

# Desirability, Challenges, and Methods of Protecting Farmland

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*JEL Classifications: Q24, Q28, R14*

For many Americans, loss of farmland and forestland ranks as a significant land use problem. The amount of U.S. farmland has declined by an estimated one million acres annually over the last 60 years. Population increases, a desire for larger lots in less urban settings, and advances in communications and transportation have increased the demand for low density housing. The number of acres consumed per person for new housing have almost doubled in the last 20 years, and in metro areas such as Washington, DC the rate at which land is being consumed exceeds population growth by almost 2.5 times. Since 1994, residential lots larger than 10 acres have accounted for more than half of all land developed (Heimlich and Anderson 2001). Thus farmers in many areas of the country face a loss of farmland and other farmers, on the one hand, and new nonfarm neighbors next door, on the other.

## Is Retaining Farmland Desirable?

Should farmland retention be a goal of local communities? The U.S. population is growing, and people have to live somewhere. Moreover, technological advances in agriculture have increased per acre yields, requiring less farmland to produce the same amount of food and fiber. Economists ask “What is the market failure in the conversion of this farmland? Why do we need a policy to prevent conversion?” If conversion occurs because people are willing to pay more for land for residential and commercial structures than a farmer can earn by growing a crop on it, then conversion appears optimal (Lynch 2005). Of course, other policy interventions such as transportation policies, educational policies and school quality, banking regulations, and crime prevention or lack thereof all affect development patterns and may contribute to the retention of less farmland than society would find ideal. Nonmarket values or willingness to pay for the multifunctionality of farmland derive from the desire to preserve the amenity values of

open space and rural character, to slow suburban sprawl, to provide wildlife habitat, to provide local food supply and food security, and to improve water quality. People report a willingness to pay to retain land as farmland for amenity and environmental reasons. Much of the information on what society desires to preserve and how much it is willing to pay for these multifunctional attributes is presented in the accompanying article by Duke.

## Reasons for Farmland Conversion

To ensure that any program or policy introduced actually does retain farmland, we must try to understand the forces that result in its conversion. In certain periods and some areas of the country, net returns to farm activities have been negative and farmers may abandon the land or let it return to forest. For example, in 266 counties in the six Mid-Atlantic States, out of the 1,330 county/decade combinations over the last 50 years, 418 (31%) counties lost agricultural land even when the county’s population was not increasing. But what people seem to find most disconcerting is the conversion of farmland to housing and commercial developments. Forces driving this conversion range from demand for land for housing and commercial development that raises the price of land for these uses far above those for agricultural uses, lack of competitiveness in international trade, speculation in the land market (investors earn higher returns buying land than equities), decreasing relative returns from agriculture in urbanizing areas, difficulties with nonfarm neighbors, and inability of farm families to diversify their income sources with off-farm employment in some areas. Some of the forces stem from macro-economic factors (interest rates, value of the dollar internationally, trade agreements) beyond the scope of local and state governments. However, local land-use planning and policies impact others. We address these factors.

### Challenges from Land–Uses Patterns

While adapting to surrounding urbanization is crucial for farmland owners, the pattern of land conversion can result in lower profits on remaining farmland, as spillover effects from nonfarm neighbors can decrease the relative net returns for producers. As nonfarm homeowners move closer to agricultural operations, they often discover unexpected and unpleasant odors, dust and farm waste disposal. These new residents have bought their dream home in the country without understanding why they are awakened at 5 a.m., or have to experience fly invasions on hot summer days. And although every state has passed some type of “right-to-farm” legislation to protect farmers from these types of complaints, these laws may provide a false sense of security for farmers.

Fragmentation of the agricultural landscape by mushrooming housing developments also alters farmers’ costs. Farming many scattered fields limits an operation’s ability to achieve an efficient scale of operation. Moving equipment from field to field is time-consuming and creates conflict with cars on the road. Close proximity to nonfarm neighbors often results in increased vandalism, theft, litter, trespassing and stressed farm animals. Teenagers may think that riding their bicycles and off-road vehicles across an open field has no effect on the soil. Children and household pets may enter pasture land to pet cows, horses, geese or chickens unaware of the dangers involved or the stress caused to the animals. The increased cost to prevent or rectify these behaviors is usually borne by the farmland owner.

