

In Pursuit of the Commons:
Toward a Farmland Protection Strategy for the Midwest

by
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Introduction

I begin with an assertion -- that establishing policies and procedures to encourage retention of quality farmland in viable farms is a worthy public objective. Voters and taxpayers in all 50 states have undertaken some sort of policy to encourage retention of good farmland for the variety of products and services it provides (Sorensen). Some programs are more effective than others, but in all cases citizens have been willing to pay in various ways to create rules that encourage farming.

Farmland protection is part of a larger set of policy challenges involving how we in our society make choices in use of our natural resources, a set of issues that fundamentally affect our future quality of life. Included in that set would be preserving rural open space, protecting wetlands, unique ecosystems and endangered species habitat or wilderness areas. These land uses have many similar attributes that are valued but difficult to exchange in land markets.

I admit up front that I am an advocate. My advocacy is not for a specific solution to the farmland protection problem, or for particular acres to be preserved, but for the principle of thoughtful, reasoned policy guiding the pattern and pace of open land conversion. We **need** the land market as an exchange mechanism, but with rules that present us reasonable choices. I am an advocate for development of policy and market conditions that will protect future options in use of farmland and other important natural resources.

At the center of this concern in our society is the relationship between private rights and public responsibility in land-use. More accurately, it is a question of competing rights in land, some of which are exercised by those holding fee simple title and some by non-owners who value land for the other services it provides. Rights of the owner are exclusive, but not absolute, a product of prevailing human values and preferences. Land-use rights and responsibilities are allocated through a complex set of rules and decision institutions that define the land market. This set is unique to the United States, a product of our political and cultural history. Other nations handle land-use questions quite differently. Any **change** in those rules, like a new zoning ordinance, a development impact fee or a "right-to-farm" law, will have immediate impact on the distribution of rights and obligations among competitors for land services. We do have choices in how we accommodate or direct land-use change. We need not be bullied by a particular set of rules that may define the land market at any point in time.

Some land-use rules guide the pressures of development to encourage a coherent and less costly pattern of land conversion; other rules and policies focus on economic conditions to encourage a farmer to remain viable. The former may be considered demand side factors in farmland retention; the latter are supply side, the willingness of farmers to supply farmed land. The two sets of policies are like blades of a pair of scissors; neither works particularly well on its own and both are needed for success. This paper is focused on the supply side, policy approaches designed to influence what the farmer does with his land.

I come to this topic as an economist, but as one in search of conceptual tools from elsewhere in the social sciences that may have utility in understanding the issues at hand. My approach will be to sketch out some of the facts of farmland use in the United States and selected Midwestern states including Illinois, review the role of markets in allocating rights to land and the place of policy in those markets, develop the notion of "the commons" in farmland use and a possible role for the public trust doctrine, and conclude with brief recommendations for the states of the Midwest.

Midwest Farmland Use -- The Facts

United States data on farmland use come from two basic sources; the Census of Agriculture conducted by the United States Census Bureau and the National Resource Inventory done by the Natural Resources Conservation Service of the U. S. Department of Agriculture. The former is based on a mail survey of farm population every five years, followed by selected telephone interviews. Emphasis in any follow-up contact is on completeness of data rather than accuracy of

reporting (Wegner, et al). The NRI is based on remote sensing data collected by satellite from approximately 800,000 data points across the nation. The same sites are examined every five years since the current technology was put in place in 1982, giving fairly reliable indicators of change in land cover and land-use. Remote data are checked with on-the-ground observation for a sample of sites and use of available air photos.

As indicated in [Table 1](#), the Census of Agriculture determined that Illinois had more than 27 million acres of land in 77,000 farms in 1992, 77 percent of the state's land area. The Illinois Agricultural Statistics Service estimated 28 million acres in 81,000 farms in 1992 on the basis of a USDA farm survey. Both USDA and the Bureau of Census define a farm as having greater than \$1000 in sales, but they run separate surveys with slightly different results. According to the Census of Agriculture, the number of Illinois farms decreased by more than 20 percent from 1982 to 1992, though decrease in land in farms was minor. Average farm size increased to 351 acres. Average market value per farm has stayed at about \$540,000 over the decade, with a dip to \$400,000 during the more difficult times in the mid-1980's. About 70 percent of the farms were run by an on-farm operator and over 60 percent of the operators listed farming as their primary occupation, but about one in three Illinois farm operators works more than 200 days off the farm each year. Contrary to popular belief, 84 percent of Illinois farmers are family operations and another 2 percent are family owned corporations. Non-family owned corporations are insignificant in Midwest farm ownership.

In 1994, Illinois ranked fifth in the nation in total cash receipts from farm marketings, second behind California in receipts from cropland, second behind Iowa in total corn production and acreage, second to California in total value of farm exports, first in value of exports of feed grain and soybeans and third behind Texas and Iowa in government payments to farmers (Illinois Department of Agriculture).

[Table 1](#) compares several states with Illinois -- California and Texas since they seem to rank above Illinois in nearly every category, and the others because of their proximity and similarity. A few highlights of the comparison may be helpful.

1. Illinois has considerably fewer farms than Texas and Iowa, about the same as California, and more than the others.
2. California, Texas and Indiana had substantially higher proportions of full ownership of farms than did Illinois and far fewer tenants as operators.
3. The average age of farm operators is between 48- to 56-years-old in all the states being compared, with Texas and California having the oldest.
4. Agriculture still dominates the landscape in all states, with California the lowest among them at 29 percent of land area. Agriculture claims nearly 90 percent of Iowa and Nebraska.
5. There are no startling insights from the 1982 to 1992 comparisons across the seven states. Texas had a much smaller reduction in number of farms than did any other state, 5 percent as compared to 21 percent in Illinois.

