to provide an acceptable living for the people that farm them. In today's markets, this means farmers who produce sustainably must clearly distinguish their products in the minds of customers who will pay premium prices for sustainably produced foods. The economic value of anything cannot be determined until four basic questions are answered: what is it, where is it, when is it available, and who wants it? In the case of food, production and processing addresses the first, transportation the second, packaging and storage the second, and product differentiation is an attempt to deal with the fourth. Virtually all of the product differentiation in mainstream supermarkets today is purely cosmetic or superficial.

The current industrial food system is very economically efficient in production, processing, and distribution, but achieves these efficiencies at the cost of being able to meet the unique tastes and preferences of individuals and even small groups of consumers. There are no real differences among different the brands, varieties, or assortments of mass produced and processed foods to accommodate different tastes and preferences. The distinctions that are supporting premium markets for local foods today include freshness and flavor. However, food safety, nutrition, and health are growing concerns, with the current epidemic in obesity and other diet related health problems. Concerns about the health of the local environment, local communities, and local economies also are growing in importance. An industrial food system cannot address these concerns without sacrificing their economic efficiencies of mass production and distribution.

Distinctions between local and industrial foods can be made most clearly through direct markets, including on-farm sales, community supported agriculture organizations or CSAs, and farmers markets. Through direct marketing, farmers can explain the *hows* and *whys* of their production methods directly to their customers. Customers can also see and taste the physical differences in their products. Certainly not all farmers who sell at direct market venues are sustainable producers, but customers at such venues have an opportunity to talk with their farmers and distinguish among the farmers and their products. The new USDA “know your farmer, know your food” initiative is a response to a growing public concern about the integrity of the mainstream food system and growing consumer demand for foods with integrity. To ensure integrity, more people are buying locally – from farmers they know and trust.

Farmers markets, CSAs, and other direct markets will continue to be important in the future. However, local food systems of the future may resemble today's multi-farm CSAs. *Grown Locally*,¹³ *Idaho's Bounty*,¹⁴ and *the Oklahoma Food Cooperative*,¹⁵ for example, are cooperative organizations of farmers that offer a variety of vegetables, fruits, meats, eggs, cheese, baked goods, flowers, and herbs produced by local farmers. Many items are available as CSA shares, standing orders, or for week-by-week purchase. Customers may have the option of on-farm pick-up, local delivery points, or delivery to the door for an added charge. Websites allow producers to post what they have available each week, ensuring that products sold are available for delivery and allowing customers to place or revise their orders on the website. At a different scale of operation, Riverford Organics in the United Kingdom is a multi-farm CSA cooperative that provides nearly 50,000 customers each week with fresh local foods – including meat, milk, and eggs.¹⁶ There are many examples of promising possibilities for the future.

Ultimately, sustainable local food systems will need to be linked together through relationships of trust to form regional, national, and even global *networks* of local food systems. These networks will allow sustainable producers to gain many of the economic efficiencies of the mainstream food system, but without compromising their integrity. The ecological and social integrity of production will be ensured through personal connections within local communities. However, the economic integrity of financing, processing, and distribution must also be ensured to ensure sustainability of the new food *networks*. Financing, processing, and distribution have been the Achilles Heel of virtually all past efforts to “scale up” sustainable food production to meet the needs of mainstream consumers.

The key to “scaling up” for greater economic efficiency without sacrificing sustainability is to maintain a meaningful sense of connectedness between sustainable farmers and the ultimate consumers of their products. In today's industrial food markets, farmers' products are assembled and comingled into homogenous lots to achieve “economies of scale” in processing, packaging, and distribution. In the process, all connection between the final products with individual farmers is lost. There is no way of ensuring or verifying the integrity of the final product other than through either corporate or government standards or product descriptions. Such standards and descriptions are developed primarily for purposes of economic efficiency rather than social and ecological integrity. As we are seeing, such systems are not sustainable.

The organic food movement provides a prime example of inherent risks in “scaling up” production to achieve greater economic efficiency. Rules for organic certification were

standardized during the 1990s in order to allow organic foods to move more efficiently through the mainstream, industrial food system. Standardization allowed production and processing to be specialized and consolidated under the control of large production and processing organizations. Most of the innovative organic producers, processors, and retailers who started and grew the organic movement, eventually were bought out by the same large corporate organizations that have dominated the mainstream food system. These corporations are committed to maximizing profits and growth, which are in direct conflict with the sufficiency conditions of sustainability.

Those who could meet the minimum organic certification standards at the lowest costs gained market share at the expense of those who refuse to compromise on the organic principles of sustainability. The integration of organics into the impersonal, economic, global food system destroyed the consumer's sense of connectedness with organic farmers, and with it, their trust in the integrity of mainstream organic foods. This integration of organics into the mainstream food system reduced organic premiums and profits and threatened the economic viability of “authentic” organic farms. Many of the smaller organic farms have returned to direct and “near-direct” local markets to maintain their economic viability. Local has become the new organic.

