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## The Role of Southern SARE Projects in Enhancing the Quality of Life in Rural Communities in the South

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## **THE ROLE OF SOUTHERN SARE PROJECTS IN ENHANCING THE QUALITY OF LIFE IN RURAL COMMUNITIES IN THE SOUTH\***

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### **ABSTRACT**

As an institutional mechanism, funding agencies play a key role in actualizing perspectives about sustainable agriculture by funding research, education, and outreach activities. This paper examines trends in sustainable agriculture research and education projects funded by the Southern SARE program in the last 15 years. First, it analyzes key trends in the research foci of 174 projects, which demonstrate two main threads of thought and research in sustainability: one oriented toward addressing production issues and the other toward community issues. The paper then examines projects that use “quality-of-life measures” to guide their research processes and discusses common challenges that these projects face. The concluding section presents our recommendations to future researchers and to SARE for research strategies that may allow SARE to continue its contributions to the enhancement of quality of life for farmers, rural residents, and rural communities.

### **Introduction**

Since the mid-1980s agricultural sustainability has emerged as a key concept and social value that affects the research, educational, and outreach activities of many individuals and organizations that provide services to farmers and rural communities. The term *sustainability* has multifaceted and heterogeneous meanings because diverse individuals, groups, and organizations often value different components of a given socio-ecological system. Consequently, one perspective of sustainability may be viewed as unsustainable from another perspective (Orians

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1990). Decision making among those individuals concerning *what* to sustain and *how* to sustain is therefore crucial.

Practitioners and advocates of sustainable agriculture recognize that changes in farming practices by individual farmers alone are not sufficient to make agriculture more sustainable. A successful transition to sustainable agricultural systems requires collaborative efforts by farmers, policy makers, community leaders, researchers, extension agents, and other stakeholders. What is more important, the goal of agricultural sustainability needs to be incorporated into institutional mechanisms that foster and support such collaborations.

Funding agencies—whether public or private and multinational or local—are among such institutional mechanisms that play a key role in guiding the processes to actualize agricultural sustainability by providing a working definition of, and creating opportunities for diverse stakeholders of agriculture to negotiate approaches to, agricultural sustainability. To examine how the goal of sustainable agriculture and the direction to achieve it, is shaped through a federally-funded agency, this paper applies the social constructionist perspective of science to discuss key trends in sustainable agriculture research, as identified in our evaluative study (Bhavsar et al. 2005) on research projects funded by the Southern Sustainable Agriculture and Education (Southern SARE) program between 1988 and 2003.

The historical background of SARE has been provided by Jordan and Constance in this issue. Southern SARE has been a unique agency in the development of sustainable agriculture for farmers, researchers, and community leaders in the southern region.<sup>1</sup> From 1988 to 2003, Southern SARE funded 174 research and education (R&E) projects including 25 Agriculture in Concert with the Environment (ACE or AS) projects.<sup>2</sup> SARE envisions that sustainable agriculture is realized through the development and diffusion of practices that simultaneously promote the three legs of sustainability, including: economic profitability, environmental stewardship, and quality of life. One question we raised in our

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<sup>1</sup>The region includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Puerto Rico, and the U.S. Virgin Islands.

<sup>2</sup>While SARE R&E projects were funded by the USDA-CSREES, ACE/AS projects were funded jointly by the US Environmental Protection Agency (EPA) and the USDA-CSREES. The ACE program aimed to promote sustainable agricultural practices by reducing the dependence on toxic herbicides and other pesticides.

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original study was: Are research foci of R&E projects evenly distributed among these so-called “the three legs of sustainability?” This paper focuses on our findings from the analysis of projects that aimed to strengthen the third leg, which is the area of concern to many rural sociologists, but, unfortunately, is the least funded among the three according to our data.

In the next two sections, we discuss the theoretical underpinnings and research methods used for our evaluative study, conducted between 2003 and 2005. After we present key findings from the analysis of significant trends in the research foci among the 174 R&E projects, the paper discusses the common features of those research projects, which are oriented toward addressing community, rather than production, issues. In particular, our discussion focuses on the projects which use “quality-of-life measures” to guide their research processes. Findings from interviews with 25 Principal Investigators will be integrated into our discussion of common challenges that these projects face in addressing quality-of-life issues. The concluding section presents a summary of findings and our recommendations on how rural sociologists can contribute to future SARE research that aims to enhance the quality of life for farmers, rural residents, and rural communities.

