Sustainable Agriculture and the SARE Program

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General concepts of sustainability have been gaining currency in recent years as publications such as *Our Common Future* (1987) and events such as the 1992 Earth Summit in Rio de Janeiro push sustainable development issues into the forefront of critical discussion on growth, development, and finite resources. Agricultural practices are critical to any discussion of sustainability as current agricultural practices worldwide are considered environmentally unsound. Increasing public awareness of problems associated with conventional agricultural practices and a growing interest in concepts of sustainable development have converged to bring the subject of sustainable agriculture out of the periphery and into the center of discussion on the future of agriculture in the United States.

Until recently, conventional agricultural production was never questioned. Rather, its increasing concentration into bigger units and the subsequent demise of many family farms and rural communities has been accepted as historical inevitability. Earl Butz, former U.S. Secretary of Agriculture, will long be remembered for his infamous edict, "Get big or get out," delivered during the heyday of farm expansion in the 1970s. At about the same time, environmentalists and advocates of family farms began to speak out about the inadequacies of conventional agriculture. Environmentalists were concerned about soil erosion, groundwater adulteration, and bio-genetic engineering. Family farm advocates were concerned with adequate incomes and the health of rural communities and businesses. Agricultural scientists were noting limits to production despite increasing chemical input.[1] Consumers joined in, voicing concern about chemical residues on their food and deteriorating water quality. In response, the U.S. Congress renewed its mandate to support the family farm system of agriculture but added a new focus--to preserve family farms and to do so in a way that enhances environmental quality and the natural resource base.

This shift is reflected in the U.S. Congress's 1985 call for a program of Sustainable Agriculture Research and Education (SARE). Sustainable agriculture had acquired government sanction. However, any effort to promote sustainable agriculture should not leave out the concept of sustainable communities. This paper discusses the SARE program, assesses its contribution to the promotion of sustainable agriculture, and evaluates the program's success in fostering sustainable communities.

What is Sustainable Agriculture?

American farmers are touted as the best food producers in the world. They provide consumers with inexpensive, high-quality food in seemingly unlimited quantities. Vast natural resources, the technical expertise of the land-grant system of universities, and receptive government policies combine to produce this bountiful harvest. The type of agriculture responsible for this level of production is known as conventional agriculture. It is characterized as large-scale, capital-intensive, highly-mechanized, and focused on monocultures and the extensive use of pesticides, herbicides, and fertilizers. It is also characterized by an increase in concentration: 85 percent of food in this country is

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produced on 15 percent of the farms.[2] These are not the family farms emblazoned upon the American imagination. They are huge corporate farms, vertically-integrated and well-financed.

Sustainable agriculture suffers from a crisis of definition. It is referred to by a variety of names--low input, alternative, organic, regenerative--that do not provide a completely accurate picture. "Low input" merely refers to less use of outside materials, usually chemical inputs. "Alternative" can simply mean something other than the ordinary, such as raising ostriches in Oklahoma or kiwi in South Carolina, but it usually refers to resource-conserving agriculture. "Organic" agriculture forbids chemical use, but might not make provisions for water conservation. "Regenerative" means a system that is able to reproduce the resources it requires. "Sustainable" implies the ability to continue indefinitely and is the name that seems to have gathered most acceptance. All these labels display a bias towards the environment, resource conservation, productivity, and farm-level economics.[3]

Consideration of quality-of-life issues and sustainable rural communities does not usually enter the definitional debate. The assumption appears to be that sustainable agriculture leads to sustainable communities, or conversely, that sustainable agriculture is necessarily practiced in sustainable communities. Neither assumption is a given. Family farmers and rural communities are not guaranteed their vitality by the adoption of sustainable agricultural practices. Sustainable agricultural practices could be co-opted by conventional agriculturalists, if they choose to adopt them, thus continuing the domination of agricultural production by large-scale, corporate farms and hastening the decline of rural farming communities. If the promotion of quality-of-life issues and sustainable communities is considered part of the sustainable agriculture paradigm, then it should be incorporated into the definition of sustainable agriculture.

Allen et al. have addressed this issue, holding that sustainable agriculture concepts must move beyond a preference for environmental issues and give greater consideration to social issues such as .inter- and intra-generational equity and the whole-systems nature of agriculture. They offer this definition: "A sustainable agriculture is one that equitably balances concerns of environmental soundness, economic vitality, and social justice among all sectors of society."[4] Expanding the definition shows that "issues such as farm worker rights and inner-city hunger are as central to the goals of agricultural sustainability as soil erosion and groundwater contamination."[5] While this definition is broad in concept and reminiscent of the Brundtland Commission's definition of sustainable development,[6] it tempers the usual disproportionate importance given to environmental interests with a concern for quality-of-life issues.

