

Sustainable Agriculture: It's About People

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Sustainable agriculture probably is viewed by most people as an environmental issue. In fact, many questions concerning sustainability do have their roots in the environmental movement. The concept of "sustainable development" came into the consciousness of many people following the first major international conference on environmental issues sponsored by the United Nations in Stockholm, Sweden in 1972. The concept of "sustainable agriculture" was first promoted in the public policy arena during the 1980s by the organic farming community – led by the Rodale Institute, a long-time advocate of environmental causes. So, it's only natural for people to relate sustainability with the environmental movement.

However, sustainable agriculture gained its initial credibility in the public policy arena as an economic issue. During the farm financial crisis of the 1980s, American farmers were caught in a financial squeeze between chronically depressed commodity prices and continually rising costs of production inputs – fertilizers, pesticides, fuels, etc. The organic farming community had been lobbying, without much success, to get the USDA to support research and education programs that would reduce, if not eliminate, farmers' reliance on commercial chemical inputs. A compromise between conventional farmers, who wanted to reduce input for economic reasons, and organic farmers, who wanted to reduce inputs, for philosophical reasons, resulted in the USDA's LISA (Low Input Sustainable Agriculture) research and education program. However, some of the early advocates saw sustainable agriculture as a simple matter of economics – "if it's profitable, it's sustainable, if it's not profitable it's not," they said.

The agribusiness community openly opposed the LISA program. They were not going to support any government program that might reduce the farmers' reliance on their products and decrease their profits. They used everything from making jokes about the LISA name, to raising the specter of mass starvation, to phony "research plots" using "no fertility or pest management" to represent LISA farming systems. The tactics weren't ethical, but they worked. USDA abandoned the LISA program and shifted the emphasis from reducing inputs to natural resource management through a new Sustainable Agriculture Research and Education (SARE) program.

The social dimension of sustainable agriculture rose to public awareness out of the SARE program. Sustainable agriculture was defined in the SARE legislation as systems of farming that, among other things, would "enhance the quality of life for farmers and society as a whole." In the legislative discussion, "quality of life" was defined to mean, to "increase income and employment -- especially self-employment -- opportunities in agricultural and rural communities and to strengthen the family farm system of agriculture, a system characterized by small and moderate sized farms which

are principally owner operated" (Congressional Record 10/22/90:H11128). Thus, sustainable agriculture was defined to include social responsibility – to increase self-employment opportunities in rural communities and on owner-operated, small- and moderate-sized, family farms.

Thus, sustainable agriculture is about the environmental integrity, about economic viability, and about social responsibility, but ultimately, it's about people. The fundamental purpose of agriculture is to meet the needs of people – to tip the ecological balance in favor of humans relative to other species. However, agriculture is rooted in nature – in soil, air, water, plants, animals, and the other elements of natural ecosystems. The earth and everything upon the earth, including people, are parts of that natural ecosystem. And, according to the fundamental principles of ecology, if we attempt to tip the balance of nature in favor of humans too far or too fast, we will destroy the integrity of the ecosystems of which we ourselves are a part.

In other words, a healthy, diverse environment is necessary for the long run well being of humans. If we degrade the natural environment – the soil, air, or water – we degrade its ability to provide for the food and fiber needs of people. If we destroy the quality of the environment – the purity of air or water – we degrade the health and well being of people. If we destroy other living species of the earth, we may ultimately destroy the ability of the earth to support human life. We must maintain the integrity of the natural ecosystem in order to sustain its ability to sustain the life and health of people, because we are a part of the natural environment.

However, the economy provides the means by which we relate to the natural environment, and to each other, within complex human societies. In primitive self-sufficient societies, people relate directly to each other. They provide most of their own needs, they work together, and they barter to acquire the things they cannot produce for themselves. In such societies, people relate directly with the natural environment, they farm the soil, cut lumber from the forests, and dig minerals from the earth to meet their needs. However, as societies move beyond self-sufficiency, they develop "money" and "markets," and impersonal systems of "economics" to facilitate greater specialization and trade. As economies emerge, relationships between people and the natural environment become impersonal and indirect. Farmers, foresters, and miners sell their products to other specialized producers and receive money in return. The economy then determines who gets to make decisions about how the natural resources are used – who gets to be farmers, foresters, miners, etc.

