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Local and Regional Policy Implications of Agriculture's "Multifunctionality"

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In a recent *Commentator* issue (No. 454, October 3, 2004), I discussed national policy implications of agriculture's "multifunctionality". I explained how this multifunctionality perspective has influenced agri-environmental policy making in Western Europe in recent years, and I also discussed the emergence of this perspective in the U.S. in the form of the 2002 Federal Farm Bill's Conservation Security Program. In the present *Commentator*, I present ideas about how a multifunctionality perspective could add clarity to local and regional policy making for agriculture.

As explained in the earlier *Commentator* issue, "multifunctionality" is the term that has recently come into use to characterize an expanded policy focus on agricultural functions beyond just production of food and fiber. These other functions include both environmental and social functions, the latter including contributions to rural development. Historically, in the U.S., some agricultural functions have primarily been the domain of Federal government (national) policies. The function of producing food and fiber for domestic consumption and for exports has been a principal concern of national policies. Maintaining clean water supplies has been the focus of both national policies [e.g., of the U.S. Department of Agriculture (USDA) and the Environmental Protection Agency] and policies of State and regional authorities. Rural development has received piece-meal attention from the Federal government, but actual rural development planning – when it takes place at all in the U.S. – is usually under the leadership of State or regional authorities. Local

policy instruments have been the principal means of controlling the types of farming that can take place near urban areas.

We have been observing greater numbers and intensity of conflict between the *economic growth* and *amenities* functions of agriculture in many areas of the U.S. in recent years. Here I use the term *economic growth* to represent just one aspect or dimension of *rural development*. In South Dakota and elsewhere, 'concentrated animal feeding operations' (CAFOs), such as those for hogs or dairy cows, often are the focus of growth-versus-amenity conflicts. Seldom are there simple solutions to these conflicts, but my intention in this *Commentator* article is to explain how the "multifunctionality" perspective can bring insights on such conflicts and add clarity to the process of developing policies to address them.

Dimensions of multifunctionality at local and regional levels

The basic policy problem faced in many local situations is what mix of *market* and *non-market* goods to foster in the agricultural sector. Food and fiber outputs are paid for in the *market*, though for many agricultural commodities (corn, soybeans, wheat, etc.) the Federal government often makes payments that further encourage production of those outputs. *Non-market* outputs, by definition, normally are not purchased through regular market channels. Market price signals "fail" to induce production of socially desirable amounts of these non-market outputs. Therefore, government policy instruments are needed if citizens wish to benefit from the 'good' and discourage the 'bad' non-market outputs.

Before discussing policy instruments, it is useful to envisage the range of non-market outputs that can be produced on agricultural lands. Note the list in Table 1, drawn from a recent USDA publication (Hellerstein, et al., p.7).

Table 1. Non-market outputs from agricultural lands

Positive Environmental	Positive Rural Development	Positive Social	Negative
Open space	Rural income and employment	Traditional county life	Odor
Soil conservation		Small-farm structure	Nutrient/pesticide runoff
Biodiversity	Viable rural communities	Cultural heritage	Soil erosion
Wildlife habitat	A diversified local economy		Ecosystem fragmentation
Recreational opportunities			
Scenic vistas			
Isolation from congestion			
Watershed protection			
Flood control			
Groundwater recharge			

Drawing on the list of potential non-market outputs in Table 1, let us consider an example facing local and regional citizens and policy makers. Take the case of proposed large-scale dairy operations – currently the source of considerable controversy in eastern South Dakota (SD). Proponents of such operations argue that large dairies will help expand ‘rural income and employment’, which constitute the *economic growth* dimension of *rural development*. Some people also feel that large dairies can help keep rural communities viable and, especially if they contribute to the viability of regional dairy processing plants, help diversify regional economies. Opponents of large dairies, however, feel that such operations will produce negative environmental and social outputs. They argue that such operations might result in local odor problems, nutrient runoff from manure storage facility spills or seepage, property value declines, and an undermining of agriculture’s small-farm structure. Sometimes, opponents also contend that large dairies actually could lead to less diversified and less viable rural communities if they have the effect of squeezing out smaller dairy farms and if farm workers immigrate from outside the region and are paid low wages. Proponents of large dairy operations counter that smaller dairy farms already have been on the decline, and that the introduction of large dairies is unlikely to accelerate their decline.

Some of the non-market outputs listed in Table 1 require rural settings, but not necessarily farmed settings. Open space, isolation from congestion, some types of wildlife habitat, scenic vistas, and groundwater recharge are examples of non-market outputs. Some other non-market outputs do require the presence of functioning farms. Examples from Table 1 include scenic vistas of traditional country life (something highly valued by some Europeans, in particular), some types of biodiversity and wildlife habitat, and retention of a cultural heritage of small farms (valued by many

American, as well as European, citizens). For purposes of the following discussion of policy instruments, assume the focus is on the types of non-market outputs that require the continued local presence of operating farms, i.e., farms that produce crop and/or livestock outputs.

Policy instruments for addressing the problem of non-market outputs

There is a wide range of policy instruments available at local and regional (including State) levels for attempting to achieve some ‘socially desired’ mix of market and non-market outputs from agriculture, but some instruments are better suited than others to particular situations. I will briefly discuss policy instruments in the following categories: (a) environmental regulations; (b) zoning; and (c) support for ‘environmentally friendly’ farming practices.

Environmental regulations are well suited to limiting some types of negative non-market outputs. Using the dairy CAFO example from above, tight and rigorously enforced regulations on manure management may go a long way toward reducing the likelihood of nutrient spills and seepage. We must keep in mind, however, that ‘reducing the likelihood’ is not the same as ‘eliminating the possibility’. Different people and groups in watersheds potentially affected by CAFO spills or seepage, understandably, place different values on potential regional *growth* benefits and on the *risks* associated with nutrient spills or seepage or with other possible negative outputs.