Both [Tables 1](#) and [2](#) document the general trend in Illinois and the other states of decline in the human and physical resources dedicated to crop production. Similar trends are evident in national data. All compared states show declines in cropland and total rural land over the decade. Reduced importance of land in food production functions is a long standing trend in the United States (Schultz). We simply need less farmland than we used to. Recent policy changes, particularly removal of acreage restrictions under the 1996 Farm Bill and release of lands from the Conservation Reserve Program, combined with attractive world prices, will likely increase acres in corn and soybeans in 1996-97 (FAPRI), but the long term trend is consistent.

While there may be fewer farms and less farmland, production levels continue to climb. United States corn yield has climbed from around 80 bushels per acre in 1970 to over 120 bushels in 1995 ([Figure 1](#)). Soybeans have shown a similar production path over that period ([Figure 2](#)), both with a certain amount of year to year fluctuation reflecting the vagaries of weather, trade policies, embargoes and other factors.

The fact that developed land has increased in those states over the decade does not mean that all land-use changes in agriculture go into development. There are adjustments within agriculture as well as shown by the national totals in [Table](#)

3 (Greene, p.78). Of the 550 million acres of United States cropland in 1982, 491 million were still cropped in 1992, 3.6 million went into rangeland, 11.3 million to forest, 6.5 million to urban use and 37 million to a general catch-all that included the Conservation Reserve Program where farmers leased erosive cropland to the United States government. Further, some land in each of the other use categories was added to the cropland /pasture base between 1982 and 1992 (even 300,000 acres from urban use back into agriculture).

Who Decides Land-Use?

Land-use patterns evolve from thousands of separate decisions by individuals or other legal entities seeking the services of land. A person's motives may be honorable, responsive to a broader society, but usually he or she is essentially acting in his or her own interest, to achieve a personal goal. At least assuming self-interested behavior within bounds of legally acceptable action yields fairly reliable predictions of land-use patterns.

Markets. The primary instrument for conveying rights to land from one user to another is the land market. All markets function within rules that establish eligibility of bidders, define the product or service being exchanged, the terms under which rights may be exchanged and the rules then enforce the results of a legal transaction. In that sense, there is no such thing as a "free market." There must always be public sanction of markets to accomplish exchange. The only questions are which rules apply to given sets of transactions.

The price at which rights to use land are exchanged is a function of expected future returns to that land by both the buyer and seller. Land may be an input to a production process that generates income for the owner over some planning horizon. Income expected in the future will be discounted to reflect uncertainty of that income flow as well as alternative returns to the capital required to buy the land. In farming, land is the factory for food production, the combination of water, minerals and organic matter that supports plant growth when management and other inputs are brought to the task. Other land components may be extracted and sold as inputs, including gravel, oil, minerals and even native grasses. Land value may also derive from location, getting value from where it is rather than its physical productivity. Various attributes add value; the terrain, proximity to natural features such as water or mountains, or to other economic activities. The demand for land as a productive or locational input is derived from demand for the final product or service. Land also has value as a consumer good, just because it is the tangible, physical resource known as land that has innate utility, offers shelter for wildlife and is an ecosystem of infinite complexity. Some people get utility from just owning things. A buyer's willingness to pay for a specific parcel combines expected returns from all of these attributes in some balance.

The overall pattern of land-use, either spatially or temporally, reflects the relative value placed on the locational, productive and consumer aspects of land. Farming is land intensive, meaning it takes more land per increment of capital and management than is the case for other land-uses. Some types of farming like greenhouse horticulture, field ornamentals or hydroponics have higher capital to land ratios, making it feasible to spend more for the smaller unit of land required. In general, however, other uses of land are more capital intensive or place very high locational or consumer value on relatively small land parcels. Under those conditions, a buyer will bid land away from farming in anticipation of much higher returns per unit. In theory, land will change use when the discounted present value of the anticipated returns falls below returns to an alternate use, plus the cost of transition. Inertia of existing land-uses and attitudes of the user can mean a substantial cost of transition. A smoothly functioning market for anything requires that no competitor can manipulate or control the market, that full information is available to all, that resources are "mobile," and that non-participants can be excluded from using the resource in question. Land is optimally allocated when the value of the marginal product from its use is the same for all possible uses and when its reallocation would make someone worse off.²

Farming is a Mix of Outputs. Farming is a deliberate manipulation of natural systems, what Sandra Batie has termed as "an argument with nature," (1996, p.1) to create a different mix of outputs than if the system were left alone. We get more than the target product, the corn, tomatoes or other crop for which there is measured effective demand and exclusiveness in the sense that only those who pay get the product. We also get various side products, some of which complement the target product and others that detract from it. The negative side products are better understood and measured than the positive, yet neither set is fully captured by the farmer in his bid for land services. The price mechanism is therefore ineffective as a means to convey control over all land outputs. The farmland market is incomplete in that rights to some services are attenuated, unclear and the cost of excluding consumers is very high, in some cases infinite.