In a market economy, if a farmer can't make a living farming, he or she will be forced to find another line of work. So, if their current method of farming isn't profitable, or otherwise financially viable, farmers are forced to either find a profitable alternative to the current system or find something else to do for a living. Therefore, ecologically sound farming methods will not be used unless they are also economically viable. If the farmer goes broke, his or her farming operation is not sustainable, no matter how ecologically sound it may be. However, the fact that a system of farming is profitable in the short run, even over a few decades, doesn't mean that that farming system is sustainable over the long run.

Short run profits may well be gained by exploitation, by mining wealth from the natural environment. Any system of resource development that is based on exploiting the wealth of nature, rather than maintaining its productivity, is not sustainable over time. Economic viability is a necessary condition for sustainability, but it is not sufficient.

The concept of a profitable, environmentally sound agriculture has been grudgingly embraced by nearly everyone associated with agriculture in America. Even the large agribusiness corporations – including Monsanto and DuPont – have “sustainable agriculture” programs, which focus on reducing the negative environmental impacts of conventional farming methods. However, strong resistance still exists to accepting the “social responsibility” dimension of sustainability. Some label it as “social engineering” – imposing one particular set of social values on the rest of society. Others argue that our “free market” economy ensures “socially responsible” behavior – that the market is the best arbiter of social equity. Thus, agribusiness firms, most farm organizations, most commodity groups, and even many universities resist acknowledging social responsibility as a prerequisite for sustainability.

Perhaps, markets are capable of ensuring “equity,” in some sense of the word, but markets are not capable of ensuring “equality.” Civilization is based on the premise that people are capable of rising above a “survival of the fittest” way of life. Certainly, there are some aspects of civilized societies in which it is deemed appropriate that people be rewarded in relation to their ability – whether it is physical strength, mental ability, or economic cunning. However, one mark of a civilized society is their ability to define and defend those rights that accrue equally to all, regardless of their physical or mental ability or their ability to earn income or accumulate wealth. In America we have defined “life, liberty, and the pursuit of happiness” as fundamental rights to which all must be given an “equal” opportunity. This is not social engineering – it is a legitimate, civilizing function of government.

A socially responsible agriculture must provide for the food and fiber needs of people. But, social responsibility goes beyond simply making sure that enough is produced to meet the needs of those who are willing and able to pay. In America, all people have a fundamental right to sufficient food to ensure their life, growth, and health, regardless of their ability to pay. In a “civilized society,” to the extent that such minimum levels of nutrition are available for any, they must be available for all. A society that is unwilling to accept this responsibility could hardly be called civilized. Certainly, the government must be involved in ensuring the social responsibility of agriculture, but such is the legitimate and logical function of government. A socially responsible agriculture must ensure food “security” for all.

The concept of social responsibility extends to the producers as well as the consumers of food. “Man does not live by bread alone.” A socially responsible agriculture must ensure that the people who produce the food have an opportunity to lead successful, productive lives. This does not mean that society has a responsibility to ensure the success of everyone who might choose to farm by any means they might choose. However, it does mean that farmers should be protected from unfair competition in the

market place. The concept of “free markets” was never meant to imply the freedom of a handful of large corporations to dominate an industry. Neither should farmers be forced to exploit their land, their neighbors, nor their customers in order to maintain the economic viability of their farming operation. The concept of “free markets” was never meant to imply the freedom to degrade the earth or its people. Certainly, there is a role for government in ensuring the long run sustainability of agriculture. Farmers ultimately must be rewarded for contribution to public welfare, by protecting the environment and contributing to healthy communities, but such are the legitimate and logical functions of government.

If an agricultural system is incapable of supporting the needs of a society, then society will not support that form of agriculture. A system that is not socially responsible ultimately will degrade its resource base, will lose its ability to produce, and thus, cannot survive economically. We need look only to the communistic farming systems of Eastern Europe for clear evidence of farming systems that were not socially responsible, could not sustain society, and thus, could not be sustainable by society.

So a sustainable agriculture must be capable of meeting the current food and fiber needs of people, all people, while leaving equal or better opportunities for people of the future. To be sustainable, agriculture must be ecologically sound, economically viable, and socially responsible. The three dimensions of sustainability are not a matter of formal definition or legal precedent, but are a matter of common sense. If the land loses its ability to produce, the farm is not sustainable. If the farmer goes broke, the farm is not sustainable. And if a system of farming fails to support society, it will not be supported by society, and thus, is not sustainable. The economic, ecological, and social dimensions of sustainability are like the three dimensions of a box. All are necessary but none is sufficient. A box that is lacking in height, width, or length, quite simply is not a box. A farming system that is lacking in ecological integrity, economic viability, or social responsibility, quite simply is not sustainable.