### **Social Construction of Sustainability**

Many works in the science studies literature suggest a symbiotic relationship between science policy and scientific knowledge, in which the authority and legitimacy of both the state and science are constantly renegotiated among numerous social actors (e.g., Bimber and Guston 1995; Cozzens and Woodhouse 1995; Elzinga and Jamison 1995; Jasanoff 1996). These studies treat “scientific knowledge as a negotiated product of human inquiry, formed not only via interaction among scientists but also by research patrons and regulatory adversaries” (Cozzens and Woodhouse 1995:534). Whether over budget allocation among federal funding agencies in the Congress or the strategic planning for research in a federal department, the outcomes of these negotiations inevitably affect what kinds of knowledge and products are generated by scientific research. As Cozzens and Woodhouse stress (1995: 534), the content of scientific knowledge therefore “depends in crucial ways on how negotiating authority is distributed.” Simultaneously, the content of scientific knowledge redefines who participates in negotiation processes surrounding scientific policy and knowledge production. In short, the relationship between science policy and scientific knowledge is “a system of ‘coproduction,’ in which scientific and political order are simultaneously created

and recreated to sustain each other through complex rituals of interdependence” (Jasanoff et al. 1995:527).

Among social constructionist perspectives in science studies, actor-network theory (ANT) emphasizes the importance of examining *science-in-the-making* (Callon 1986; Latour 1987; Law and Hassard 1999). Studies informed by ANT often employ a methodological approach of “following the actors” linked to each other in networks to observe processes in which scientific knowledge is socially constructed. Also, these studies also aim to unpack how the authority and legitimacy of scientific knowledge is distributed among diverse social actors in these processes.

In this theoretical perspective, the funding agency is treated as simultaneously a *network of actors* and an *actor in networks*. First, the funding agency is a network of actors because it consists of heterogeneous social actors, including government offices, agency departments, the Congress, universities, academic organizations, and lobbyist organizations, which bring in specific economic needs, political interests, social perspectives, and moral values into negotiations for shaping that agency. In other words, the funding agency is an arena for bringing social actors together and distributing negotiating authority among social actors. In agricultural science, for example, Kloppenburg (1988) and Perkins (1990) emphasize the strong role that USAID and the Rockefeller Foundation played in shaping the direction of the Green Revolution. Their work shows that these funding organizations were not monolithic and their funding decisions to support the Green Revolution were made through negotiations among various social actors, each of whom had specific interests and perspectives on agricultural development.

On the other hand, the funding agency is also a key social actor who is enrolled in many networks for making scientific knowledge and policy. By defining priority areas of research (“what jobs get done”) and providing guidelines for designing and evaluating a research project (“how jobs get done”), funding agencies play a role of directing how each network needs to be assembled among diverse human actors (e.g., research/extension scientists, extension agents, community leaders, farmers) and numerous nonhuman actors (e.g., soil, insects, seeds, composts, labs, demonstration farms) to cause desired outcomes from scientific research. Surveys of agricultural scientists (Busch and Lacy 1983; Goldberger et al. 2005) suggest that the availability of research funding affects how individual scientists from diverse disciplines set their research agendas and develop collaborative relationships with colleagues within and outside their discipline, extension agents, and clients. In turn, by carrying out their projects agricultural scientists appear to

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internalize what is the societal value and who are the beneficiaries of their research work and to frame how their own scientific discipline *could* (and *should*) contribute to the future transformations of agriculture and food systems that would be socially desirable.

However, as Latour (1987) shows, the fate of science is in later users' hands. *Ready-made-science*, or products and knowledge created through scientific research, often, though not always, has an enormous impact on transforming our understanding of, and interaction with, the social and natural worlds from which we derive meanings. Let us think about technological transformations in U.S. agriculture over the last 50 years. Such technical changes as high yielding varieties, synthetic fertilizer and pesticides, and high precision machinery can be seen as results of "advancement" in scientific understanding of social and natural worlds surrounding agriculture and food. On the other hand, such advanced scientific knowledge and technology in agriculture have had profound and enduring impacts on transforming not only farming practices, but also the very social and natural worlds that classify what constitutes agriculture and food and what roles various social actors play in the agricultural sector, food systems, and rural communities.

Indeed, the call for agricultural sustainability is a manifestation of uneasiness and dissatisfaction felt by some social actors with these worlds created by technologies that overemphasize economic profitability. Moreover, heterogeneity in the meaning of sustainability reflects different locations in which many social actors have been placed in networks (e.g., farmers vs. consumers, tobacco farmers vs. corn farmers in Kentucky) surrounding technical change in agriculture.

The social constructionist perspective of science, particularly ANT, guided our evaluative study to critically examine Southern SARE as a *social actor* and a *network of actors* that continuously redefines who would be included, what could get negotiated, and how these negotiations should be carried out simultaneously to induce the technological and social change necessary for making agriculture more sustainable. Patterns<sup>3</sup> observed in research foci among Southern SARE-funded projects were assumed to indicate how negotiating authority was distributed among social actors with diverse perspectives on agricultural sustainability. Then, these findings guided us further to identify common characteristics among projects with

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<sup>3</sup>Although this particular paper only focuses on the pattern of research foci, our study also examined the pattern of funding allocation among these projects.

a strong focus on the quality-of-life goal and to develop recommendations to improve funding in this area.

