

WHAT NEXT FOR SUSTAINABLE AGRICULTURE

William Lockeretz
School of Nutrition
Tufts University
Medford, Massachusetts 02155

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The campaign to have serious attention paid to the sustainability of America's agricultural system has recently entered a critical phase: it has been won. The people who have been concerned about the long-term consequences of how we produce our food can now take satisfaction from seeing this concern starting to influence the agricultural research agenda, and at least getting talked about in policy-making circles and the farm press. That means that the real work can now begin. No longer is the task merely to get people to even think about alternatives that might do better in protecting the environment, conserving limited resources, providing an adequate economic return for producers, and supporting decent rural communities. Rather, we now must develop realistic systems that offer a reasonable promise of fulfilling these goals.

Achieving this will require further research on specific technical questions in fields such as agronomy, entomology, rural sociology, economics, and animal science. But it also will require thinking about far-reaching conceptual issues and long-range strategies, not just mere "sustainable versus conventional" comparisons that received most of the attention when sustainable agriculture was still struggling to be taken seriously. This thinking should involve a diverse spectrum of interests, both within and outside of agriculture, and should aim towards developing a vision of our agricultural future that can be widely accepted and actively supported by the American public.

LEVELS OF ALTERNATIVES: TECHNIQUES, FARMS, AND THE AGRICULTURAL SYSTEM

Changes towards a more sustainable agriculture can occur on several levels. Should we be dealing primarily with improvement of individual production techniques, or with new designs for the entire farm, or with the agricultural sector as a whole? Likewise, a closely related question is how much emphasis should be given to changes that can occur soon versus longer-range goals; usually sector-wide changes will take the longest.

To some people, the emphasis should be on specific technical developments that farmers can adopt quickly, such as tillage methods that do a better job in controlling weeds without requiring herbicides. However, a major theme in the sustainable agriculture literature is the need to analyze the farm as an integrated system. That is, careful attention must be paid to the interactions among the various techniques involved in producing each crop or each type of livestock, and also to the interactions among the various crop and livestock enterprises that comprise the farm. In this view, the benefits of adjusting individual techniques will be limited at best; the real promise of sustainable agriculture lies in mutual reinforcement among components interacting to give a coherent structure to the entire farm.

Yet even this broader view does not encompass strategies and issues that encompass the farm sector as a whole, considered as part of the entire economy of an area. For example, introducing an unfamiliar crop might substantially help farms become more sustainable, but this change is possible only if enough farmers do it to justify providing the necessary supporting services, such as marketing channels and input suppliers.

The various levels of change in production systems have their counterparts in the various levels at which agriculture policy can be changed to promote sustainability. For example, a specifically-focused policy proposal that I discuss in more detail later is to reform Federal commodity programs to encourage more diversified crop rotations in grain farming. But a much broader set of actions will be required if we wish to go beyond the practices used on individual farms and deal with the full range of structural changes relevant to sustainability.

Early supporters of sustainable agriculture often took a broad, long-term view, emphasizing the benefits of changes at the level of the whole farm and the farm sector. Sometimes, too, they belittled the people concerned with "mere" technique. Recently, more emphasis has been placed on technique-related questions and immediately-achievable changes. With a much greater variety of people now involved in the subject, not everyone necessarily agrees with the views of earlier sustainable agriculture advocates on larger issues.

Regardless of how and why the emphasis has shifted, the question before us is how to apportion the emphasis in the future. All three domains -- techniques, whole-farm design, and sector-wide changes -- have something to contribute, but none by itself will fulfill the promise of sustainable agriculture. Unless we make a point of dealing with the full spectrum of possibilities, they will not all get an appropriate share of the attention. Advances in specific techniques are more easily envisioned and more readily accepted, and offer a much more likely and much quicker payoff. But they also carry the risk of preempting work that takes a broader view. With increasingly widespread interest in sustainable agriculture, smaller and smaller changes have been

given the designation "sustainable." Eventually the term may become so trivialized that it no longer connotes anything, serving merely as an agreed-upon label for certain programs and projects.

Before any single approach muscles out the others, careful thought should be given to what can and cannot be achieved in promoting agricultural sustainability through new techniques, through new designs for integrated farm systems, and through restructuring the economy of farming areas. In the rest of this article I consider several far-reaching issues that sustainable agriculture will face as it moves from an abstract concept to a real of shaping the future of our agricultural system. I conclude with a suggestion on how to think about the future to help insure that the promise of sustainable agriculture does not elude us because we neglected to consider changes at all levels.

