

## Do Agricultural Land Preservation Programs Reduce Overall Farmland Loss?

When purchase of development rights (PDR) programs are in place to prevent farmland from being developed into commercial or residential property, you would expect that less farmland would be converted. But are these programs actually working? Dr. Lori Lynch at the University of Maryland finds out.

### AT A GLANCE

- Purchase of development rights (PDR) programs provide a landowner with cash payments or tax benefits in exchange for restricted land conversion rights; the land can never be used for commercial, residential, or industrial uses once enrolled even if the land is sold to a new owner.
- PDR programs help protect a viable agricultural economy and environmental amenities as well as maintaining a certain amount of open-space land.
- 80 state and local governments have implemented PDR programs.
- These programs have preserved 2.23 million acres at a cost of \$5.47 billion.

*Glance continued on page 2*



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**PDR programs apply easements to farmland property to restrict the current owner and all future owners from converting the farmland into residential, commercial, or industrial use.**

**A**s the suburbs grow, open space shrinks, and farmland disappears in a wave of housing construction. This affects national and local food supplies because of the current farmland loss and because other farmers begin to lose faith in the

viability of the local agricultural sector. Farmland loss also impacts the quality of life for nearby residents. Figure 1 shows the funding that has been used to retain open space; clearly, land conservation is important to U.S. citizens. Purchase of development

Glance continued from page 1

- Counties with a PDR program have a rate of farmland loss 40% to 55% lower than similar counties without PDR programs. They also lose 375 to 550 fewer acres per year relatively.

rights (PDR) programs provide a landowner with cash payments or tax benefits in exchange for restricted land conversion rights. The land cannot be used for commercial, residential, or industrial uses.

More specifically, PDR programs apply easements to farmland property to restrict the current owner and all future owners from converting the farmland

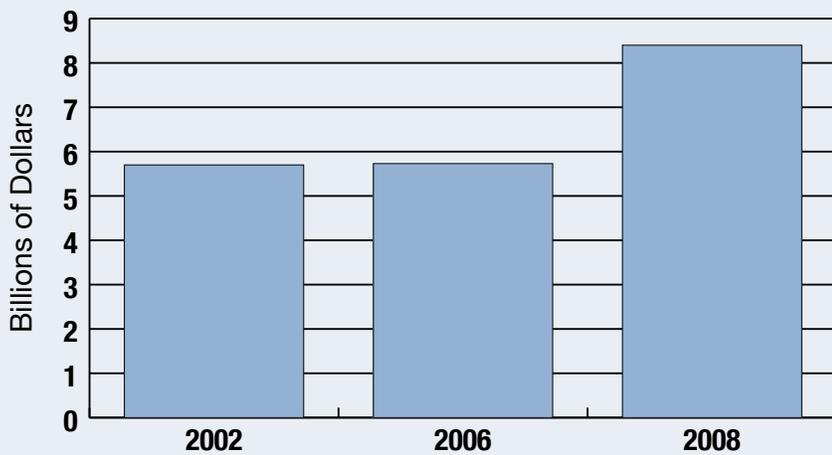
into residential, commercial, or industrial use, compensating the owner with cash payments and/or income and estate tax benefits for the lost opportunity to develop. Various criteria are used to determine which farms are eligible; examples include soil quality, acreage, and proximity to preserved land parcels.

The six states in Figure 2 – Delaware, Maryland, New Jersey, New York, Pennsylvania, and Virginia – experienced a 47% decrease in farmland between 1949 and 1997. The first PDR program was established at the local level in New York in the early 1970’s. Maryland followed with a state-level program in 1977, and by 1997 five out of these six states had state level PDR programs. PDR Programs provide permanent easement restrictions and as such should have long term impacts on farmland loss.