### Methods

While the design of the original evaluation study discussed in this section was guided by the existing literature on the social construction of scientific knowledge, the data generated further research questions and shaped analytical approaches to investigate the current state of sustainable agriculture in the South, including the question on common challenges in addressing quality-of-life issues discussed in this study. This section therefore discusses methods used in two distinctive phases of our research.

#### Phase 1: Evaluation of Trends in Sustainable Agriculture Research

To evaluate 174 projects funded by the Southern SARE program between 1988 and 2003, we used their final or annual report summaries submitted to the agency's website (available on the website, <http://www.sare.org>). We carried out the analysis of research categories by raising the following questions: Are some topics over- or underrepresented? Do topics change over time? Are some topics over- or under-funded? We assumed that the research topic affects the type of networks required to carry out a project, and therefore the type of knowledge to be generated from it.

Each final report summary was read multiple times by at least three of the four project staff to generate and agree on 17 research topic areas to be assigned to each project (see Appendix A for definitions). It is assumed that the priorities of Southern SARE are likely reflected in proposal funding patterns. As our analysis focused on *science-in-the-making* (Latour 1987), we also assumed that research is a dynamic process involving constant adjustments in the research objectives, design, and plan. Therefore, each project could include multiple topic areas, assigned based on results (or research output) rather than on objectives (or research input), reported in final or annual report summaries. This is largely because research objectives may not produce results that contribute to the anticipated topic, and findings from past projects often affect the future direction of a given funding program. By relying on research output rather than input, our analysis of research trends could capture the role of Southern SARE in shaping actual knowledge and products being produced through research over time, and therefore evaluate the potential impact of the Southern SARE R&E program in achieving its goals.

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As shown in Table 1, these 17 research topic areas were further grouped into the four categories: *Physical Farm*; *Economics*; *Community*; and *Systems*. These four categories roughly correspond with the three goals of sustainable agriculture: environmental stewardship, economic profitability, and quality of life. However, we developed categories that reflect how these goals were integrated into actual research and educational processes. For example, those projects classified under *Systems* explicitly addressed issues surrounding all the three legs of sustainability. To separate the second and third legs of sustainability, we distinguish those research topics that focused on social equity issues from economic issues. Thus, *community economics* (CE) projects were classified under *Economics* instead of *Community*. This re-categorization allowed us to grasp how the research priorities of particular aspects of agricultural sustainability may have changed over time and identify which goal of sustainable agriculture needs to be strengthened.

### Second Phase: Examination of Quality-of-Life Projects

In the second phase of our project, we carefully reviewed annual and final reports of 69 projects classified under the *Community* category. These projects contained at least one topic designation of *community relationships or education* (CO), *minority or low resource farmers* (LRF), or *policy* (PO). As noted earlier, however, most projects included other topic designations, and therefore were classified under more than one category. To investigate common features of projects that address quality-of-life issues, isolating those projects that focused more on *Community* issues than *Physical Farm* and/or *Economics* issues was necessary.

We identified 11 such projects. To evaluate these 11 projects, we asked in our textual analysis: What are common features of these projects? What do these projects consider to be key factors that determine the quality of life? In this phase, we assumed that these reports reflect values and visions for agricultural sustainability shared among team members on these projects. As discussed below, we found that these projects are often very *explicit* compared with other projects under *Community* in articulating their perspective that benefits of sustainable agriculture should contribute to improving the quality of life in rural communities beyond individual farms. In our analysis of the reports, six common values emerged as something that consistently guided their research processes, including: independence of family farms; vitality of rural communities; entrepreneurship; leadership; collaboration; and trust.



TABLE 1. CATEGORIZATION OF TOPICS ADDRESSED IN S-SARE PROJECTS, 1988-2003.<sup>a</sup>

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CATEGORY/Topic
PHYSICAL FARM
Soil-air-water (SAW)
Crops (CR)
Livestock (LV)
Crop protection (CP)
Grazing (GR)
Aquaculture (AQ)
Agroforestry (AF)
Wildlife (WL)
Engineering (EG)
Organic (OR)
ECONOMICS
Individual farm economics (IFE)
Community economics (CE)
Computing and whole-farm planning (CFP)
COMMUNITY
Community relationships (CO)
Policy (PO)
Limited resource farmers (LRF)
SYSTEMS
Systems (SY)

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<sup>a</sup>The definitions of topic terms are listed in Appendix A below.

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Finally, findings from the analysis of project reports were combined with the interview data collected in 2004. Thirty Principal Investigators (PIs) were contacted over telephone for interview, roughly<sup>4</sup> about two per each state or protectorate. They were selected because they had the most funding in that state and/or multiple funded projects from Southern SARE. Among them, we completed interviews with 25 PIs. Interview questions focused on motivations and challenges in designing and carrying out research and/or educational projects funded by Southern SARE. Although only three PIs interviewed were involved in the 11 projects that explicitly address quality-of-life issues, interview results helped us to recognize how the quality-of-life measures were used *implicitly* by these PIs and their collaborators to guide their projects.