The U.S. Congress uses a definition from the Food, Agriculture, Conservation and Trade (FACT) Act of 1990 that defines sustainable agriculture as follows:

"An integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm/ranch resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic vitality of farm/ranch operations; and enhance the quality of life for farmers and ranchers, and for society as a whole."[7]

This comprehensive definition guides the SARE program. It is notable that the definition includes reference to quality-of-life issues for farmers and society as a whole.

For the layman, sustainable agriculture can be described as low-input, resource-conserving, environment-enhancing, small-scale, and community-sustaining. These characteristics are in direct contrast to the characteristics of conventional agriculture stated earlier. Further distinctions between conventional agriculture and sustainable agriculture have been developed by Beus and Dunlop. Their distillation of the key elements of the two competing agricultural paradigms are included in Table 1.[8] These distinctions go beyond such comparisons as large-scale versus small-scale, high-input versus low-input, and resource-expending

CONVENTIONAL AGRICULTURE	ALTERNATIVE AGRICULTURE
* Centralization	* Decentralization
* Dependence	* Independence
* Competition	* Community
* Domination of Nature	* Harmony with Nature
* Specialization	* Diversity
* Exploitation	* Restraint

Table 1: Key Elements of Two Competing Agricultural Paradigms

versus resource-conserving. Beus and Dunlop identify societal attributes that delve deeply into our national psyche and which seem, interestingly enough, to represent two distinct phases of our national history.

The key elements of the alternative agriculture paradigm aptly describe the yeoman ideals of the Jeffersonian democracy that shaped the nation, whereas the key elements of the conventional agriculture paradigm could easily describe dominant trends in business and politics during the present era. This is not to say that the practice of sustainable agriculture entails setting the clock back 200 years, but it does highlight the importance of acquiring a different set of ideals, one that considers not only the current generation, but more importantly, future ones.

The SARE Program

The U.S. Department of Agriculture (USDA) was mandated by Congress to develop a sustainable agriculture program in 1985 (then called LISA for Low-Input Sustainable Agriculture) but did not establish the program until 1988. Reasons for the delay in the initiation of the program are unclear. The USDA has consistently requested less funding for the program than has been appropriated. Such foot-dragging from an institutional Goliath like the USDA might be expected, especially when it involves an issue contrary to its major emphasis, conventional agriculture. Despite this slow start, the SARE program has gained some impressive ground. A competitive grants program, SARE has funded 183 projects with approximately $39 million (combined federal and matching public and private money) through 1991.

Nationally, the SARE program is overseen by USDA's Cooperative State Research Service. The national office develops guidelines and distributes funds but exercises little authority. The program's structure is very decentralized. The states are divided into four regions: North Eastern, Southern, North Central, and Western. Each region has an administrative council comprised of land grant researchers, farmers, non-profit representatives, representatives of agribusiness, and various USDA agencies. The council selects a host institution and establishes goals, priorities, criteria and procedures for project selection. They appoint a regional coordinator and technical reviewers to evaluate proposals. Finally, the council makes regional decisions on project selection and funding. The program's goals are: (1) to involve farmers directly in research design and implementation, (2) to promote partnership between all interested parties, and (3) to transfer practical, reliable, and timely information to farmers on sustainable agriculture practices.[9]

SARE has defined four general project categories as eligible for funding. These are:

(1) *Educational, demonstration, or information projects* that provide training on sustainable farming practices through conferences, workshops, and preparation of educational materials, and exhibit sustainable farming practices and systems on farms;

(2) *Experimental component research projects* that focus on developing or improving a specific sustainable low-input method or practice;

(3) *Integrated-systems research* that examines synergistic and conflicting relationships among various aspects of farming operations and functionally integrates the findings of research and experience into a whole-farm context; and

(4) *Economic or social impact assessment projects* which examine the economic and/or social effects of adopting sustainable farming practices and systems.[10]

Although integrated-systems research projects are to be given highest priority, component research projects initiated by researchers at land-grant agricultural institutions are most frequently funded. This reality displays the land-grant institutions' bias for component-based research. Land-grant researchers are comfortable organizing, conducting, and analyzing such projects. They are also better rewarded for it by their institutions. Notably, social impact assessment projects have received little attention, receiving only 4.5 percent of available funds.[11] The SARE program officials are aware of this situation and many of the regional groups are working to correct this imbalance. Indeed, the Western region's "Call for Proposals" in 1992 was restricted to projects that focused solely on whole-farm or ranch systems.