With such a firm foundation in common sense, it might seem difficult to find credible opposition to the concept of sustainability. However, the opponents of sustainability find strong support in the current global culture of economic materialism. The dominant “social and ethical” paradigm of all industrialized nations today is “free market” economics. Contemporary economic thinking now permeates all aspects of modern life – private, public, personal, interpersonal, ethical, and moral. However, the economic paradigm has become universally accepted with very limited understanding of its roots, its legitimate function, or its ultimate implication for humanity.

Economics deals with the optimum allocation of scarce productive resources among competing consumptive uses. Economics is a very useful science, as we have seen over the past couple of hundred years. But economics, fundamentally, is about finding the optimum means for “using things up.” Economics has virtually nothing useful to say about conserving, sustaining, or regenerating productive resources, so that future generations will have opportunities to meet their needs as well. Economics has virtually nothing useful to say about using resources for anything other than consumptive

purposes – about social equality or creating opportunities for people to lead productive, rewarding lives. Economics is about the pursuit of individual, short-run, self-interests. Our individual and collective “quality of life” is assumed to be the natural product of our success of our pursuit of individual, economic self-interests.

The economic system of competitive capitalism, which has evolved with contemporary economic thinking, has resulted in tremendous material gains for human society. No one would choose to go back to the pre-capitalistic, pre-industrial era of starvation, depravation, drudgery, and subsistence living. However, with its tremendous gains, our dominate system of economic development brought with it important and significant unintended negative social and ecological consequences. Over time, as the marginal gains from increasing economic materialism has diminished, the negative social and ecological consequences have risen, both in absolute magnitude, and even more in relation to the declining gains. Not the least among those growing costs is the current economic threat to the long run sustainability of society.

The economic development paradigm dominating the past two centuries has been industrialization. The emergence and development of the “industrial era” was supported and nurtured by the evolving economic theories of competitive capitalism. Adam Smith, in his landmark book, The Wealth of Nations, wrote of the tremendous gains in productivity made possible by specialization – division of labor. Specialization became one of the defining characteristics of industrialization. Standardization of form, function, and sequence emerged as the second characteristic of industrialization – facilitated by replaceable parts, mechanization, and assembly-line production. Standardization was necessary to coordinate the specialized functions to achieve productive and economic efficiency.

Finally, specialization and standardization simplified production processes and made functions more easily controlled – greatly increasing the effective span of management. Industrialization allowed the control of industry to be centralized or consolidated, with fewer decision-makers controlling more workers, more machines, more capital, more land, and more total productive resources. In economic terms, industrialization made possible tremendous “economics of scale.” Industrialization created tremendous societal benefits, in terms of material gains, but it brought with it tremendous unintended social and ecological costs. Not the least among the growing costs is the current threat of industrialism to long run sustainability.

The characteristics of the industrial paradigm – specialization, standardization, and centralization of control – are in direct conflict with the fundamental principles of sustainability. A sustainable system of development must work in harmony with nature, to ensure long run ecological integrity and productivity. And, nature is inherently diverse. The niches with nature are small. As Charles Darwin pointed out, in his Origin of Species, the great diversity of species is a direct reflection of the diversity of nature. Large-scale, specialized systems of farming, forestry, mining, and fishing are in direct conflict with the diversity of nature, and thus, are an inherent threat to the long run sustainability of the natural ecosystem.

Sustainable systems must be site specific and individualistic. To ensure ecological integrity and social responsibility, we must fit the things we do to the uniqueness of specific places and of the specific people involved in the processes. The concept of standardization is in direct conflict with site and individual specificity, and thus, represents an inherent threat to sustainability. “Socially just” systems of production require independence of thought and action by individuals working in harmony with the diversity of nature and individuality of people, by making free and independent choices. Industrial economies of scale, achieved through consolidation of decision-making and control, represent an inherent threat to long run sustainability.

Economists defend our current exploitative systems of economic development based on the theories of competitive capitalism. However, the consolidation of economic power, to achieve economies of scale, has fundamentally transformed our economic system, bringing in doubt, if not outright invalidating, its most fundamental principles.