### Sustainable Research Foci

The 174 unique projects resulted in 543 total category designations because each project could be assigned to multiple categories. On average, each project investigated is assigned to three categories, indicating the commitment of the Southern SARE program to reach beyond single topics of investigation and support collaboration among a wide range of researchers and stakeholders in agriculture. Figure 1 shows the frequency of all project categories, expressed as percentages of the 543 total category designations.

Stressing that during our analysis we did not notice substantial gaps between research objectives and findings in most projects is important. By assigning multiple topic designations per project, our approach could treat unanticipated outcomes as additional research input, thereby allowing us to assess both the impact and patterns of Southern SARE funding.

*Soil-air-water* (SAW, 14%) and *individual farm economics* (IFE, 14%) dominated, followed by *crops* (CR, 12%), *crop protection* (CP, 11%), and *community relationships* (CO, 10%). This pattern suggests that particular types of agriculture and particular aspects of farming receive more attention in agricultural sustainability research than others, namely crop rather than livestock agriculture and farm economics over community life. Furthermore, certain fields of agricultural sciences (e.g., agronomy, plant pathology, soil science, agricultural economics) are likely to be

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<sup>4</sup>Unfortunately, despite our repeated attempts, we were unable to contact any from Puerto Rico or U.S. Virgin Islands.

overrepresented than others (e.g., animal science, forestry, rural sociology, anthropology, human geography).

FIGURE 1. SOUTHERN SARE PROJECTS BY RESEARCH TOPIC, 1988-2003.

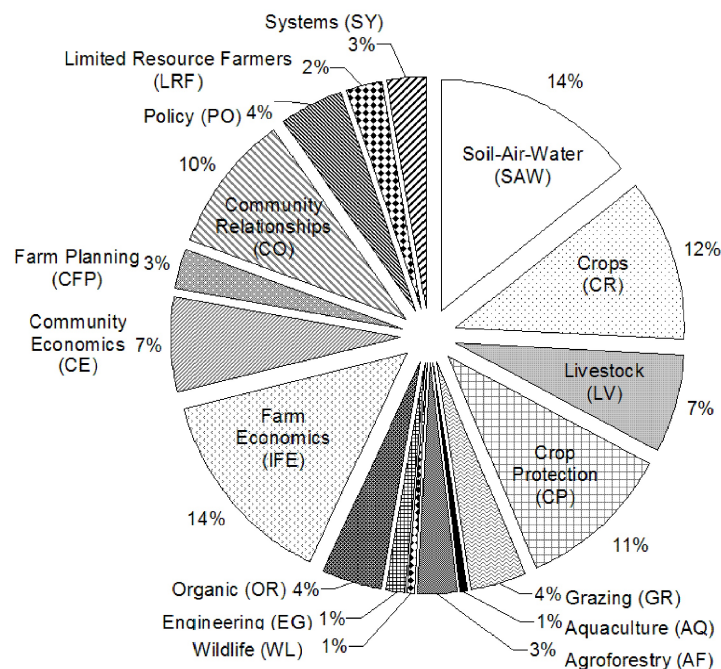


Figure 2 presents broader categories, including *Physical Farm*, *Economics*, *Community*, and *Systems*. These broader categories were generated by combining more specific categories as shown in Table 1. Clearly Southern SARE research focused mostly on physical farm attributes such as production issues and environmental protection issues and less on community aspects of sustainable agriculture. This is expressed partly because most projects included some sort of topics under *Physical Farm*, even if they were not the primary foci of the projects. For example, a Heifer International pastured poultry project focused primarily on CO and CE topics, but also contributed information to livestock production practices. Therefore, in this analysis that project was counted under *Physical Farm*, *Economics*, and *Community*.

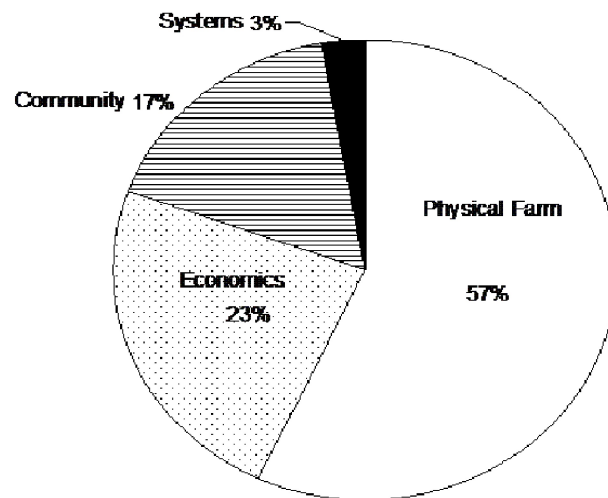
As stated earlier, SARE's vision for agricultural sustainability includes the goals of improving environmental stewardship, economic profitability, and quality of life. However, the concentration of research funding on physical farm attributes indicate

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the latter two goals are underrepresented. Moreover, it confirms that agricultural sustainability is driven by scientific language derived “from the work of agroecologists and environmentally-concerned agricultural scientists” (Buttel 1992:21).