Through 1992, the Southern region had funded 37 projects, second only to the North Central region's 41 projects. Some examples of project funding levels in the Southern Region between 1988 and 1992 are:

(1) Utilization of Winter Legume Cover Crops for Pest and Fertility Management in Cotton ($193,280) [LS91-40(44)];

(2) Economically Viable Production of Vegetables in the Southern Region using Low-input and Sustainable Techniques: A Data Base ($76,770) [LS91-32(185)];

(3) Enhancing Farmer Adoption and Refining of a Low-input Intercropping Soybean-Wheat System (89-55-1) ($244,883) [LS89-12];

(4) Planning Funds for a Proposal on Extending the Issue of Sustainable Agriculture to Small Farms in North Carolina, Tennessee, and Virginia ($15,000) [LS88-5].[12]

A major project was recently started in the Southern region that has a focus refreshingly unrelated to component-based research. The project will involve organizing a comprehensive analysis of the state of agriculture in the South in order to identify assets and constraints for the adoption of sustainable agricultural practices. This project aims to further define what sustainable agriculture means for the South by sampling the existing multiple regional perspectives about the subject.[13]

North Carolina farmer standing in a field of pepper plants. Credit: The Carolina Farms Stewardship Association.

Assessment of SARE

In September 1992, the General Accounting Office (GAO) published a report on SARE, its management, accomplishments, and opportunities for improvement. The GAO report concluded that the SARE program is "successful in promoting sustainable agriculture, not only through its many projects, but through its ability to bring together diverse groups within the agricultural community to communicate and work together. It has also been instrumental in encouraging research institutions to become more involved with sustainable agriculture research."[14] In addition to SARE, the USDA sponsors other programs to encourage sustainable agriculture; however, the responsibility for these programs is fragmented among nine different USDA agencies. Couple this fragmentation with USDA's lack of a stated policy regarding sustainable agriculture and the result is often duplicated efforts or conflicting goals.[15] To assist in the coordination of activities, the 1990 FACT Act mandated the formation of two councils, the National Sustainable Agriculture Advisory Council (NSAAC) and the Agricultural Council on Environmental Quality (ACEQ) to oversee and coordinate sustainable agriculture programs at USDA. As of July 1992, the ACEQ had met only to discuss organizational issues and the NSAAC had yet to meet. The GAO criticized this fragmentation at the federal level, commenting that it leaves regional authorities with little guidance as to program monitoring and project results dissemination.

The GAO correctly maintains that programs to promote sustainable agriculture within the USDA are often at odds with other USDA programs. These programs are concerned with "short-term economic considerations such as maximizing production, minimizing production costs and consumer prices, and maximizing the market share of certain agricultural commodities".[16] The programs most in conflict with the goals of the SARE program are the commodity programs. Originated in the 1930s, the commodity programs were basically income support programs designed to maintain farmer income when prices slipped below parity. They were also designed to maintain food security and manage food production. Although the commodity programs have grown more complex with every revision of the Farm Bill, they survive to this day, benefiting only the largest of farmers and costing taxpayers billions of dollars.[17] The problem with commodity programs is that they promote the kind of agricultural practices that are in direct opposition to sustainable agriculture. To participate in commodity programs a farmer must maintain a base

acreage in the program crop and not shift production of that crop off the base.[18] This discourages the practice of crop rotation, one of the basic tenets of sustainable agriculture, and encourages farmers to increase use of chemical inputs to boost yield on their base acreage.

Not all agriculture is covered by commodity programs in the U.S., only major crops like wheat, corn, soybeans, and cotton; however, it is the intensive monoculture production of crops such as these and others that leads to environmental degradation. If sustainable agriculture is to make a difference in agriculture production, the USDA needs to address these contradictory policies within their department.

The GAO also commented on the disparity between the funding Congress appropriates for SARE and the amounts requested by USDA. Congress has consistently offered more than USDA requests. The reasons underlying USDA's decision to not fully utilize funds that Congress appropriates are uncertain. It is noteworthy that USDA did not request funds for SARE for the first three years of the program. Congress appropriated $3.9 million in 1988, and $4.5 million per year for 1989 and 1990 without a funding request from USDA. In 1991, USDA finally requested only $4.5 million of a $6.7 million appropriation for that year. In sum, Congress appropriated $26.25 million for the SARE program from 1988 through 1992, while USDA requests totalled $8.9 million.