The organic experience provides a valuable lesson in the economics of sustainability. Sustainable farmers must develop systems that achieve “economies of aggregation and disaggregation” rather than “economies of scale.” They must gain economic efficiencies through collective processing and distribution without losing the connectedness between the producer, or producers, and the final consumers of their products. In cases where several producers' products are comingled, all producers must share a common set of core values that are of significance to the specific consumers willing to pay premiums for their particular products. The larger the lots of comingled products, the greater will be the economic efficiencies. However, as larger numbers of producers comingle their products, their comingled products become less distinctive and more like competitive mainstream products selling at lower prices. Consequently, the premiums and profits become both smaller and less sustainable. Sustainability will always require a balance between economic efficiency and long run economic sustainability.

Economic sustainability can only be ensured by “food value chains” where everyone in a vertical food system – farmers, lenders, processors, distributors, and consumers -- joins together in a cooperative, coalition, or other type of collaborative organizations with a common commitment to sustainability. Everyone from farmers to consumers must be committed to a common set of guiding principles that defines sustainable relationships, including honesty, fairness, responsibility, respect, and compassion. These principles must be exemplified in a commitment to sharing the economic rewards among everyone in the system, from farmers to consumers, without regard for who has the most economic power. This will require complete openness and transparency in all economic relationships. There must be a shared appreciation and respect for the fact that sustainability of each level is essential for the sustainability of the whole. Such food value chains will exemplify the six-Rs of sustainability: resistance, resilience, redundancy, renewal, regeneration, and responsiveness.

A sustainable food system ultimately will require fundamental changes in public policies to ensure that those who renew and regenerate do not have to compete economically with others who continue to exploit and extract. Public policies will also be necessary to ensure that good

food is made accessible and affordable for all who need it, regardless of their ability to pay – including those of future generations. Such policies will evolve from growing public awareness that today's industrial global food system is neither meeting the needs of all in the present nor ensuring opportunities for those of the future. It is not sustainable. However, farmers need not wait for change in public policy to make their personal transformation. The potential market for sustainably produced foods is already at least three-times larger than the current supply. Policies will change to ensure sustainability only when those who are actively creating the new sustainable food systems, both farmers and their customers, demand fundamental change.

The economics of sustainable agriculture is about finding logical, reasonable means of balancing individual economic self-interest with ecological and social integrity, to achieve long run economic viability. Those who are creating the new sustainable food systems are people who have reawakened to the reality that quality of life is not simply a matter of economics. Certainly, we are material beings; we need food, clothing, shelter, and the other economic essentials of life. But we are also social beings; we need positive *personal* relationships with others – in families, communities, and society. And we are ethical and moral beings; we need to have a sense of rightness and goodness in our relationships with others and with nature. The economics of sustainability is about finding and sustaining harmony and balance among the economic, social, and ethical dimensions of life; it is about keeping economics in its appropriate perspective in the pursuit of happiness and quality of life.

End Notes:

¹ Eric Schlosser, *Fast Food Nation: The Dark Side of the All-American Meal* (Boston & New York: Houghton Mifflin Co., 2001).

² Michael Pollan, *The Omnivore's Dilemma: A Natural History of Four Meals* (New York: The Penguin Press, 2006).

³ Paul Roberts, *The End of Food* (Boston & New York: Houghton Mifflin Co, 2008).

⁴ Harvey Blatt, *America's Food: What You Don't Know About What You Eat* (Boston: The MIT Press, 2008).

⁵ *The Future of Food* <<http://www.thefutureoffood.com/>>

⁶ *Broken Limbs*, <<http://www.brokenlimbs.org/endorsements.html>>

⁷ *Food Inc.*, <<http://www.foodincmovie.com/>>

⁸ *Fresh; the Movie* <<http://www.freshthemovie.com/>>

⁹ *Polyface Farms Inc.* <<http://www.polyfacefarms.com/>>

¹⁰ *Growing Power*, <<http://www.growingpower.org/>>

¹¹ *Packaged Facts*, “Local and Fresh Foods in the U.S.,” May 1, 2007. ><http://www.packagedfacts.com/Local-Fresh-Foods-1421831/>>

¹² Allison Worthington, *Sustainability, the Rise of Consumer Responsibility*, The Hartman Group, Bellevue, WA, Spring, 2009.

¹³ Visit the *Grown Locally* website at <<http://www.grownlocally.com>>

¹⁴ Visit the *Idaho's Bounty* website at <<http://www.idahosbounty.org/>>

¹⁵ Visit the *Oklahoma Food Cooperative* website at <<http://www.oklahomafood.coop/>>

¹⁶ *Riverford Organics*, <<http://www.riverford.co.uk/about/riverford/index.php?PHPSESSID=ab9d136c17f85194b64ca4a5f3b1c55a>>