FIGURE 2. SOUTHERN SARE PROJECTS BY CATEGORY, 1988-2003.

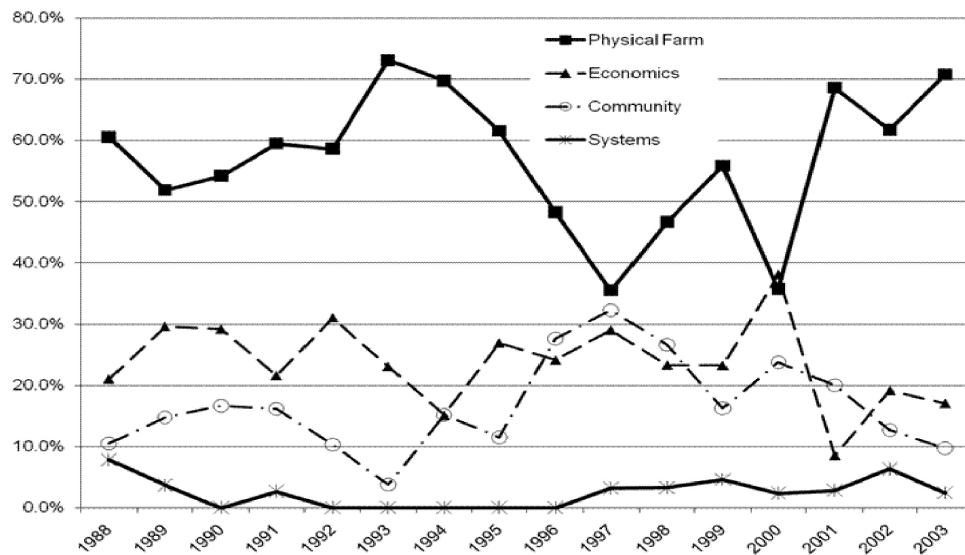


Many projects under *Physical Farm* often include a component of economic impact analysis at the individual farm level (e.g., cost-benefit analysis, market return) but exclude that of social impact analysis (e.g., impact on families, communities, other lifestyle measures). Only 16 projects had no physical farm aspect at all but focused entirely on research topics under *Community* or *Economics*. Perhaps troubling was the low number of CE projects. Some of our interviewers indicated that more systematic and long-term structural changes in the agriculture sector and food systems are necessary to transform farming into ecologically, economically, and socially sustainable. CE projects are the ones most specifically directed toward such change.

There are multiple, competing visions of sustainability. Gale and Cordray (1994) identified nine “sustainability types” based on four defining questions, including: what is sustained; why sustain it; how is sustainability measured; and what are the politics. As indicated in Figure 3, category frequencies in the Southern

SARE projects have not changed significantly over time, indicating a high level of consistency in the manifestation of Southern SARE's mission. The concentration of funding in the *Physical Farm* category suggests that certain sustainability types, what Gale and Cordray call "Dominant Product" and "Self Sufficient," are valued over the others. This presents challenges to many social scientists, particularly sociologists and anthropologists, who are interested in other sustainability types.

FIGURE 3. CHANGES IN THE RESEARCH FOCI, 1988-2003.



Bird and Ikerd (1993) stress the importance of placing quality of life in rural communities as a focal point for sustainable agriculture research. However, from our analysis of Southern SARE funding patterns, we cannot confirm Bird and Ikerd's claim that quality-of-life issues have been integrated into systems-oriented sustainable agriculture research. Below we will present key findings from our analysis of those projects that exclusively try to address sustainability of certain social systems to benefit farm families and rural communities.

### Projects with the Quality-of-Life Measures

Among the 174 projects, 69 distinctive projects address one or more *Community* topics. Eleven of these projects *explicitly* emphasize various issues concerning the quality of life among farmers, rural residents, and/or communities as the research

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focus. In most other projects under the *Community* category, the research focus often resides in the improvement of environmental stewardship in farming and the quality-of-life goal is addressed through a small component added to the research design. Our careful review of annual and final project reports from these 11 projects indicates that despite variations in the project design there are three commonalities in research goals and underlying assumptions used to tackle quality-of-life issues through sustainable agriculture research.

First, one or more of the following interrelated goals are pursued by these projects:

- To identify existing and explore new marketing opportunities and constraints;
- To inventory existing resources available for farmers and communities and create a network that enables resource sharing among farmers and communities; and
- To develop linkages between producers (i.e., small-scale, family farmers) and consumers in rural and urban communities to promote local food systems.