As a result of their review, the GAO developed three recommendations to increase the value of the SARE program:

> (1) "Establish a departmental policy for sustainable agriculture and direct the under- and assistant-secretaries to develop goals to implement that policy. This policy should consider sustainable agriculture's interrelationship with other departmental programs and *acknowledge the trade-offs* (emphasis added) that may be necessary as agriculture becomes more productive, competitive, and environmentally sound;
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> (2) Ensure the active participation of the National Sustainable Agriculture Advisory Council and the Agricultural Council on Environmental Quality in coordinating sustainable agriculture programs, as required by the FACT Act; and
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> (3) Recommend that the Secretary of Agriculture direct SARE program management to provide guidance to regional offices to improve program monitoring and wider information dissemination."[19]

Another area of concern, unaddressed in the GAO report, was the small portion of funding awarded to Impact Assessment projects, only 4.5 percent since the program's inception. These projects, as mentioned before, examine the economic and/or social effects of adopting sustainable farming practices and systems. It is likely that projects in this area would lead to an understanding of how sustainable agriculture can lead to sustainable communities. More projects in this area would also help move "quality-of-life" issues to the forefront of the discussion on sustainable agriculture, a concern of many leaders in the field. Fortunately, change is occurring in this area. A national research team was formed recently to study how well the SARE program addresses quality-of-life issues. This project was awarded $50,000 in SARE funding in 1992. Additionally, the USDA's Economic Research Service is examining the question of what might happen to the economy and environment if all farmers adopt sustainable methods. SARE has funded this project at $1.2 million for three years. If the SARE program can address quality-of-life issues in a meaningful way, then the program will achieve a better balance between its focus on the environment and its desire to consider a whole-farm, whole-community perspective.

Research in and Promotion of Sustainable Agriculture

Sustainable agricultural research, practice, and promotion is expanding across the United States. One of the more prominent institutions involved in research is the Leopold Center for Sustainable Agriculture at Iowa State University. The Center funded $2.3 million in research from 1987 to 1990. Michigan State University recently appropriated $3.5 million for the endowment of the Charles Stewart Mott Distinguished Professor in Sustainable Agriculture. The University of California at Davis also has a successful sustainable agriculture program. Many non-profit organizations are involved in the promotion of sustainable agriculture ranging from the Center for Rural Affairs in Nebraska to the Rodale Institute in Pennsylvania to Winrock International in Arkansas.

Here in North Carolina, the W.K. Kellogg Foundation recently awarded over $900,000 to a statewide partnership of farmers, agricultural organizations, universities, and communities to develop sustainable agriculture at four model sites across the state. The project is a coalition of seven groups including the Land Loss Prevention Project, Carolina Farm Stewardship Association, North Carolina Coalition of Farm and Rural Families, Rural Advancement Foundation International-USA, Rural Southern Voice for Peace, North Carolina State University and North Carolina A&T State University. The coalition will work to change the character of farming in the state by identifying, design-

Promoting Sustainable Agriculture

In addition to funding the SARE program, Congress could further promote sustainable agriculture by changing agricultural policy to more directly affect the survival prospects for small- and medium-size family farmers. Kenneth Robinson, in his book *Farm and Food Policies and Their Consequences* (1989), has outlined some principle policy alternatives, listed in declining order of political acceptance:

(1) "Offer more liberal credit for small-scale farmers;

(2) Fund special research and extension programs designed to favor small-scale farms;

(3) Target price-support benefits to farms below a certain size;

(4) Prohibit ownership of farm land by nonfamily corporations;

(5) Eliminate provisions in the tax laws that favor nonfarm investment in agriculture and encourage expansion by large-scale farmers;

(6) Impose an upper limit on farm size, or at least limit the area of land eligible for government-subsidized water for irrigation;

(7) Authorize the government to purchase land for resale or lease to entering farmers or small-scale operators who need to expand; and

(8) Create local land purchase review committees with the power to prohibit land transfers that lead to concentration of production on large-scale units."

The World Resources Institute has also considered how the federal government might promote a more sustainable agriculture and at the same time promote family farms. In the book *Paying the Farm Bill: U.S. Agricultural Policy and the Transition to Sustainable Agriculture* (1991), a team of researchers analyzed the changes needed to protect U.S. agricultural resources and income over the long term. They investigated two case studies that contrasted the results of several different farming strategies in Nebraska and Pennsylvania. Their analysis led them to several policy conclusions:

(1) "Farm support mechanisms create distortions that encourage dependence on chemical inputs and discourage sustainable agricultural practices;

(2) A policy of multilateral decoupling [of income support programs and commodity production] could remove the distorting influence of commodity programs;

(3) An agrichemical input tax could encourage lower levels of input use;

(4) Adaptations to baseline agricultural policy which allow flexibility in crop production could go far towards encouraging sustainable practices;

(5) When complete accounting of on-farm and off-farm environmental costs without the distorting effects of baseline agricultural policies are evaluated, sustainable farming systems are economically competitive;

(6) Shifting towards sustainable farming systems can raise agricultural productivity, reduce the fiscal costs of maintaining farm incomes, and lower environmental costs."