REFORMING COMMODITY PROGRAMS TO PROMOTE SUSTAINABLE AGRICULTURE

Current activity in sustainable agriculture tends to be narrowly-focused and oriented towards the short-term. Specifically, many sustainable agriculture supporters are concentrating their attention on the farm commodity programs, which come up for continuation and possible modification in 1990.

The reason for this attention is clear. Price supports, production adjustments, and management of surpluses of major crops, especially grains and cotton, constitute the single largest federal involvement in agricultural policy. Tens of billions of dollars are spent in some years, with hundreds of thousands of farmers and hundreds of million of acres affected directly or indirectly. Also, unlike with newer and less familiar

concepts, no effort is needed to earn a place for reform of the commodity programs on the legislative agenda: the programs automatically come up for renewal and revision every three to five years. Moreover, the administrative structure is already in place to carry out any program changes dictated by Congress.

For several years the programs have been recognized as a serious obstacle to the use of more sustainable methods. The main offender is the "base acres" concept, which links payments for each crop to how many acres of that crop the farmer actually raises: the principle is "use it or lose it." If a farmer switches to a rotation that conserves soil and reduces the need for fertilizers and pesticides, but includes crops not covered in the program, such as nitrogen-fixing legume forages, the farm's acreage base is reduced accordingly. Unfortunately, some farmers simply cannot afford to give up part of their acreage base, even if this means continuing with a cropping system that is environmentally damaging and prone to erosion. Understandably, sustainable agriculture supporters are working very hard to change these rules to reward rather than penalize environmentally-conscientious farmers.

However, it will be unfortunate if concern with commodity program reform and other changes that can be achieved through immediate legislation result in too little effort being given to other approaches. The commodity programs involve short-term adjustments by individual farmers. Therefore they cannot explicitly handle longer-range, area-wide changes, although they certainly have caused such changes (usually not the predicted or intended ones). But even within these constraints they do not exhaust the possibilities. First, they do not deal with all of U.S. agriculture. Fruits and vegetables are not covered, even though they account for a large share of insecticide-related

problems. Nor are livestock covered, even though integration of livestock and crop production is a characteristic of many sustainable systems. Moreover, since participation is voluntary, not all production is covered even of crops that come under the programs.

Another limitation is that the programs already have a primary purpose -- to reduce surpluses and to support commodity prices and farmers' incomes. The political support behind this purpose is very strong, and any modifications to achieve additional purposes must not conflict with it too sharply. At most, some details might be changed, but restructuring the programs in a fundamental way, or ending them entirely, seems unlikely. Their very existence has altered agriculture in a way that makes farmers heavily dependent on their being continued in something like their present form. The short-term hardships that would result from wiping them out or drastically overhauling them make it politically difficult to do so, even if farmers and everyone else would eventually be better off, both environmentally and economically. This time around, tinkering seems to be the main option.

But on a more fundamental level, there may be an inherent conflict between the very idea of sustainable agriculture and the range of adjustments achievable through the commodity programs, no matter what the political mood of the moment. Sustainable agriculture, ideally, involves the whole farm as a system, and is not simply a matter of adjusting individual techniques. Fulfilling its promise might require far-reaching changes, such as introducing new crops to the farm, not just changing the proportions of crops already grown. Such changes may take a long time, whereas the essence of the commodity programs is short-term (usually annual) adjustments in

selected crops. In principle, farm programs could be a vehicle for far-reaching structural reforms of the agricultural system, especially since the billions of dollars of program payments can be used as a very strong inducement. But only rarely in their history has this possibility received serious, politically realistic consideration.

What, then, is the relation of commodity programs to sustainable agriculture? Certainly, we should remove the disincentives that the programs now create for farmers who already wish to adopt more sustainable systems. But if we use them to try to achieve more, we should recognize that this course does not encompass the range of possibilities, and therefore should not monopolize efforts to advance the cause of sustainable agriculture. In the remainder of this article, I discuss some of the larger issues that also need to be considered if we are to capitalize on the great opportunity created by the recent surge of interest in agricultural sustainability. These issues involve agriculture's contribution to the rural economy, the roles of agricultural labor, management, and capital, and the relation between farm structure and agriculture's effects on the environment.

RURAL COMMUNITIES

The economic crisis that hit agriculture in the early 1980s has had serious effects not only on many individual farm families, but also on the communities of which they are an important part. This is especially true where agriculture is the dominant economic activity, so that the shocks suffered by agriculture have not been cushioned by healthier conditions in other sectors. The result has been declining population and deteriorating public services in many agriculturally-dependent areas. A strategy

commonly offered in response to this problem is to foster expansion and diversification of the rural non-agricultural economy. However, in many areas it does not seem reasonable to expect such developments reasonably soon, if at all. Therefore many people look to changes within agriculture, specifically a shift towards sustainable systems, as a way for agriculture to do more for the economy of rural communities and to support a higher quality of community life.