Second, these projects rely heavily on various social science research techniques to achieve these goals. Survey and interview techniques are often used to document the impact of structural transformations of agriculture on the quality of life for farmers and rural communities and to identify needs, expectations, and attitudes of farmers, consumers, extension agents, and/or community leaders. The data collected through these techniques are then used to design educational/training programs for farmers, leaders of agriculture-related organizations, extension agents, K-12 students, and/or other stakeholders of the communities.

Third, the commonalities in the goal and research design come from a shared assumption that agricultural sustainability cannot be achieved merely through changes in farmers' attitudes and behaviors alone, but through systematic and structural changes in individual and organizational actors linked together in the food system and rural communities. For example, a school and community garden project introduces agriculture as an integral part of K-12 curriculum and creates new opportunities for farmers to interact with people whom they previously had little contact. This assumption is expressed in the emphasis among these community projects on bringing various actors in the food system and/or communities together at various stages to plan and design research, outreach, and/or educational activities. Furthermore, an interviewee involved in one of these

projects stressed that this assumption is also grounded in the long-term commitment to working toward sustainability. He believes that working specifically with the youth is therefore particularly important in building long-term coalitions among rural residents to sustain research, educational, and policy initiatives toward agricultural sustainability.

### **Key Values to Determine the Quality of Life**

These 11 projects share the vision of how sustainable agriculture *would* (and *should*) contribute to the quality of life in rural communities. These projects reflect the social scientist's perspective, presented by Cornelia Flora at the USDA Agriculture Outlook '93 Conference, that problematizes power distribution in the locality in defining what constitutes quality of life in a sustainable production system and rural community (Bird and Ikerd 1993). As mentioned above, these projects try to address issues far beyond environmentally-sound farming practices. In this section, we discuss the six shared values, identified in the text analysis, that appear to have become an integral part of this vision, including: (a) independence of family farms; (b) vitality of rural communities; (c) entrepreneurship; (d) leadership; (e) collaboration; and (f) trust. These values embrace the community development perspective in the rural sociology literature that emphasizes the expansion of social capital by relying on existing assets in the community (e.g., Flora and Flora 2003; Kretzmann and McKnight 1993; Mathie and Cunningham 2003). Consequently, strategies being used or advocated to achieve the quality of life are very similar, including: crop diversification; efficient and cost-effective farming practices; value-added, direct marketing of value-added, direct marketing of locally-produced products; and farmers' participation in the decision-making process for marketing, processing, and/or retailing.

More important, we believe that each value can be both quantitatively and qualitatively measured and that rural sociology can greatly contribute to the development of prescriptions of each value. Evaluative measures of the six values are summarized in Table 2. These measures are easily obtained and can be systematically integrated into the funding programs of SARE and other agencies which aim for agricultural sustainability to evaluate the long-term impact of sustainable agriculture research projects on the quality of community life.

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TABLE 2. EVALUATIVE CRITERIA OF THE QUALITY-OF-LIFE MEASURES.

VALUE	CRITERIA
Independent Family Farms. . .	Productive
	Locally-owned
	Staying on the land
Vitality of Rural Communities.	Stable employment opportunities
	Thriving main-street businesses
	Sustained/expanding social capital
	Diverse land-use
	Retention of young people in the community
Entrepreneuership.....	Locally-owned enterprises
	Value-added enterprises
Leadership. ....	Farmers to train other farmers
	Adults to train youth
Collaboration. ....	Between farmers and technical advisors
	Between farmers and consumers
	Among rural residents
	Between/among rural residents and community leaders
Trust. ....	Between farmers and technical advisors
	Between farmers and consumers
	Among rural residents
	Between/among rural residents and community leaders

**Independence of Family Farms**

All 11 projects emphasize the importance of independent family farms above any other values. This suggests the presence of what Buttel (1992) calls “the family farmism” of agrarian activism during the 1970s in framing sustainable rural



community in these projects. These projects treat family farms as the basic unit of human organization that creates and transforms ecosystems that have an enduring impact on the quality of life in rural communities (Strange 1988). It is assumed that these farms' independence is vital in maintaining their commitment to stewardship of the land. The degree of "independence" is evaluated by three closely interrelated measures. Farms must be both locally-owned and productive, therefore allowing farm families to stay on their land.

### **Vitality of Rural Communities**

Sustainable agriculture is assumed to affect the vitality of rural communities positively. This assumption comes from a view that agriculture plays multiple roles in linking diverse economic and social activities in a given rural community and shaping social interaction among rural residents (Goldschmidt 1978; Lobao, Schulman, and Swanson 1993). Numerous studies have supported this assumption, often termed the Goldschmidt hypothesis (e.g., Gilles and Dalecki 1988; Lobao 1990; Lobao and Schuman 1991; Swanson 1988). Common measures used to evaluate vitality of a given community are the stability in employment opportunities (including farming), the liveliness of the Main Street, the diversity of land-use, and retention of youth in that community.