Contemporary economics is based on the observations of a British economist, Adam Smith, in his landmark book, The Wealth of Nations, published in 1776. From Smith's observations, economists developed the fundamental assumptions, which underlie all “free market” economic thinking even today. These basic assumptions must hold in order for Smith's “invisible hand” of competition to transform individual greed into the greater good for society in general.

Markets must be economically competitive – meaning numbers of buyers and sellers so large that no single buyer or seller can have any noticeable effect on the overall market. In such markets, the benefits of more efficient production are quickly passed on to consumers. It must be easy for new sellers to enter markets that are profitable and easy for sellers to get out of unprofitable markets, so that producers are able to respond to consumers' changing wants and needs with changes in production. Consumers must have clear and accurate information concerning whether the things they buy will actually meet their wants and needs. And finally, the consumer must be sovereign – their tastes and preferences must reflect their basic values, untainted by persuasive outside influences.

None of these assumptions is valid in today's society. Today agricultural markets are dominated by the large agribusiness corporations, certainly at every level other than the farm level, and increasingly even at the farm level. In addition, it is not easy to get into or out of any aspect of agriculture, and it is becoming increasingly harder even to get into or out of farming. Consumers don't get accurate, unbiased information concerning the products they buy, but instead get disinformation by design, disguised as advertising. Finally, consumers are no longer sovereigns. The food industry spends billions of dollars on advertising designed specifically to bend and shape consumers tastes and preferences to accommodate mass production and mass distribution, which enables corporate control of agriculture. There is no logical reason to believe that the corporate agriculture of today is evolving to meet the needs or wants of consumers.

Such a system may produce lots of “cheap stuff,” but there is no assurance that it is producing the “right stuff.”

There is no logical reason today to believe food costs will be less or food quality will be enhanced after even more family farmers are forced out of business. There is no reason to believe that food will be cheaper or higher in quality when free market coordination is replaced with corporate contractual coordination of the food system, as is happening in agriculture today. On the contrary, there is every reason to believe that the corporatization of agriculture will lead to higher costs and lower quality as they seek to maximize profits and growth. Corporate agriculture today is designed specifically to generate profits and growth for corporate investors. And, we no longer have a competitive, capitalistic agricultural economy to transform corporate greed into societal good.

Virtually every environmental and social problem today can be traced to overuse, or misuse, of the corporate, industrial paradigm of development. And, there is nothing in contemporary economy theory that addresses the negative environmental and social impacts of industrialization – at least not in any meaningful way. In economics, environmental and social impacts are treated as “externalities” – something that must be dealt with outside the economic system.

With respect to the sustainability of agriculture, the threats to the natural environment to the quality of life of farmers, of rural residents and of society as a whole have continually risen as we have industrialized American agriculture. Today, the same technologies that support our large-scale, specialized system of farming, the systems through which we have achieved economies of scale, are now the primary sources of growing public concerns. Commercial fertilizers and pesticides -- essential elements in a specialized, industrialized agriculture -- have become a primary source of growing concerns for environmental degradation and food safety. And, industrialization has transformed agriculture, created for the fundamental purpose of converting solar energy to human-useful form, into a mechanized agriculture that uses more non-renewable fossil energy than it captures in solar energy from the sun.

Industrial systems of production also degrade the human resource base. Henry Ford is quoted as once saying the biggest problem in running a factory is that you have to hire whole people when all you need is two hands. Large factory farms transform independent decision-makers, into farm workers – into people who only know how to follow instructions or directions but not how to make decisions. At a recent conference in Minnesota, one farmer remarked that “any fool could grow a good crop of soybeans using the Roundup Ready system of Monsanto.” We have transformed our farms in biologically assembly lines and farmers into non-thinking, assembly line workers.

Industrial agriculture, inherently, is management extensive. It allows fewer farmers to farm more land by using more capital -- machinery and equipment -- and more purchased inputs. As farms have grown larger and more specialized, agriculturally dependent rural communities have withered and died. Larger farms meant fewer farms

and fewer farm families to support local schools, churches, public institutions, and retail businesses. In addition, larger farms tend to bypass local communities in purchasing production inputs and in marketing their products. It takes people, not just production, to sustain local communities. The fundamental purpose of agricultural industrialization was to make it possible for fewer people to produce more.