These spillover effects from low density developments to farmers may reduce farm profits. But just as importantly, the operational difficulties cause uncertainty about the long-run profitability of the farm sector as more homes are built nearby. This creates an impermanence syn-

drome, in the sense that farmers see no long-run future in farming in the area and invest less in both physical and human capital (Gardner 1994). They may stop adopting the newest technologies that could increase their yields or decrease their costs.

As farmers exit the industry in a local area, fewer operations remain to support the input and equipment businesses, and veterinarians. Similarly, product marketing firms and food processing plants may disappear. As the farmer travels further to buy inputs or sell outputs, costs increase and profits decline. This loss of a critical mass of farmers has social and political as well as economic consequences. The overall effect is a decrease in the profitability of the farm and an increase in the relative attractiveness of selling the farm for housing development. In some sense, the impermanence syndrome becomes a self-fulfilling prophecy.

In addition, the increased demand for land often prices farmland out of reach of existing farmers who may need to expand their operations to achieve efficient scale. And because the farm population is aging, escalating land values may hinder the long-term continuation of the farm sector as fewer farmers can buy into the sector. Other than individuals who inherit farmland, younger farmers seeking to enter the industry in an urbanizing area will find buying the main input, farmland, to be too expensive. These so-called urban influences affect about 17% of the nation’s agricultural land and real estate investors often purchase the appreciating land to achieve high investment returns.

### Benefits of Farming Near the City

While problematic in many ways, metropolitan farms can succeed if they take advantage of the opportunities that proximity provides. Many metropolitan farms grow high value crops (fruits and vegetables, bedding

plants and other horticultural products, compost and others) and sell to consumers directly. The growing slow and local food movements provide support for farm locations close to population centers. State and local support has resulted in expanding farmers’ markets for direct sales to a variety of consumers including those receiving food stamps. The growth in community supported agriculture groups provide a growing number of outlets to reduce income risk and provide consumers locally produced products. Restaurants and schools seek fresh produce as well. These approaches allow some farmers to obtain top dollar for their commodities while providing consumers with a source of locally grown fresh food.

Agri-tourism ventures can also succeed when people from nearby cities come out to the farm. Agri-tourism is a subset of “nature tourism,” which is the fastest growing segment of the tourism industry, averaging a 30% annual increase each year since 1987. In the United States., nature tourists spend more than \$7.5 billion annually on travel alone. Many of these people would consider visiting a farm or a forest setting for their recreational experience. Also, the equine industry has grown at the rural-urban fringe as farmers realize that boarding horses, riding rinks, and riding trails can earn them higher returns and guaranteed buyers for their hay and alfalfa.

Metropolitan farms also benefit from the proximity of off-farm employment opportunities to increase their family income. Off-farm work provides income during the slow seasons and has resulted in farm income being greater than non-farm income in recent years. As the farm operation changes with the changing economic environment, off-farm income can also aid in any transition from full-time to part-time employment. For labor intensive farm enterprises, the metropolitan proximity also provides

a seasonal labor supply. Thus, although population growth and closeness to metropolitan areas can create an impermanence syndrome and create spillover impacts, farmland loss is not inevitable if the farm sector shifts to new commodities and enterprises more suited to this environment.

### Methods for Retaining Farmland

Given that society continues to express a desire to retain farmland and change the pace and pattern of development, what would an optimal preservation strategy be? A farmland retention policy should seek to do three things:

1. Enhance the profitability of farming in the region,
2. Decrease the obstacles to productive farming such as nonfarm neighbors adjacent to productive farms, and
3. Slow or end housing development in the farming area itself and redirect development to nonagricultural areas.

A policy may accomplish these goals by protecting farmland from conversion and/or redirecting new development to desirable nonrural areas. Both regional and local planning is an important and fundamental first step to choosing the right protection techniques and deciding where farmland retention is desired and where development is acceptable. Planning efforts can be aided by ecosystem models that capture space and time dimensions, and balance population growth, consumer tastes and preferences for housing and open space, and land conservation. Regional planning efforts are imperative to ensure farmland protection in one area does not spill over and create conversion problems for adjacent areas.