### **Entrepreneurship**

The community development model based on sustainable agriculture often advocates the preservation and expansion of enterprises with two characteristics. The first is locally-owned, family-operated enterprises that used to flourish on the main streets of all communities. Second, these enterprises are encouraged to rely on value-added marketing to sustain and expand their business. Entrepreneurship is not something that farmers and non-farm business owners can develop overnight, but requires them to undergo a series of training sessions and a period of trials and errors. The entrepreneurship in these individuals in a rural community is assumed as a pre-requisite for scoring high on the first two values described above.

### **Leadership**

Like entrepreneurship, leadership is also suggested as an area needed for capacity building among individual farmers and rural residents to enhance the quality of life in rural communities. Among the 11 projects, two specifically incorporated the development of leadership skills into the project design: one was

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to encourage farmers to train other farmers to disseminate new sustainable farming practices, and the other was to have farmers play the role of instructors in school/community gardening projects.

**Collaboration**

The SARE program is based on the principle of strong collaboration between researchers and clients. Certainly all the projects we reviewed considered collaboration as one of the most rewarding, yet challenging aspects of sustainable agricultural research. Unlike the previous four values described above, quantifying collaboration is very difficult. The PIs we interviewed suggested that qualitative characteristics of collaboration such as knowledge sharing, mutual respect and trust throughout and after the project matters far more than quantitative characteristics such as the number of collaborators on the project or the frequency of meetings among them during the project. Moreover, both the interviews and research reports suggest that the collaboration required for sustainable agriculture research is not limited to collaboration between farmers and technical staff (e.g., researchers, extension agents), but also between farmers and consumers, between rural and urban residents, and between adults and youth.

**Trust**

Trust is recognized as a prerequisite in building social capital in a community (Coleman 1993; Flora and Flora 2004; Pavey et al. 2007; Putnam 1992). As the final report of one project points out, rural life has been always based on the commitment to be a “good neighbor” between farmers, between farmers and non-farmers in a community, and between rural farmers and urban consumers. Farmers’ markets and community supported agriculture are examples of a strategy for value-added direct-marketing that rely heavily on trust building between producers and consumers. Many PIs we interviewed, even those who did not include strong components to address quality-of-life issues, emphasized the importance of trust among collaborators in their projects and key social actors in the rural community to realize agricultural sustainability and build sustainable rural community. Like collaboration, however, the trust in a given community is difficult, though possible, to evaluate through quantitative measures. None of the 11 projects articulated what measures could be used to evaluate a level of trust in the community.

### Conclusion

In our trend analysis of sustainable agriculture research, we found that Southern SARE's vision for agricultural sustainability is consistently addressed by supporting research and educational activities that aim to realize environmental stewardship, economic profitability, and the quality of life. Unfortunately, our study shows certain disciplinary knowledge and perspectives on agricultural sustainability are privileged over the others in sustainable agricultural research.

During the first phase of our research we observed a tendency that visions and types of agricultural sustainability in which rural sociologists and anthropologists are interested are undervalued in the Southern SARE funding program. Projects concerning *Physical Farm* attributes, particularly for crop agriculture, are over-represented over those on the other three topic categories, namely *Economics*, *Community*, and *Systems*. Only 11 out of 174 projects funded by Southern SARE explicitly address the quality of community life. During the second phase of our research, we found that these community-oriented projects were often guided by the perspective of sustainability that problematizes power distribution in an agricultural production system and a community. Consequently, these projects often focused on building new coalitions and strengthening linkages among diverse social actors who share interest in enhancement of the quality of life in rural communities.

If agricultural sustainability requires the three legs to be strengthened equally, types of technical and social change induced by sustainable agriculture research may not successfully transform farming toward sustainability. Here, the weaker legs need to be supported through a more targeted effort by the funding agency that increases the participation of social scientists in sustainable agriculture research. In other words, there is more room for rural sociologists and anthropologists to play a vital role in sustainable agriculture research.

In particular, there are three areas in which rural sociologists can make valuable contributions. First, rural sociologists can assist in constructing both quantitative and qualitative "measures" of the six values that enhance the quality of community life. The existing literature in community development (e.g., entrepreneurship, leadership, community asset mapping) provides both theoretical and methodological frameworks that can be modified to develop specific indices for a particular community in a project. What is more important, such work will help rural sociologists empirically evaluate and further refine the usefulness of key sociological concepts such as trust and social capital.

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Second, shared assumptions about the interaction between sustainable agriculture and the enhancement of the quality of life in rural communities can be evaluated by rural sociological work. For example, research guided by the Goldschmid's hypothesis has been used to justify the need to protect family farms in rural communities. However, the relationships among agricultural sustainability, the number and types of family farms, and quality of life in a given community are not clear. Developing common indices of the quality of life that can be used to compare the impact of agricultural sustainability research among various communities in the South is essential.