One important reason behind this hope is that under prevailing practices, most of the money that farmers receive for their products leaves the immediate area to pay for inputs purchased from the national economy, such as agricultural chemicals. In contrast, sustainable systems are often characterized as less dependent on inputs of distant origin, favoring farm-generated and other locally-available resources instead. In turn, the money retained locally instead of leaving the area for purchased inputs can support more local trade, employment, and population.

Unfortunately, this very reasonable argument for the community-level advantages of sustainable systems is supported by little actual analysis. A counter-argument is that although sustainable systems often entail lower expenses for purchased inputs, they may also produce less gross revenue because of lower yields. Therefore, even though less money may be leaving the local economy for inputs such as fertilizers, this does not mean that more money is retained. But carrying the analysis one step further, one can argue in return that if production really does drop with sustainable systems -- which is not always true -- then prices of farm commodities will rise by more than the volume of output falls, leaving both farmers and the local economy better off.

Thus the issue is more complicated than it might first appear. Depending on

what form it takes, sustainable agriculture certainly could help alleviate some of rural America's economic malaise, but it won't automatically do so. Interactions between farming and rural communities must get major consideration as we choose among the alternatives offered in the name of sustainability. If the discussion is kept too restricted, we may find that we have missed an excellent opportunity, and perhaps have left our rural communities even worse off.

THE ROLE OF LABOR IN SUSTAINABLE AGRICULTURE

Among the most likely ways for sustainable agriculture to contribute more to rural communities and help ease the problem of depopulation is by substituting labor for inputs brought in from outside. This assumes, of course, that the labor is provided by operators or their families, or by resident (non-migrant) hired workers who are paid and treated decently. A shift toward more use of labor is possible, but it won't be easy: it would mean nothing less than reversing the most profound change that agricultural production methods have undergone in the past several decades.

The displacement of farm labor by technology is a very controversial subject: should we cite as evidence of efficiency and progress that we were able to release so many workers to take non-farm jobs, or was this a change that took place without regard for its serious social consequences, leaving displaced farmers and depopulated rural communities to fend for themselves? In either case, once the change has reached a certain point, the individual farmer has difficulty bucking the trend. Ironically, because less labor is needed, and therefore has gone elsewhere, it often is difficult for farmers to find the additional labor they might want. Understandably, for many farmers an

important consideration in choosing production methods is minimizing the need for labor.

In looking to the future, therefore, two points must be kept in mind. First, a variety of sustainable systems will be available, only some of which will require more labor. Second, in evaluating the attractiveness of a more labor-intensive alternative, we must take account of the interests of both the individual farmer and the rural community, interests that may appear to diverge. But in the long-run, the well-being of the farmer affects and also is affected by the well-being of the community. Presumably, recognizing this mutual dependence is the key to reconciling their divergent interests, provided the issue is made an explicit item of policy discussion instead of just being allowed to work itself out one way or another.

FARM LABOR AND AGRICULTURAL STRUCTURE

If it is necessary to reconcile individual and community interests regarding labor needs, a fruitful solution may lie in changes in the structure of agriculture, that is, in the number and size of farms, the amount and source of agricultural labor, management, and capital, and the linkages between farms and the larger economy. Under our current structure, a serious obstacle to a more labor-intensive agriculture is the belief that labor-replacing technology is essential if a farmer is to make enough income despite low profit per unit of output. Such technology allows a farmer to handle a larger operation without becoming more dependent on hired labor, which often is not available.

On the other hand, in many areas there are would-be farm operators who have

been kept from entering farming because of the continuing expansion and consolidation of farms. These people, rather than hired workers, could supply the necessary labor. This source of additional labor is particularly appropriate if, as is commonly said, sustainable agriculture requires more management attention and sophisticated decision-making, not simply more labor for routine tasks: operators of moderate-sized farms can supply both.

Taking advantage of this opportunity will mean halting the long-standing trend towards fewer but larger farms. But a shift towards a more labor-intensive system would also make it possible for that to happen: using one's own labor to replace some purchased inputs, while staying with the same amount of land, is an attractive response to the problem of low profit per unit of output. In contrast, the main options available today are to expand by acquiring another farmer's land, or to leave farming. A third choice is to supplement the income from a small farm with off-farm employment, but in heavily agricultural areas this choice may not be available.