The negative side products of farming have become actionable as persons not wanting the additional nitrate in drinking water or pesticide residue on their tomatoes have mobilized to force some of those products into the decision structure of

the land user. While the positive side products of farming are widely acknowledged, less is known of their magnitude. Included are open space amenity of active farms, adding measurably to the value of adjacent properties (Bergstrom, et.al.; Halstead; Correll, et.al.), wildlife and endangered species habitat, groundwater recharge, farmland's capacity to convert organic wastes to valuable nutrients and other such products. Public actions have been taken to encourage continued availability of some positive side products as well, through tax breaks that improve net revenue to farming and through regulations like exclusive agricultural zoning that remove the farmers' right to stop producing those positive side products.

Who decides land-use? Primarily those competing for land services in a market, but **within** the structure of market rules. The various side products of farming have fostered public actions to correct the price mechanism. Results of these policy actions may be seen in the price of farmland as they affect expected future returns for the buyer.

Policy Impacts on Land Value. The rules that create opportunity and obligation in the use of land inevitably affect its market value. As discussed above, the market has little meaning outside of a policy context, and existing policy is a crucial aspect of "who decides land-use."

Farmland is affected by a broad array of policies, some like zoning designed to influence land-use by establishing permitted uses, and others like use-value assessment or farm price and income policy influencing the land-use through economic incentives. There is scattered evidence on how such policies are captured in the market price of farmland. Movement away from a farm program emphasizing product price supports and toward greater reliance on markets to direct production and prices is projected to depress Midwest farm prices by 5 percent over the seven year implementation period of the 1996 Farm Bill (Johnson and Van der Sluis). Existence of a national tobacco production quota on some Kentucky farmland explains 38 percent of the value of the land involved (Vantrees, et.al.). The Illinois use-value assessment law added about \$1,000 of land value per acre of eligible farmland in a 1982 study (Chicoine). Regulations that permit development in one area while prohibiting it in another explained more than two-thirds of the difference in land value between the two areas in a study of the Minneapolis region (Gleeson). Anticipation that growth controls may be imposed has been shown to boost land prices substantially in the New Jersey Pinelands (Beaton).

The full set of productive and locational attributes of farmland affect its market value. Proximity to freeway access, a rural municipality, a large city, and the limitations imposed by zoning and soil suitability for septic systems had a far greater impact on land value than did natural productivity in a 1981 analysis of Illinois farmland values (Chicoine). Patrick Stewart and I have analyzed factors explaining prices of DeKalb County farmland sold in 1995. We selected only sales of farmed land in "arms length" transactions between willing buyers and sellers who were under no compulsion to transact. The agricultural value of the sampled parcels had little impact on market price. Location of those parcels relative to a limited access highway, paved rural road and a rural community with adequate commercial services are being used as independent variables explaining land price differences. The zoning designation and crop base on these lands in 1994 will be observed as explanatory variables as well. We can already see that location matters most even on land that is actively farmed.

Defining the Commons -- A New Approach to Farmland Protection Policy

I would suggest that the most compelling reasons for changing the way we decide land-use patterns in this country, and particularly here in the Midwest, are the "public good" attributes of farmland. These are the aspects of farmland that make up the commons, the interests shared by all of us, though poorly articulated and defined. These are the kinds of interests that motivated Garret Hardin's important essay, "The Tragedy of the Commons" (1968) in which he warned of the imminent destruction of resources for which access is open, unrestricted and private rights are inadequately defined. His case in point was publicly owned rangeland where each user had the incentive to graze additional cattle, to get what was there as quickly as possible because if he didn't, it would only be used by someone else. There was no incentive for any individual to limit his use to protect the quality for all with inevitable destruction of the resource when its regenerative capacity was exceeded. Benefits of an additional animal grazed are captured by the owner, while costs are not separable and thus irrelevant to him.

Definition of the commons in farmland is related to, though different from, the Hardin case. The farmland attributes to which I refer are true public goods in economics in that they are non-exclusive and non-rival in use. That is, no one may be excluded from the benefits of these attributes and use by one does not limit its availability for others. The short run cost of those benefits in terms of opportunities forgone may be substantial and highly concentrated if a farmer is required to give up future development potential to protect the ill-defined non-exclusive interests of the broader citizenry.

Food Security.

There are several farmland attributes that I have in mind. First, and arguably most important, is something I will call food security. That is a term used by economists and others as the goal of agricultural development efforts in less developed countries. In a recent Atlantic Monthly essay, Robert Kaplan asserted that food security and environmental integrity are the most compelling **global** security issues of the 21st Century (1994). The 60 percent increase in the price of grain in China in 1994 has raised concern about political instability from potential food shortage in that nation and others in the developing world. But here in the United States, food availability is something we take for granted, and with reason. I do not suggest that United States farmland protection efforts should be predicated on impending food scarcity in this country. I just see no evidence that the trend in agricultural productivity noted in Figures 1 and 2 will be reversed any time soon (see Libby, 1993). Most of the increase in demand for United States food supply will be for export. There are legitimate concerns about the environmental or social consequence of some production technologies and availability of water or energy for farming could arrest the overall rate of productivity growth somewhat, though opportunities for growth are substantial in many nations of the world. Adequacy of the United States cropland base was the theme of many articles and studies in the early 1980s following release of President Carter's Global 2000 Report (1980), but little has been written on the question since then (for an exception see Brown).

The public good aspect of the food supply issue refers instead to the sense of personal security, of general well-being associated with confidence that future generations of Americans and other global citizens will in fact have adequate supplies of healthy food. People are generally aware of the physical finiteness of the land base though may not fully appreciate the importance of land quality to food production. While we may need less land today than in the past because of productivity growth, we will still need some high quality farmland in the future. Agriculture is at base an ecological process with certain scientific imperatives related to soil and water. Ecological soundness or sustainability may be considered renewable though fragile "natural capital" that can in fact be exploited beyond its capacity to regenerate (Harte). The current land market based on anticipated returns to alternative enterprises has no self-correcting device for recognizing absolute limits.