No one set about intentionally to destroy the ecological integrity, social responsibility, and now, the economic viability of American agriculture. We simply lost sight of the fundamental purpose of agriculture to meet the needs of people – as consumers, as producers, as members of rural communities, and of society. In our preoccupation with increasing economic efficiency to bring down the cost of food, we neglected to monitor what was happening to the overall quality of life of people. In our preoccupation with increasing production today, we neglected to monitor the agricultural legacy we were leaving for people of the future.

Thankfully, a new type of agriculture is beginning to emerge to address the issues of sustainability.¹ These new farmers may claim the label of organic, low-input, alternative, biodynamic, holistic, permaculture, practical farmers, or just plain farmer. But they are all pursuing the same basic purpose by the same set of principles. They are trying to build farming systems that are ecologically sound, economically viable, socially responsible, and thus, are sustainable. They are pursuing their self-interest, but a higher self-interest – satisfying the personal, interpersonal, and ethical dimensions of self. They realize that quality of life is a product of harmony among the economic, social, and spiritual dimensions of their lives. They refuse to exploit other people or exploit the natural environment for short run personal gain. They are building an agriculture that is sustainable over the long run, not just profitable for today.

While there are no “blueprints or recipes” for the new American farm, some fundamental principles are emerging. The new farms tend to be more diversified than are conventional farms. These farmers are committed to caring for the land and protecting the natural environment. They work with nature rather than try to control or conquer nature. They fit the farm to their land and climate rather than try to bend nature to fit the way they might prefer to farm. In most regions, this requires a variety of crop and animal enterprises. In some regions, however, diversity means crop rotations and cover crops. In other regions, diversity means managing livestock grazing to achieve diverse plant species or with multiple species of grazing animals. Through diversification, these new farmers substitute management for the off-farm inputs that squeeze farm profits and threaten the environment. Their farms are more economically viable, as well as more ecologically sound, because they farm in harmony with nature.

The new farmers tend to have more direct contact with their customers than do conventional farmers. Most either market their products direct to customers or market through agents who represent them with their customers. They realize that each of us value things differently, as consumers, because we have different needs and different tastes and preferences. They produce the things that their customers value most, rather than try to convince their customers to buy whatever they produce. They market

to people who care where their food comes from and how it is produced – locally grown, organic, natural, humanely raised, hormone and antibiotic free, etc. – and, they receive premium prices by producing what their customers value. Their farming operations are more economically viable, as well as ecologically sound and socially responsible.

To these new farmers, farming is as much a way of life as a way to make a living. They are “quality of life” farmers. To them, the farm is a good place to live, a good place to raise a family, and a good way to be a part of a caring community. Their quality of life objectives are at least as important as the economic objectives in carrying out their farming operations. Their farming operations reflect the things they like to do, the things they believe in, and the things they have a passion for, as much as the things that might make money. However, for many, their products are better and their costs are less because by following their passion they end up doing what they do best. Most new farmers are able to earn a decent income, but more important, they have a higher quality of life because they are living a life that they love.

Finally, these new farmers build relationships, among each other and with their customers, as well as with their land. They freely share information, they form partnerships and cooperatives, to buy equipment, to process and market their products, to do together the things that they can't do as well alone. They are not trying to drive each other out of business; they are trying to help each other succeed. They are not trying to take advantage of their customers to make quick profits; they are trying to create lifelong social and economic relationships. They refuse to either exploit each other – or to exploit the land. They buy locally and market locally. They are bringing people together in positive, productive relationships that contribute to their economic, ecological and social well-being.

Some question whether a sustainable agriculture is physically capable of meeting the needs of a growing global population. They argue that “high-yield, high-input” systems are necessary to keep pace with population growth. First, “high-yield” systems rely heavily on non-renewable inputs such as commercial fertilizers and pesticides. Biotechnology isn't going to reduce this reliance, but instead may even increase in the quest for maximum yields. There may be sufficient supplies of non-renewable inputs for another 50 or maybe 100 years. But, what will people do then? We will have twice or three times as many people on earth by then, and the resources will be gone.