Although the difficulties in fulfilling its promise must not be underestimated, sustainable agriculture potentially offers significant economic and social advantages that go beyond the immediate environmental and resource-related benefits of improved production techniques. It could allow more of the people who would like to become farmers to fulfill that wish, it could halt the involuntary departure from farming that accompanies the shift towards fewer farms, and it could allow rural communities to maintain a larger farm population. But achieving these benefits will not happen automatically just by switching to any system that anyone has labeled "sustainable." And it certainly will not happen if we proceed without recognizing that all major changes

in production systems have social and economic consequences -- for good or for bad -- that reach far beyond the individual farm. The choice is to try to anticipate and shape these consequences, or merely to deal with them as best we can only after they have occurred, which in practice generally means when it is already too late.

AGRICULTURAL STRUCTURE AND ENVIRONMENTAL QUALITY

Economic problems of the 1980s, along with growing awareness of environmental problems originating in agriculture, were the main reasons that agricultural sustainability has become an important item on the agricultural policy agenda. To some observers, agriculture's economic distress signals a fundamental structural unsoundness that goes far deeper than a temporary imbalance between supply and demand. The solution, therefore, should be sought not in short-term adjustments but in more basic changes: less of a separation between ownership, labor and management; a greater share of the economic rewards of farming going to those who do the work and make the decisions, rather than those who supply the capital; and a redistribution of economic and political power to make farmers less subordinate to input suppliers, lenders, processors, and the other components of the agricultural economy.

Advocates of these structural changes -- "family farm advocates" is the common, if oversimplified, label -- argue that they would also help eliminate the underlying causes of agriculture's environmental problems. Correspondingly, from the viewpoint of those concerned with the environment, a clear basis for allying with people concerned with agricultural structure is found in two commonly-heard beliefs: that family owner-operators of moderate-sized farms are more inclined to adopt environmentally

sound systems, and that these systems are most suited to such farms.

It seems plausible to assume that when farm operators own and live on the land they make their living from, they will care more about preserving the quality of their environment and conserving the resources on which their livelihood depends. Plausibility alone, however, has led us astray many times in thinking about agricultural policy. The historical record shows that we need to look a little deeper: for example, family farmers, unfortunately, have been among those responsible for the serious erosion problems that have plagued agriculture for so long. Another complication is the feasibility of environmental regulation. So far, environmental protection and resource conservation have largely been promoted through voluntary means -- education, exhortation, technical assistance, and subsidies. However, this may change if groundwater contamination and other potential threats to public health become too severe to allow good citizenship to remain voluntary. If so, no longer will it matter what agricultural structure would have protected the environment the best. The question becomes: for what structure are stronger regulations most politically palatable and also most enforceable? Family farms can draw upon much more public goodwill than corporate farms to put off regulation; also, the more farms there are, the more difficult it is to monitor them.

Sustainable agriculture offers a great deal to those concerned respectively with a more broadly-based agricultural structure and more environmentally sound production methods. When these two important movements work together, their combined political clout can be formidable. But as the previous discussion shows, this marriage, like any good one, must be made to work once the honeymoon is over. Making it work will

mean dealing with possible incompatibilities, instead of simply calling the whole thing off or hoping the incompatibilities will just go away. It also will mean acknowledging the importance and legitimacy of concerns that are not one's own highest priorities, in the interest of achieving more than either party could hope to have achieved alone.

A WAY OF LOOKING TOWARDS A SUSTAINABLE FUTURE

The questions just discussed involve issues that go beyond the scope of any single piece of legislation. Commodity programs, for example, quite properly confine themselves to short-term adjustments. No one has the wisdom to foresee what agriculture will be like twenty-five years from now, and no one person or agency should be entrusted to move it inflexibly towards any particular vision of the long-term future.

Yet this should not prevent us from thinking about what direction agriculture will or should take far beyond whatever legislation is under discussion at the moment. I believe that much of our thinking has been unnecessarily hemmed in by the political constraints governing what one can realistically hope to achieve immediately. Granted, action must proceed one step at a time. But when each step is largely independent of what came before or what will come next, the result is a random walk that does not necessarily take us in the direction we originally intended. An alternative is to have a longer-range goal in mind, and then work towards that goal in a series of steps that are small enough to be politically achievable, but that when combined will take us much further than if the slate gets scrubbed each time a piece of legislation expires.

Not thinking beyond current legislative proposals limits the discussion too much to fulfill the promise of sustainable agriculture. Take as an example the Corn Belt

region, which during the past several decades has moved towards specialization in just two crops, corn and soybeans. With this specialization has come a heavy dependence on agrichemicals. Everyone's version of a more sustainable agricultural future includes reversing this trend. But the pessimists point to the difficulties in achieving this, for example some farmers' unfamiliarity with certain crops, their reluctance to take on livestock, the fixed investments already made in cash grain farming, and the lack of infrastructure and markets supporting other kinds of production. The arguments are convincing.