Some economists will argue that markets can correct for declining supply through the price mechanism. Shifting demand functions with population growth will, in the presence of stable supply, trigger higher food prices that will in turn call forth greater production. At some food price level, returns to the farmer may be high enough for him to outbid the developer for a choice parcel. And perhaps successful bankers and college professors will be lured into farming by relative wages, but the pain of that kind of adjustment process could be substantial. Since price elasticity of demand for food is relatively low, people in lower income groups will forego almost everything else to have enough food, and I suspect that neither land nor people are as mobile back into farming as they were out. The fact that such adjustments could occur is faint comfort. To rely on these costly adjustments is a disservice to future generations when we have the opportunity to handle things better today. Again, the public good or the commons in farmland is not the future food supply itself, which is a private good, rival in consumption, but the sense of security we feel about food adequacy for future generations. Economist Kenneth Arrow and others writing from the 1994 Stockholm convention on economic and environmental policy concluded " ... given the fundamental uncertainties about the nature of ecosystem dynamics and the dramatic consequences should we guess wrong, it is necessary that we proceed in a precautionary way" (Arrow, et.al.).

Farmland as Habitat. Another public good attribute of farmland is linked to protection of wildlife habitat, endangered species and bio-diversity. Popular demand for retention of lands that do protect endangered species of plants and animals has been crystallized in the Endangered Species Protection Act of 1973. It applies to some farmland already, but I would argue that the sense of well-being available to citizens from simply knowing that wildlife and threatened species are protected is part of the commons in farmland use. That knowledge is non-rival in consumption and non-exclusive, part of the general public domain. Reasons often cited for protecting bio-diversity include potential future commercial value, the value people associate with the very existence of specific endangered species or bio-diversity as a whole, the notion of ecological balance that includes diverse species and the ethical proposition that protecting habitat for wildlife and threatened species is simply a proper human concern and a reasonable policy objective (Metrick and Weitzman). I would not argue that actively farmed land is ideal for endangered species or biodiversity. But retaining the biological functioning of land does infinitely more for those qualities than does a shopping center or other development.

Several studies have attempted to measure the value that people associate with the continued existence of a species or ecosystem. One examined willingness of non-users of specific beach environments to pay to protect those beaches. Authors concluded that failure to include those non-user benefits in analysis of proposed resource protection efforts would

understate the returns to such efforts (Silberman, et. al.). Estimates of existence value for affected species and ecosystems may be included in recoverable damage from oil and toxic spills under The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or "superfund)." Thus, non-users of the resource in question have an enforceable right to protect the environment. Bishop and Welsh argue, and demonstrate in theory, that human expression of preference or value for the existence of species or a fragile ecosystem requires information about that resource. Thus, there could be such value linked to presently ill-defined species or qualities in the absence of specific information (1992). That, I would argue, is the case with respect to the habitat services of farmland. Because existence value is so ephemeral, so linked to other aspects of human behavior, indirect measurement based on observed human action is impossible. Only direct questioning of affected parties with adequate information of the qualities in question will do the job (Larson).

Other public good attributes of farmland may include non-user open space aesthetics. As discussed above, agriculture includes a whole array of products and both positive and negative side-products. They may be compared on a spectrum of exclusiveness from the corn or soybeans bought and sold at one end, to food security or habitat at the other, with many steps in between. Existence value is an aspect of human experience, a product of human values and preferences, knowledge, and the prevailing culture. Land has social importance only because people believe that to be the case. Value associated with such land services as food security and existence value will vary from place to place within a nation and certainly among nations (Batie, p.2). If we can accept the possibility that such values exist, what are the action implications?

Policy Directions -- Managing the Commons

The current United States policy experience with farmland protection covers the full range of government authority from regulation to taxation to acquisition. Virtually all states tax farmland at farm use-value rather than market value as required for other property, as an inducement to keep land in farming. In 15 states, nine of them in the northeast, development rights on farmland are acquired through voluntary programs leaving only the rights to farm with the owner (Libby, 1996). The primary limit on the police power of governments to regulate land-use on behalf of public health, safety and general welfare are the Constitutional provisions for due process and equal treatment and the requirement for compensation when private land is taken for public use. Tests of regulatory takings, when regulations become so burdensome as to essentially constitute public taking requiring compensation, include determining the extent to which regulations preclude all economically profitable uses of the property or curtail investment backed expectations (Hunter, p.332).

Thus, the limits on public efforts to restrict future land-use are based primarily on current market estimates of foregone revenue from a prohibited land-use. Takings deal almost exclusively with land as a factor of production. There has been little opportunity for consideration of the relative importance of the public good attributes of land, those benefits available to all, withheld from no one, though such values are considered in environmental damage cases, as noted above. There are important recent exceptions -- "the Wisconsin Supreme Court explicitly adopted a theory of property based on the natural character of the land in question"(Hunter, p.352) in *Just v. Marinette County*. Other cases have recognized the "natural state" of undeveloped land as having legitimacy in takings cases. Thus, it appears that nature counts in some takings cases, though burden is on the government in these instances to demonstrate ecological significance of the land in question. These cases do establish, however, that the public has the right to protect the ecological integrity of certain lands, acknowledging that land is not just a productive input or space to put things.