Finally, rural sociologists can facilitate coalition building for agricultural sustainability research. One question that has not been asked at the planning and evaluation stages of research is about the appropriateness of the membership in a research team to sustain desired outcomes from the research endeavor. Nearly every PI we interviewed pointed out difficulties with working with collaborators and suggested the need for better training and guidelines in managing varied concerns raised by research team members. Many rural sociologists are trained in a system-oriented framework on agriculture, food, and community, and have extensive experience in working with diverse organizations surrounding agriculture. Such expertise can help sustainable agriculture researchers develop a policy component through which diverse social actors are allowed to clarify priorities in managing and enhancing community resources.

The ANT's perspective emphasizes the power of scientific knowledge comes from the strength of linkages (or associations) between actors in a network (e.g., farmers vs. researchers) and between networks of actors (e.g., research network vs. policy network) to transform the social and natural world. Funding agencies, such as Southern SARE, are critical because they simultaneously enable and constrain scientific research by defining the sphere of negotiations in the knowledge construction processes. It is therefore important for Southern SARE to evaluate the impact of its funded projects on transforming both the social and natural worlds by asking continuously: How closely do both products and knowledge generated from the funded projects reflect societal expectations for and perspectives on desirable social and technical change? Which social actors, tools, expertise, and perspectives need to be brought into the sphere of negotiations to realize desirable social and technical change?

**Appendix A**

**Topic Categories Used for Analysis, by Alphabetical Order**

Agroforestry: Perennial plantings including orchards, woody ornamentals, timber, alley-cropping with trees, and silvopastoral systems, but excluding small non-tree fruits (e.g., blueberries).

Aquaculture: Fish, shellfish, amphibians, or other aquatic animals in constructed or natural ponds, and integration of aquatic animals with crops.

Engineering: Special equipment or construction for environmental or human health protection and/or for food and fiber production.

Community economics: “Physical capital” of communities. Farm-to-farm or sector-to-sector physical or financial relationships, food security, community-level marketing, physical or financial infrastructure (e.g., creation of community farm market).

Community relationships or education: “Social capital” of communities. Training and skill sharing, communication, generational relationships, cultural relationships. Training and communication must go beyond workshops, newsletters, one-time field days, or other non-relational events. Projects whose major focus is educational (e.g., book publication for specific audiences) are included.

Computer modeling and whole-farm planning: Includes all projects with modeling for whole-farm planning, water quality, crop planning, and/or erosion modeling (e.g., GLEAMS, Planetor, Budgetor, GOSSYM), and projects that developed new databases.

Crops: Includes annual agronomic crops, forages not dealt with in grazing systems (below), hay, annual or biennial horticultural crops, and perennial small fruits. Includes crop characteristics such as crop breeding, quality, physiological characteristics (e.g., dwarfism) other than pest or disease tolerances. Includes plant relationships such as synergy (companion planting) or antagonism (allelopathy). Includes rotation studies except cover crop studies for soil improvement (dealt with in the soil category).

Crop protection: Pest and disease control in all crops or plant systems including agroforestry plantings. Includes cultivation, chemicals, plant characteristics, crop rotations for plant protection (may also be included in the crop category above), IPM, biological controls, and soil-borne pathogens and nematodes. Excludes animal pests and diseases.

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- Grazing: Relationship between grazing livestock and forage plants, relationship of animals, plants, and soil, pasture layout and infrastructure, animal behavior in pastures.
- Individual farm economics: Budgets, profitability, farm-level marketing, value-added products, feasibility studies.
- Livestock: Small and large livestock including poultry, except aquaculture species. Livestock breeding, diseases and pests, animal product quality, animal management and behavior other than grazing, animal housing, manure management if manure is not to be used primarily as a soil amendment, manure handling other than processing for soil amendment or composting.
- Minority or low-resource farmers: Projects focus specifically on meeting these groups' needs or reaching them for education. Projects are usually included in other categories as well.
- Organic farming: Projects include but are not limited to organic practices specifically identified in the project description. Projects are usually included in other categories as well.
- Policy: Research agendas, laws, data intended to have regulatory implications (e.g., water quality investigations with clear regulatory focus), access to credit for underserved groups.
- Soil-air-water: Environmental data such as soil, water, and air quality. Manure management for soil fertility and water pollution control, soil conservation and tillage systems, nutrient cycling, cover crop management for soil quality and influence on soil quality, soil biology EXCEPT plant pathogenic biology (included in crop protection above).
- Systems: Long-term or large-scale research with four or more physical categories (livestock, crops, soil/water/air, crop protection, etc.), plus clear effort to investigate relationships among components.
- Wildlife: Integration of wildlife into farm plans, encouragement of wildlife.

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