Farmland preservation policies can be categorized as regulatory, incentive-based, and participatory, with a fourth category being a hybrid of two of the other three types (see Table 1;

this section on techniques draws from Duke and Lynch 2006). Each category impacts the land market differently and may have challenging implementation issues. Issues of funding, administration, and equity also come into play. Farmland can be retained either through outright prevention of development or when the price of farmland properly reflects the social value it provides to the community.

### Regulatory Techniques

Regulatory techniques such as agricultural zoning, right-to-farm laws and urban growth boundaries make rural areas “off-limits” by changing the rules in the agricultural land market to both protect agricultural land and redirect development. They rely on the state’s authority to mandate a socially beneficial behavior and thus require very little tax revenue to retain productive agricultural land. They also can be designed to preserve large

contiguous blocks of land, preventing spillover impacts and allowing farmers to operate without constraints. Regulatory techniques can target areas where farms are considered most productive and retain a critical mass of farmland. In areas with a strong and viable agricultural base, agricultural zoning may be supported but only if agricultural landowners believe they have sufficient political capital to alter the zoning at a later date and be able to sell for development (Esseks and Long 2001). However, in areas where the urban influence has increased land value dramatically, limiting the land-use options on farmland without compensation could be seen as a regulatory taking by the farmland owners and thus may not be politically feasible or may result in lawsuits against the local government.

Another concern with regulatory techniques is that they are not permanent. Variances are permitted in

**Table 1.** Categories of Agricultural Land Retention Techniques

Regulatory techniques	Incentive-based techniques	Participatory techniques	Hybrid
Agricultural protection zoning	Impact fees, exactions, and mitigation ordinances	Fee-simple purchase or negotiated sale	Eminent domain with right of first refusal (ROFR)
Cluster zoning	Mortgage assistance	Eminent domain	Pension plan with purchase of development rights (PDR)
Right to farm laws	Recapture or rollback penalty	Land banks	Transfer of development rights (TDR) with protection zoning
Urban growth boundaries	Use-value assessment	Purchase of development rights or of agricultural conservation easements. (PDR/PACE) programs	Agricultural districts
Growth management regulations	Circuit breaker tax	Term easements	Capital gains reduction or state income tax reduction/or bargain sales with PDR
State executive orders	Transfer tax	ROFR	Installment payments with PDR
Mandatory real estate disclosure		Land leasing	Point systems with PDR

many cases. Zoning regulations and urban growth boundary lines can be changed with each new set of elected officials. In fact, sufficiently unpopular zoning regulations have led to a whole new slate of officials being elected. Local communities are also concerned that regulatory tools may drive up the cost of housing by restricting the amount of land available or the number of houses permitted (Glaeser and Ward 2006). The technique of cluster zoning may not be suited to consumer preferences and thus find few purchasers. In addition, cluster zoning still permits housing within an agricultural area and thus does not prevent negative spill-over impacts.

### **Incentive-Based Techniques**

Incentive-based techniques reward the land-use decisions that most benefit society and penalize those individual decisions deemed costly. These techniques can be coercive, i.e., increase the cost of undesirable land uses, or rewarding, i.e. subsidize the cost of desired land use. Compensation is paid or higher agricultural returns are ensured within the same land market but landowners receive more benefits from continuing an agricultural use. Therefore, landowners are relatively more likely to choose a land use that provides the highest benefits to society.

Many of these techniques are voluntary and thus generate less opposition, but others are more costly in terms of tax revenues expended or not collected, than regulatory techniques. Many local governments do not have enough funds to ensure a sufficiently high level of participation to prevent housing development within agricultural areas. If the relative land price in a nonagricultural use increases sufficiently, landowners will convert the farmland from the agricultural use. Therefore, incentive based techniques are more likely to slow farmland conversion rather than achieve a critical mass of retained productive farms.