I do not suggest that simply defining the commons in regulatory takings cases is a viable strategy for protecting farmland. We have to think more broadly than that. Zoning, by nature, loads the cost of achieving public purpose onto the current owner on the general notion that gains to the rest of society outweigh cost to the owner, leaving a net social gain. The fact that gainers could pay off the losers is small comfort when they don't actually do it. The owner retains important land-use options, though his opportunity set is adjusted without compensation to affect the mix of products or services generated for consumer use. Making zoning tougher by defeating more takings cases is not the answer for farmland protection. But at least courts are beginning to acknowledge some of the public good aspects of land, not farmland specifically, but other land of ecological significance. Economists have measured the implicit value of those aspects of land. Provision of such information and legal precedents will be important for future debates. Any future policy in this area must be founded on a clearly articulated commitment to the commons in farmland.

A Look at the Public Trust Doctrine. I suggest that the public trust doctrine in law may hold promise as the basis for a more active and effective public posture on farmland protection. I come to this theme certainly not as a legal scholar with an airtight case, but as a pragmatist, a policy specialist and social scientist in search of insight about the evolutionary

process of natural resource policy. I would propose that the ecological character of those lands capable of responding to effective management in food production are an important part of the public trust to be protected in the interest of long term global food security and as potential sources of biological diversity. "Of all the concepts known to American law, only the public trust doctrine seems to have the breadth and substantive content which might make it useful as a tool of general application for citizens seeking to develop a comprehensive legal approach to resource management problems"(Sax, p.474). Further, the public trust doctrine is an intuitively appealing response to the economics of public goods for which land markets are incomplete, unable to provide socially adequate quantities (see Rieser).

Historically, the public trust doctrine has been applied primarily to navigable waters and related submerged lands and shore lands. The general notion, derived from Roman and English law, is that the general public's interest in these resources is so profound that exclusive use rights may not be transferred to private individuals. The public's trust was initially vested in the Federal government, later transferred to the states as they joined the union. Legal scholars see the possibility that the doctrine may be extended to other ecologically important resources. "Some predict that courts will eventually apply public trust protections to all water bodies as well as to such diverse resources as old growth forests, mountains and wildlife" (Rieser, p.394). A California case upheld a citizen's right to the natural state of coastal wetlands, halting a neighbor's development, by including in the public's trust "... the preservation of these lands in their natural state so that they may serve as ecological units for scientific study as open space, and as environments which provide food and habitat for birds and marine life and which favorably affect the scenery and climate of the area" (Marks v. Whitney, discussed in Hunter, p.372). Similar qualities were protected in the Mono Lake case, including "... scenic views of the lake and its shore, the purity of the air and the use of the lake for nesting and feeding by birds" (Hunter, p.373). Many of those qualities apply equally well to farmland. The public trust doctrine has been proposed as the basis for protecting the lands and water of the Kesterson Reservoir in California (McCurdy). There is no obvious reason why the same line of reasoning could not be applied to other significant natural resources including the public good attributes of farmland, attributes that are non-exclusive, non-rival in consumption, inherently in the public domain.

Application of the public trust doctrine to these matters does not imply government takeover and management. Commitment is to the unorganized public not to a government bureaucracy that may act with impunity, though some level of organized oversight to protect the public interest is implied. The public's interest may well foreclose rather than foster government actions. Sax has argued that "inconsistency in legislative response and administrative action" are a major argument in support of protecting the public's interest through the courts. Piecemeal granting of building permits, changes to local zoning, annexation decisions or targeted inducements to developers may create an environment of uncertainty of future land-use that undercuts the public interest in farmland use just as certainly as the bulldozer in the corn field. In some instances, fragmented local government decisions, each made with primary attention to local needs, will produce a pattern of impact that compromises the statewide integrity of the public trust (Sax, p.531). These are examples of the tyranny of small decisions where seemingly reasonable steps lead in a direction preferred by no one (Kahn). "The aggregate effect is the same as if a major decision was made to destroy those resources" (Rieser, p.424).

Thus, the public trust approach to a farmland protection strategy is not a government vs. landowner issue but a matter of acknowledging the broad though disorganized interest in the public good aspects of farmland. It is an issue of competing rights, those of the owner and those of the broader public with the latter focused on selected side products of agriculture that accompany the target commodity but are not part of the transaction in the land market. Admittedly, public trust arguments could be brought into the debates surrounding particular zoning ordinances, but the doctrine should be seen as freedom expanding rather than limiting, enhancing the set of choices for future generations in the use of the ecological systems known as farmland.

Managing the Commons in Farmland. The real challenge is to design institutions that can guide human actions in ways responsive to the public good aspects of farmland. There is a substantial literature on institutions for managing common property resources, including many applications in developing countries (Ostrom, Ostrom and Gardner). The usual prescription for giving each user of the commons a stake in maintaining its quality is to establish exclusive, separable and enforceable rights. This requires some level of control to enforce the rights, limit free-riding and establish a shared sense that cooperation pays (see Seabright). The sum of reorganized private decisions may still fall short of the full public stake in how that common property is used. Ostrom argues for local indigenous controls on the commons, developed and maintained by those most directly affected, rather than a "one rule fits all" approach at the central government. Successful management requires that the boundaries of the resource in question be clearly defined. There must be monitoring and sanctions for those who violate the rules (1994).