Perhaps more important, many “low-input” farmers today are already achieving yields equal to or greater than conventional “high-input” systems of farming. The knowledge and expertise required to achieve high yields with low inputs are not nearly as widespread as is commercial agricultural technologies. However, many are capable of acquiring this knowledge and expertise, if they realized it was possible, and had an incentive, to do so. In addition, sustainable agriculture today is in its infancy – sustainable farmers are but the early explorers on a new frontier. As they accumulate increased understanding and know-how, their productivity abilities will undoubtedly increase as well. If we had invested a fraction of the research and development efforts

on regenerative farming methods that we have invested in industrial methods, our ability to produce sustainably might easily surpass our ability to produce conventionally.

Over time, with more farmers with better understanding of sustainable farming, productivity will rise and cost of production will fall for sustainable systems. Over time, with rising costs of non-renewable inputs and further chemical and biological degradation of the health of the soil and the natural environment, productivity will continue to fall and costs of production will rise for industrial systems. Over time, sustainable systems will be far more productive and far less costly than will industrial systems of farming.

Those who think that we can't meet the legitimate food and fiber needs of humanity with a sustainable agriculture are the “new Malthusians.” Some 200-plus years ago an economist by the name of Thomas Malthus claimed that humanity was destined to starve to death because population increases geometrically and technology only increases arithmetically. Malthus was wrong, because he failed to appreciate the potential productivity of the human mind. Those who think we can't feed the world without destroying the natural environment and without degrading human society fail to appreciate the potential of human creativity and ingenuity, coupled with caring and commitment, in developing more sustainable systems of farming. The perceived limits to sustainable farming arise from the assumptions of contemporary economics, which are hopelessly out of date, and an industrial mindset, which is rapidly losing its relevance to reality. But, we have only perhaps a 50-year window of opportunity during which we must learn to farm sustainably.

Some critics say that people simply are not willing to make the economic sacrifices required needed to ensure that those of future generations have opportunities equal to those of today. “What has the future generating ever done for us,” they ask, “so why should we do anything for them?” People are too preoccupied with their present self-interests to care about the long run sustainability of society. But, sustainability is not about personal sacrifice; it's about personal gratification. Sustainability is about achieving a desirable quality of life – right now, not at some time in the future. Sustainability is about the present, not the future – it's about living a better life now.

Our individual self-interest is an important dimension of our quality of life. If we don't respect our own interests, we are unlikely to show respect for the interests of others. If we can't meet our own needs, we are not in a position to meet the needs of others. Our economic self-interest is important, but our quality of life is not limited to our individual, personal well being.

Our relationships with other people are important to our own well being – even if such relationships return nothing in terms of our individual, economic self-interests. We are social beings by nature, and the quality of our relationships with others affects our own quality of life. It is not a sacrifice to care about other people – it is gratifying. It is not a sacrifice to share with other people – it is a privilege. Social responsibility is not a sacrifice; it is an important aspect of living a life of quality.

Stewardship of the natural environment is important to our well being – even if taking care of the resources of the earth returns nothing in terms of individual, economic self-interests. We humans realize that we are but a part of something much larger than ourselves – we exist within a higher order of things. The purpose and meaning of our lives is derived from our place within this “higher order” – from living in harmony with the fundamental laws of nature, including human nature. Stewardship of the earth is a part of our role and function within that higher order. Ensuring opportunities for those of future generations does not deprive our lives of quality, but instead, gives our lives purpose and meaning. Ecological stewardship is not sacrifice; it is part of what gives our lives quality.

People are individualistic, by nature, and are disinclined to make personal sacrifices. But, people are social, by nature, and will choose to nurture positive relationships – to be socially responsible. People also are spiritual, by nature, and will choose lives of purpose and meaning – to be ethically and ecologically responsible. Sustainability is about pursuing self-interest, but a broader self-interest, a higher self-interest, a more enlightened self-interest, than the narrow self-interests of economic materialism.

Sustainability is not a sacrifice; it is an opportunity. Sustainability is about achieving harmony and balance among the economic, social, and ecological – the personal, interpersonal, and the spiritual. A life of harmony and balance is a life of quality. Sustainability gives people an opportunity to achieve a more desirable quality of life. Sustainability, ultimately, is about people.

¹ For 50 real life examples, see “The New American Farmer – Profiles in Agricultural Innovation,” the SARE Program, USDA, Washington DC. (\$10 US – call: 802-656-0484 or e-mail: sanpubs@uvm.edu, also available free on line at <http://www.sare.org/newfarmer>)