Convincing, that is, if we do not allow changes that require more than a few years, or that must occur on a sector-wide rather than individual farm level. Suppose, for example, that a farm would benefit from a rotation with a crop that is not now grown in the region. A farmer's freedom to raise particular crops or livestock depends on having suitable outlets, which in turn depends on how many other farmers make the same choice. If we assume implicitly that the present selection of products will continue indefinitely, and rule out introduction of new ones because the necessary infrastructure does not exist, we have excluded an important category of responses to agriculture's environmental and economic problems.

Yet we cannot simply force all the farmers in a region to make a certain change just because this will open it up to those who already want it. Thus there is a serious conflict. On one hand, fulfilling the potential of sustainable agriculture requires long-term thinking on a regional scale; on the other hand, farmers' decision-making should be kept flexible and should remain an individual affair.

I would like to suggest how we might resolve this conflict. This suggestion is

offered not as a replacement for efforts to bring about short-term changes through legislation, but rather as an aid to the thinking that should underlie and support such efforts.

For each region of the country, let us make a serious effort to imagine an ideal sustainable agricultural system some twenty-five years from now, say. Let us take as given only those things that definitely cannot be changed, such as the region's soils, climate, and water resources.

What else must be regarded as given? Farmers' knowledge, experience, and personal tastes can change substantially, because the current generation will have largely been replaced. The crop mix is open: there will be enough time to introduce new crops if such a change will foster sustainability. "Fixed" investments, such as in crop production machinery or in grain elevators, should not be considered fixed. Eventually they will wear out, and will need to be replaced only if we choose to replace them (or if we never entertain the possibility of not replacing them, and thereby "choose" to replace them, in a sense). The number, size, and ownership of the region's farms are certainly not given: one should be allowed to envision the possibility of structural changes at least as great as those that actually occurred in the past twenty-five years, although of course they need not be in the same direction. The U.S.'s role in world agricultural trade is partly given, but within limits can be changed by government interventions such as export subsidies, food aid programs, and credit policies for overseas buyers. Continuation of commodity programs should definitely not be taken as given, even though they have had extraordinary staying power in the more

than half century since they were introduced as a "temporary" way of dealing with disastrously low farm prices in the Depression.

Freed from current constraints, what would the ideal sustainable agriculture of the future look like? I do not know, but I am sure it would be very different from what we have today. And it would be very different from what we will have to settle for if we allow short-term constraints to determine the feasibility of every idea for change, so that they perpetuate themselves into long-range constraints as well. In the Corn Belt, for example, I cannot believe that anyone -- not farmers, not environmentalists, not taxpayers -- really wants to continue the system we have now. What can be said for a system in which farmers have no choice but to produce some billions of bushels more corn than the market will pay a break-even price for in most years, while consuming several billion pounds of fertilizer and hundreds of millions of pounds of herbicides and insecticides to do so? And all this while the government is paying billions of dollars to get them to raise less corn!

To think about an ideal agriculture of the future is a tall order, but it is worth some portion of the effort now being given to the details of next year's commodity programs. Of course, no one vision of the future will appeal to everyone. But if an idea fails to gain acceptance, that should be because it was discussed and rejected, not because it never came up for discussion because it went beyond what could be dealt with in the next round of farm legislation.

Regardless of what system emerges from this thinking, bringing it into existence will still have to be done the old-fashioned way, small step by small step, always keeping open the freedom to shift direction as changing conditions dictate. But the

idea should be to make each such step contribute to a coherent movement in the desired direction.

If sustainable agriculture truly involves whole-farm planning, and if it truly involves taking a long-range view, then achieving sustainability will require a major overhaul of our agricultural system. Adjustments that can be made immediately in specific production techniques or in the specific details of this or that government program will help, but they will not be enough. One can call it political realism to limit oneself in advance to what can be achieved under this year's political climate or next year's price forecasts, but it can also be called lack of imagination. Advocates of sustainable agriculture have properly criticized conventionally-oriented analysts for regarding too much as given and for being too inclined to say that the way things are is the way they should be, and even the way they must be. Now that we are at the point where something significant can be done to make agriculture more sustainable, let's not make the same mistake.

William Lockeretz is a research professor at the School of Nutrition of Tufts University. This report was funded by a grant from The Ford Foundation and the Rural Economic Policy Program of The Aspen Institute.