These requirements may be appropriate for managing congestible common property, but are not applicable to public goods with no congestion in use and lack of a clear boundary. We are dealing not with a definable range area with a set of affected ranchers, but with a diffuse farmland base and an unorganized using public that could include the entire population. Further, the benefit they receive from the commons is a sense of well-being about adequacy of food for future generations, a benefit not experienced equally throughout the population. There are also important differences between farmland and such fragile eco-systems as wetlands and submerged lands. Protecting the commons in farmland does not mean cordoning the land off and preventing its economic use. Quite the contrary, farmland will be farmland only if it is farmed. That means managed manipulation of the ecosystem to facilitate production of a product that people will pay for. Farmers must have the freedom and the incentive to manage their farm as efficiently as possible, responding to new technology as it becomes available. They must be able to buy and sell land as necessary.

Managing the commons in farmland requires only that the general stake in future production capacity and other public good attributes be actively, even aggressively, acknowledged and incorporated into land-use policy by units of government large enough to encompass the affected population and small enough to address regional resource differences. National recognition of the public trust responsibility for farmland is an essential component since beneficiaries are widely dispersed. A resident of New York City will have a demand for future food security from farm production, in fact perhaps a greater level of support than would a non-farm resident of rural DeKalb County, Illinois for whom farmland and food seem endless.

At this point, I would like to reiterate and briefly expand the main points in this pursuit of the commons in farmland protection, and conclude with brief thoughts about farmland policy development in the Midwest.

1. We waste too much time and energy arguing whether or not farmland retention is a valid public issue. Voters have already decided that in all states, and they are willing to sacrifice something -- not much in some states -- to encourage retention. It is not a crisis, less crucial than some issues perhaps, but worthy of action and attention by policy analysts.
2. We badly need a new idea in farmland retention. There are lots of techniques out there, both demand side growth controls and supply side farmland protection, all based on measured costs and benefits of alternative land uses revealed in a market that may not be up to the task. These techniques have worked in some cases but are inconsistent across political boundaries and vulnerable to those incomplete market signals. We need an idea that better aggregates the public good values that transcend political boundaries and time as the basis for more effective policy.
3. We have plenty of farmland, no question about it. The question is, for whom? Experts see no problem with food production capacity through 2050, about two generations. Midwest farmland is the basis for any national or even global optimism on food supply. Its seeming abundance for us in the Midwest may be misleading. A sequence of seemingly rational land-use choices could be irrational for the broader public.
4. Agricultural production is an ecological process, subject to certain scientific imperatives. Land as a growth medium is finite in physical supply and subject to absolute limits in economic supply as well.
5. The food market could signal impending economic scarcity of food as price escalates rapidly over cost of production, leading to adjustments favoring food production or technology replacing land altogether. But we deserve a better strategy than that, a broader set of choices incorporating more complete information.
6. We will continue to have farmland conversion and substitution of capital for land and people in farming. I do not suggest that conversion be stopped; we couldn't do so if we wanted to. Conceptually, we seek a conversion rate where the marginal benefit of retention equals marginal cost, or the value of a foregone opportunity. But we need improved information on the benefits of retention.
7. The courts have recognized the validity of non-exclusive public good attributes of ecosystems in environmental damage and takings cases.
8. The public trust doctrine shows promise as the intellectual underpinning for United States and state farmland

retention policy, considering the innate ecological character of productive farmland, a part of the commonly held value from natural systems.

9. Greater use of the public trust doctrine does not mean government takeover of farmland. Successful policy for farmland retention requires first and foremost that farming be an attractive opportunity for the farmer. But any policy that does encourage retention of viable agriculture would be on stronger legal footing with inclusion of public trust ideas.

Policy Suggestions for the Midwest

The current policy mix in Illinois, Indiana, Kansas and Iowa basically relies on use-value assessment and right-to-farm laws to encourage productive agriculture. Use-value assessment entails levying property taxes on the basis of agricultural value rather than full market value; right-to-farm laws establish the basic right of farmers to employ generally accepted production technologies and practices without undue fear of nuisance suits or other action by non-farm neighbors. The use-value programs in the Midwest generally do not include recapture of avoided assessments if the eligible land is developed. Wisconsin and Michigan funnel the farmland tax incentive through their state income tax. But, other than Michigan, there is little state level guidance for local farmland programs and little real state policy on farmland protection in the Midwestern states. There are no specific enabling statutes for purchase of development rights, though such a proposal is under consideration in Illinois. Illinois also has a statewide "agricultural areas program" established by the General Assembly in 1980 enabling farmers with at least 350 contiguous acres to petition the county board to establish an area within which farming has acknowledged priority. They are established for an initial 10 years, renewable every eight years thereafter. And there is a program requiring agricultural impact statements and review prior to major state projects, excluding highways.