Zoning for compatible uses has long been used within towns and cities, and it is increasingly being used in rural areas to address concerns associated with agriculture’s non-market outputs. Various levels of local government may be involved, including county

government and joint county-city governing bodies for areas surrounding urban areas. Zoning can be used both to support particular positive non-market outputs of agriculture and to reduce or limit particular negative outputs. Zoning regulations that are designed to eliminate or restrict the location and number of CAFOs in a particular local jurisdiction implicitly recognize that some types of negative output – such as odor or ecosystem fragmentation – may be very difficult to control through targeted environmental regulations. Measurement difficulties make it very challenging to design and enforce odor regulations; therefore, zoning may be more operationally feasible than enforcing regulations when it comes to controlling odors near, for example, local urban areas.

Zoning that limits the geographic scope of growing cities, or that preserves ‘rings’ around such cities for non-urban uses, is one way to promote non-market agricultural outputs such as scenic agricultural vistas and traditional country life. However, the mere prohibition of housing and non-farm commercial development does not automatically assure that farming that fits the image of local ‘tradition’ and ‘cultural heritage’ will continue to be economically viable in the *protected* zone. Therefore, zoning, which inherently prohibits activities considered to be undesirable, sometimes may need to be used in conjunction with other instruments that actively support particular types of farming.

That brings us to the third policy instrument category, support for ‘environmentally friendly’ farming practices. Some kinds of farming practices are much more supportive of positive non-market outputs (and, conversely, less harmful in terms of negative non-market outputs) than others. There is considerable evidence, for example, that organic agriculture in Europe generally performs quite well with respect to a number of the kinds of non-market outputs listed in Table 1. In the U.S., it is generally recognized that farms that utilize diverse crop rotations perform better with respect to such non-market outputs as soil conservation and biodiversity than do farms that only rotate a couple of crops. Historically in the U.S., financial incentives for farming practices that support positive environment outputs have come primarily from the Federal government. (Research and technical support has come from a combination of Federal, State, and local sources.) However, there are opportunities for greater financial support from local and regional sources. For example, in the 1990s, New York City developed a water quality protection strategy in cooperation with farmers in the Catskills watershed (roughly the size of Delaware) that is a major water

supply source for the City. In return for financial support from the City, farmers met (and exceeded) an 85 percent participation rate requirement, under which participating farmers developed whole farm plans that encompass both profitability and water quality concerns. That way, individually and collectively, water quality goals could be met in ways that are flexible and cost-effective. (See the paper by Albert Appleton in the Proceedings of a 2001 conference on *Working Landscapes in the Midwest*.)

One could envision a similar cooperative effort sometime in the future between the City of Sioux Falls, SD (or the counties encompassed by the Sioux Falls metropolitan area) and farmers in the Big Sioux River watershed, in which organic and other ‘environmentally friendly’ farming practices receive support. This local support could complement that provided by Federal agri-environmental programs like the Conservation Security Program. Such an effort would not need to be limited to water quality, but could also encompass other non-market outputs enjoyed by a growing urban population, including access to landscape and related recreational amenities.

How to get there

A perspective that explicitly accounts for agriculture’s ‘multifunctionality’, as described in this *Commentator*, would not resolve conflicts over agriculture’s direction in different locales and regions. Such a perspective could, however, facilitate more clear thinking about what citizens want from agriculture in their State, watershed, or local area. What is often lacking is a clear regional or local vision of what outputs—both market and non-market—we want from agriculture over, say, the next 25-50 years. Such a vision needs to be developed through a process that involves all segments of the citizenry, not just those involved in production agriculture and agri-business. The area encompassed by a visioning process can take a variety of geographic forms, but watershed areas often make sense. Many multifunctionality policy issues overlap county boundaries and are common to all or much of a watershed. An example of such a watershed is the Big Sioux River watershed of eastern SD.

Once a collective “vision” of the region has been developed, citizens and policy makers can think more systematically about which policy instruments can most effectively encourage the desired “outputs” from agriculture. At this stage, both *science* and *values* play separate and interrelated roles. It is sometimes

suggested that all we need to do to resolve policy conflicts associated with agriculture is to rely on “sound science”. Certainly, the sciences—social, as well as biological and physical—have important roles to play in diagnosing problems and estimating probable outcomes of alternative policies. But, even with good scientific information at hand, conflicts will remain because different groups will be impacted in different ways and because not everyone places the same “values” on the various market and non-market outputs that agriculture can produce. Hence, an effective democratic process acknowledges those differences and provides opportunities for citizens to express their views when local and regional visions and policies are being developed.

For additional information, see:

E.G. Irwin, D.J. Nickerson, and L. Libby, “What are Farmland Amenities Worth?” *Choices* (Third Quarter 2003), pp. 21-23.
(<http://www.choicesmagazine.org/2003-3/2003-3-04.htm>)

D. Hellerstein, *Farmland Protection: The Role of Public Preferences for Rural Amenities*. ERS Agr. Econ. Rep. AER815, USDA, Washington, D.C., 2002.
(<http://ers.usda.gov/publications/aer815>)

Working Landscapes in the Midwest: Creating Sustainable Futures for Agriculture, Forestry & Communities. Proceedings of a conference at Delavan, WI, November 2001. Compiled by the Institute for Agriculture and Trade Policy and the Meridian Institute.
(http://www.iatp.org/enviroObs/library/uploadedfiles/Working_Landscapes_in_the_Midwest.pdf)

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