In addition, governments have rarely targeted these types of techniques to certain places, i.e., farmland in all areas of a county receives use-value assessment. Therefore, these techniques cost more than if they were targeted to a particular area. For example, conversion penalties such as transfer taxes would have greater impacts on those parcels most likely to convert—thus targeting the most threatened parcels. Limited targeting means some landowners, such as real estate investors and wealthy “hobby” farm owners, cannot take advantage of use-value assessment and this increases the cost of speculation. Techniques such as circuit-breaker taxes can limit benefits based on some family or farm income threshold. Incentive-based techniques can be altered relatively easily and thus will depend on the political will and the resources available.

### **Participatory Techniques**

The government may also “participate” in the land market by buying or selling parcels of land or lesser rights in land. For example, the government may purchase land, use eminent domain, purchase partial rights such as the right to build houses and restrict the land with an easement, or use a right of first refusal approach to ensure the retention of farmland. Other than eminent domain, participatory techniques are voluntary and often the creation of these programs is relatively simple and faces little opposition.

Participatory techniques allow more spatial targeting and directed efforts by which only parcels contributing to the desired goals are enrolled. Purchase of Development rights (PDR) programs appear to be achieving their goals and slowing the rate of farmland conversion (Lynch and Musser 2001; Liu and Lynch 2006). However, because the government enters the land market to buy rights, these techniques are more costly from a tax-payer perspective than either

the regulatory or the incentive-based techniques. And thus, they often cannot enroll sufficient acres to achieve all of their goals. Because the government acquires rights in the land and easement restrictions are placed on the deed, these techniques operate as a permanent means of preserving the agricultural land. Eminent domain could be used in targeted areas to enroll hold-out landowners. Public access can be permitted on those parcels owned fee-simple while private rights against trespassing can be protected on those for which the government holds lesser rights. Term easements are a temporary technique and would simply slow the rate of conversion rather than permanently retain the land. These could be beneficial to prevent conversion of farmland when the government has insufficient funds to buy more permanent rights but these found little support among stakeholders (Duke and Lynch 2007). As a further complication to the financing side of participatory techniques, several studies have found that adjacency to preserved farmland increases one’s land value (Geoghegan, Lynch and Bucholtz 2003). Right of first refusal found a high degree of support among stakeholders in part because governments are not forced to have money up front but can respond to an actual conversion threat (Duke and Lynch 2007).

### **Hybrid Techniques**

Hybrid techniques often combine the best characteristics of two of the techniques listed above into a single technique enabling policymakers to take advantage of synergies. For example, hybrid tools can stress targeting through a regulatory approach but also provide some compensation to current landowners to generate political support for the proposed program. Transfer of development rights programs often use agricultural zoning in a sending area where farmland preservation is desired but allow landowners to sell the rights to develop to

another area, where development is desired, as compensation. Landowners donating development rights receive tax benefits through a charitable tax deduction using a participatory tool (PDR) at a lower direct cost to the government. By using combinations of techniques, most hybrid tools lead to permanent preservation. Agricultural districts delay conversion and provide protection from nonfarmer complaints similar to agricultural zoning but usually for only a specified number of years, as in the case of term easements.

Communities can support farmers' adaptive behaviors on the rural-urban fringe. Farmers have adapted to the changing environment in quite diverse ways whether by changing commodity mixes or taking advantage of urban opportunities to market directly to the consumer. Recent evidence suggests that the farm community has been resilient to large losses of farmland over time and in some cases per acre returns have actually increased (Lynch and Carpenter 2003). Efforts to encourage these adjustments may facilitate farmers' transition and success. Requiring mandatory real estate disclosure of normal agricultural practices for potential rural residents and implementing right-to-farm laws may aid in these endeavors.

### **Implications for Agriculture, Urbanization, and Policy**

The widespread impact of recent housing development on water quality, air quality, loss of open space, wetlands, and wildlife habitat and the stagnation of many inner cities and suburbs suggests a new approach to land use is needed. A do-nothing approach will result in ongoing sprawl and fragmentation in rural areas. Regulatory, incentive-based and participatory policies along with regional and local planning can all play a role in achieving a more socially beneficial land use pattern given the anticipated population growth and tastes and

preferences of housing buyers. Judicious use of these policies can enhance the profitability of farming in the region, decrease the obstacles to productive farming such as nonfarm neighbors, and slow or end housing development in the farming area allowing the agricultural sector to survive.

### **For More Information**

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