I suggest the following to build on this tentative beginning in the states of the Midwest: 1. Each state should undertake a comprehensive assessment of agriculture in the state's economy. This effort should include identification and measurement of the additional services available to the citizens of the state by active farmland, including recreation, habitat, etc. The effort should be undertaken by a citizens' task force with staff support by a university or dedicated staff from some other source. Michigan recently completed such a comprehensive assessment, Ohio is just beginning one, Iowa and Indiana are considering the possibility. Such engagement by state leadership is essential for broad "buy-in" to any policy recommendations. 2. A "state of the state" appraisal of local growth management and farmland protection policies is needed. Particular attention should be given to inconsistencies and incompatibility across political boundaries. The clear purposes in these statewide inquiries are to broaden understanding of the statewide stake in agriculture, broaden the policy agenda and to give greater visibility to farmland as part of the commons. 3. Limited purpose metropolitan governing arrangements should be considered in these states to deal specifically with the inherent trans-boundary character of agriculture and development pressure. In Illinois, for example, there is currently no meaningful oversight of local policy in areas outside of the Northeast Illinois Planning Council in the counties immediately surrounding Chicago or the Southwest Illinois Planning Council near St. Louis, Missouri. This new arrangement would be designed to deal with the economic linkages between agriculture and regional growth patterns by establishing regional policy and review of local action. The current situation is characterized by costly and ineffective fragmentation, for example, there are 263 local units of government in the six counties surrounding Chicago, each with its own development aspirations. The shadow of Chicago extends much further, with economic nodes in outlying suburbs and affected "rural hinterlands" including DeKalb County, some 60 miles west of the city. Metropolitan governments have been tried elsewhere and perhaps with targeted limited application could be an effective approach for the primary urban/hinterland combinations of the Midwest (see Downs). Procedures for establishing formal intergovernmental collaboration currently exist in most states, but are seldom used. 4. Finally, new farmland protection techniques should be explored for the Midwest. Any successful technique must accommodate the management needs of the farmer. This inquiry could be part of the charge to a citizens' task force as suggested in item 1 above. The purchase of development rights to farmland is a tried and tested technique in the Northeast and should be formally authorized by state enabling legislation in the Midwest. Attention should also be given to methods by which capital gains from development of farmland may be shared among owners while retaining the best for farming. Thus, those providing the public good attributes to the broad population could be reimbursed by sharing in the returns to development. Planner Ian McHarg spelled out such an approach over 30 years ago in his "Plan for the Valleys" (1964). Perhaps farmland owners could create a development rights cooperative as they do for marketing milk or vegetables, whereby all members share in returns to the development potential of farmland while maintaining active farms.

Successful long term resource policy in the Midwest depends upon innovative development of land-use techniques and

decision structure to guide growth. There must be state level leadership, with visible commitment and a state-wide superstructure within which local farmer initiative may be expressed. But more than anything, farmland retention requires an articulate preamble built on a clear understanding of and commitment to the public commons of agricultural land.

Tables

Table 1
Farm and Operator Characteristics
Selected State Comparisons

	Illinois		Iowa		Indiana		Kansas	
	1982	1992	1982	1992	1982	1982	1982	1982
Farms (number)	98,483	77,610	115,413	96,543	77,180	62,778	73,315	63,278
Land in Farms (acres)	28,726,114	27,250,340	32,611,964	31,346,565	16,294,268	15,618,831	47,052,213	46,672,188
Average farm Size (acres)	292	351	283	325	211	249	642	738
Market Value of land (\$ per farm)	538,886	539,181	471,011	394,267	338,549	346,199	384,197	343,312
Ag as proportion of total area	81	77	91	88	71	68	90	89
Full Owners (%)	44	44	46	45	57	57	43	43
Part Owners (%)	36	38	33	36	32	33	41	43
Tenants (%)	20	18	21	19	11	10	16	14
Operator lives on farm (%)	71	72	76	75	76	77	66	67
Operator Primarily Farmer (%)	65	62	75	69	52	50	65	63
Operator work > 200 days off farm (%)	28	31	22	26	39	40	29	31
Average Age of Operator (yrs)	49	52	48	50	49	52	51	53
Individual or Family Owned (%)	85	84	85	84	85	85	88	87
Partnership (%)	12	12	11	10	12	11	9	9
Non-Family Corporation (%)	.3	.2	.3	.3	.3	.3	.2	.3

Source: 1992 Census of Agriculture

Table 2
Land Use Changes 1982-1992 (1000 acres)
Selected State Comparisons

	Cropland			Pasture		Rangeland		Forest		Total Rural		Developed		
	1982	1992	% change	1982	1992	1982	1992	1982	1992	1982	1992	1982	1992	% change
Illinois	24727	24100	-2.5	3158	2763	0	0	3430	3418	31939	31672	2854	3094	+8.4
California	10521	10051	-4.5	383	1161	18001	17139	15113	14793	49360	47892	4200	5000	19.0
Iowa	26441	24988	-5.5	4539	3712	0	0	1758	1931	33661	33584	1729	1779	2.9
Indiana	13782	13512	-2.0	2210	1866	0	0	3637	3626	20440	20193	1866	1987	6.5
Kansas	29118	26565	-8.8	2171	2306	16380	15722	1255	1331	49624	49491	1875	1997	6.5
Nebraska	20276	19239	-5.1	2130	2065	23148	22688	733.8	777	47025	46885	1214	1251	3.0
Texas	33319	28261	-15.1	17064	16709	95471	94155	9334	9960	157356	155456	6829	8231	20.5