Policy changes such as these could greatly reduce America's expensive farm bill and assist the promotion of sustainable agriculture.

ing, and implementing sustainable agricultural systems that will benefit rural Carolinians. In addition to encouraging new farming techniques, the project should benefit selected communities by enhancing economic activity, increasing environmental stability, and promoting community development.

On a different front, research has shown that the communities of small-scale agriculturists are more socially, culturally, and politically developed. Fifty years ago, Walter Goldschmidt studied the effects of small-scale and large-scale agriculture on rural communities. His 1944 study of Arvin and Dinuba, two towns in the Central Valley of California, provides the earliest analysis of the consequences of farm size on the quality-of-life for a surrounding community. His study of socio-economic and town characteristics found a marked difference between Arvin (a town surrounded by large-scale farms) and Dinuba (a town surrounded by small-scale farms). For every characteristic studied, Dinuba was healthier than Arvin.

Arvin and Dinuba were reexamined in 1977 by Steve Peterson, a researcher with the California Department of Housing and Community Development. He found Dinuba, still surrounded by small-scale agriculture, to have a more prosperous central business district and a higher standard of living than Arvin, still surrounded by large-scale agriculture. Dinuba had more schools, playgrounds, churches, civic organizations, businesses, and higher voter participation. Fujimoto (1977) continued work in the same vein, studying the relationship between quality-of-life and control of the major agricultural resources of land and water. He studied the complexity of services as an index to the quality-of-life in 130 towns in the San Joaquin Valley

of California. His results confirmed Goldschmidt's earlier findings--small-scale agriculture is crucial to the sustainability and success of rural communities.

Conclusion

Environmental and socio-economic problems arising from the practice of conventional agriculture are occurring across the U.S. The SARE program, mandated by Congress in response to problems of conventional agricultural practices, has legitimized the need to research and adopt sustainable agricultural practices. Despite fragmentation at the federal level and a small budget, the program has been successful at promoting sustainable agriculture research in the land-grant university system and at the grassroots level with on-farm research. The program reaches the farmer who wants to learn how to practice a more sustainable form of agriculture and is creating a dialogue between two groups who do not usually share the same table--environmentalists and agribusiness. Facilitation of this dialogue is one of the most important contributions of the SARE program.

A significant aspect of the sustainable agriculture discussion that is frequently neglected is the critical importance that the practice of small-scale sustainable agriculture can have for the sustainability and viability of rural communities. Farms do not exist in a vacuum. They demand many support services. A family farm system of sustainable agriculture requires the infrastructure of a healthy, economically vibrant community. Likewise, a family farm system of sustainable agriculture can help keep rural communities strong and vital. It is an interdependent relationship. This important link should not be overlooked in future discussions of sustainable agriculture. CP

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Notes

[1] Faeth, et al. *Paying the Farm Bill.*

[2] Bird, "Sustainable Development," 6.

[3] Lockeretz, "Open Questions in Sustainable Agriculture."

[4] Allen et al., "Integrating Social, Environmental, and Economic Issues in Sustainable Agriculture," 37.

[5] Ibid., 38.

[6] "Sustainable development is development that meets the needs of the present without comprising the ability of future generations to meet their own needs."

[7] United States General Accounting Office, "Sustainable Agriculture," 12.

[8] Beus and Dunlop, "Conventional versus Alternative."

[9] Ibid., 14.

[10] Ibid., 31.

[11] Ibid., 32.

[12] Southern Region 1993 SARE/ACE Report to Congress.

[13] The project was called "Participatory Assessment for Strategic Planning in Sustainable Agriculture Research and Education" [LS92-50] and had funding levels of $37,500 in 1992 and $90,550 for 1993.

[14] United States General Accounting Office, 40.

[15] Ibid., 23.

[16] Allen et al., 35.

[17] "According to the General Accounting Office, nearly a third of the total [farm subsidies] goes to the biggest 1% of producers," from *The Economist*, "Rural America," November 2, 1991, 23.

[18] In an effort to remedy the problems associated with commodity programs, the 1990 Farm Bill made some provisions for farmers to grow different crops on a small part of their base to promote diversification.

[19] United States General Accounting Office, 5.