Source: 1992 USDA National Resource Inventory

Table 3
Land Use Transition Matrix (million acres)
1982-1992¹

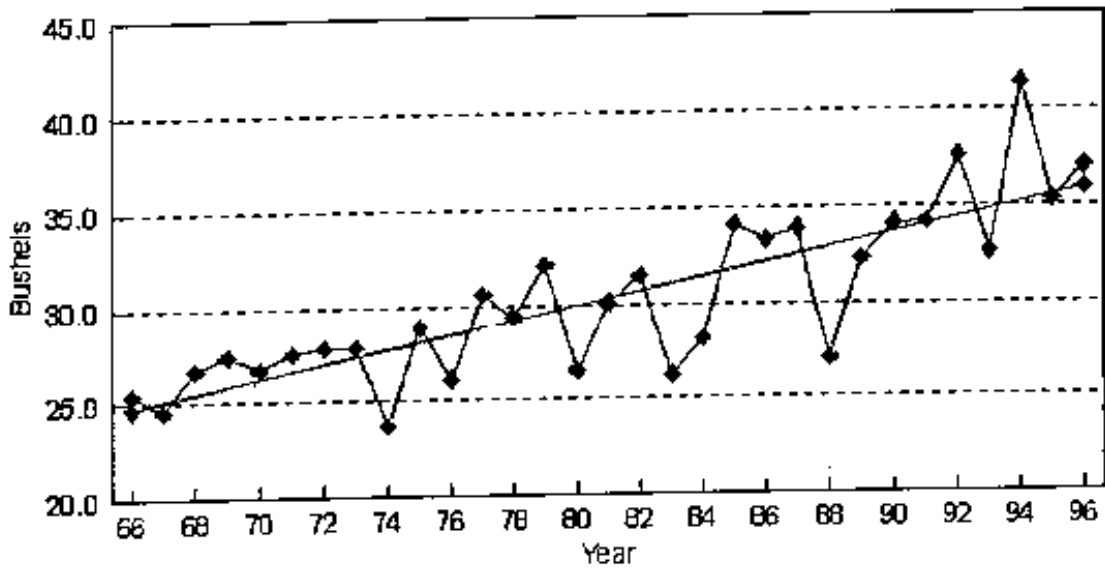
Major Land Uses	1982	1992				
		crop/pasture	range	forest	urban	% of other
crop/pasture	549.9	491.1	3.6	11.3	6.5	37.4
range	404.5	8.1	390.6	1.5	2.1	2.2
forest	390.3	4.3	1.1	377.7	5.5	1.7
urban	77.9	0.3	0.1	0.2	77.3	0.0
other	99.7	2.2	0.5	1.6	0.3	95.1
Total	1,522.5	506.0	395.9	392.3	91.7	136.4

Source: 1992 USDA National Resource Inventory

¹Adapted from Greene, p.78.

Figures

Figure 2
U.S. Soybean Yields
Time Series



Source: National Agricultural Statistics Service

Figure 1

U.S. Corn Yield
1970 to Present

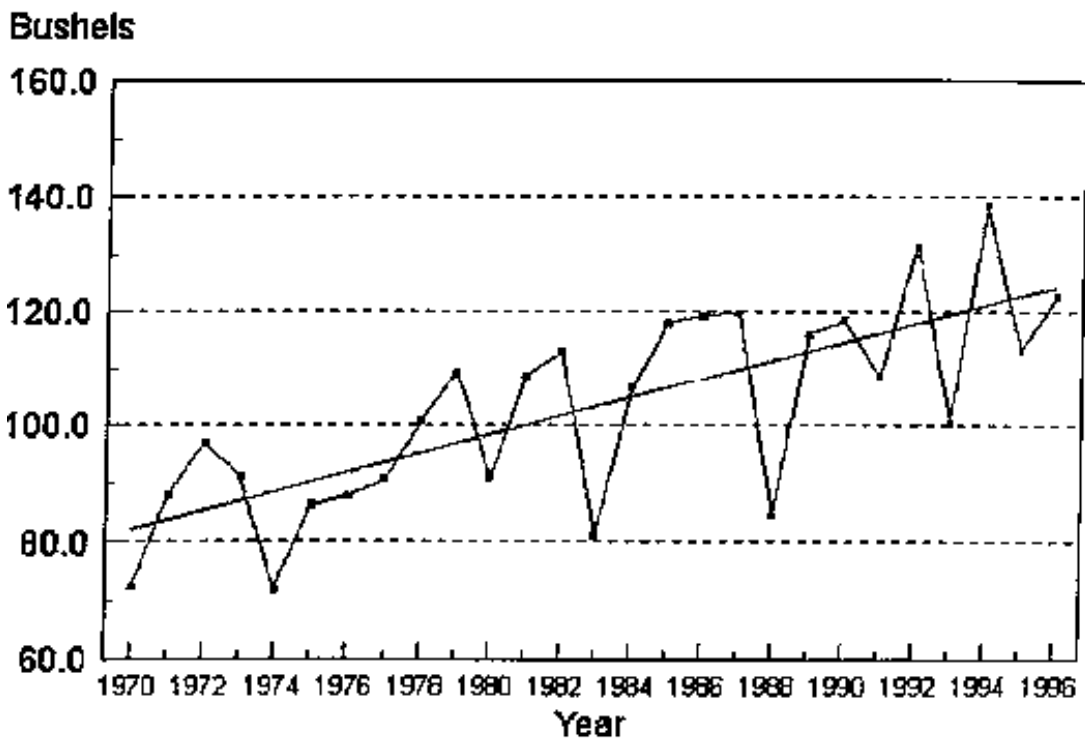


Chart last updated October 11, 1996

Source: National Agricultural Statistics Service

Footnotes

¹ Dr. Lawrence W. Libby stepped down as chair, Department of Food and Resource Economics, University of Florida to join the Center for Agriculture in the Environment on February 15, 1996 for a year's sabbatical. In August 1997, he joined Ohio State University as the C. William Swank Chair in Rural Urban Policy. [Back](#).

² For many analysts, the Pareto Optimal decision rule has been replaced by the Kaldor-Hicks Potential Pareto Optimality criterion in stating that a change in resource allocation is still an improvement if gainers could bribe losers to accept the change, leaving a net surplus, whether or not they actually do so. Normative application of PPO to real policy decisions, requiring aggregating gains and losses when there may be considerable losses to a few, is viewed with some skepticism (Griffen). [Back](#).

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