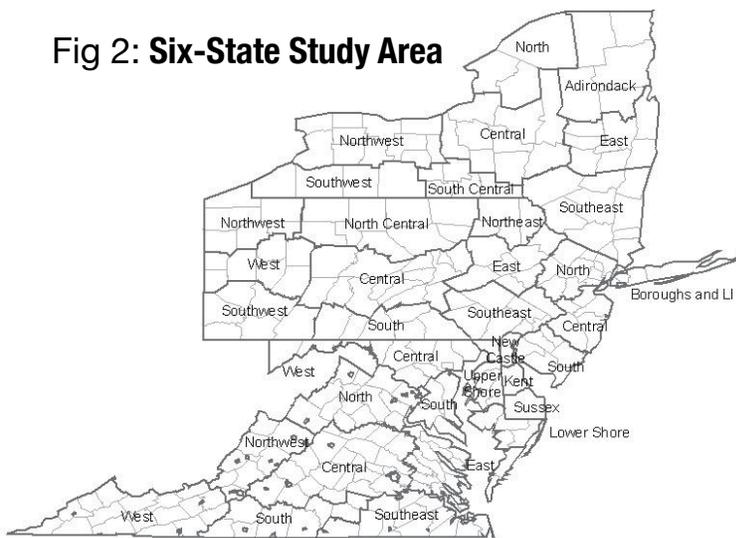
It’s difficult for Dr. Lori Lynch and her coauthor, Dr. Xiangping Liu, to know what the impact of a PDR program is because they need to know what would have happened without the program. They can’t actually know what would have happened, but they can compare counties that are very similar except that one has a PDR program and the other does not. If both counties show similar changes in farmland loss, you can conclude that it is something that these counties have in common and not the PDR program that caused the change in land conversion.

Unfortunately, preservation efforts may raise the value of land just outside of the preserved area, increasing demand for housing and thus increasing the pressure to convert the land. The presence of permanent open space is appealing to homeowners, so housing prices next to the open spaces are higher than they would be without the preserved land. This gives farmers

**Fig 1: Authorized Conservation Funding**

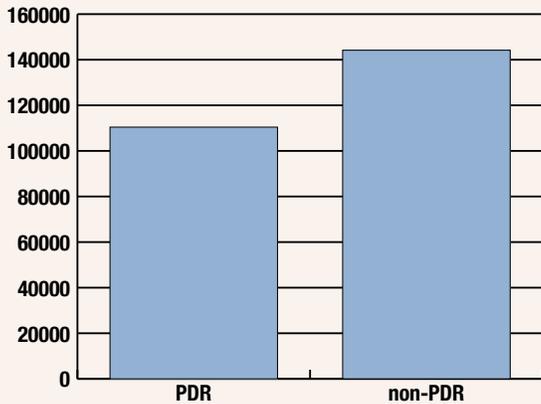


**Fig 2: Six-State Study Area**



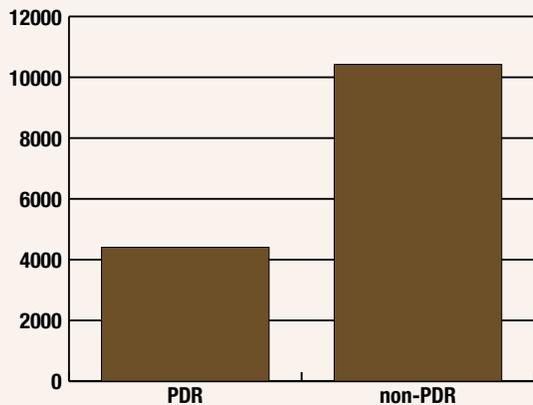
New York, New Jersey, Pennsylvania, Maryland, Delaware, and Virginia encompassed the Six-State Study Area depicted here by Crop Reporting Districts. These states lost 47% of their farmland between 1949 and 1997.

**Fig 3: Average Number of Acres of Farmland By County (1949-1997)\***

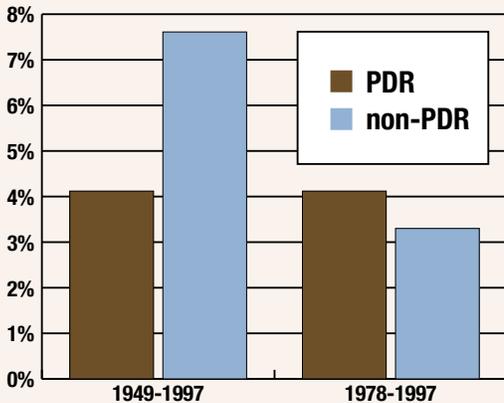


\*PDR programs began in 1978. Thus PDR counties starting point was 1978 rather than 1949.

**Fig 4: Average Number of Acres Lost by County (1949-1997)**



**Fig 5: Average Rate of Farmland Loss by County**



more incentive to sell their land to developers. Thus preserving some land can actually cause an overall increase in farmland conversion by raising housing prices.

It is also important to note that the PDR programs may be preserving land parcels that are unlikely to be converted anyway. Saving these acres may not have a significant impact on overall land conversion. Therefore, it is also useful to look at the change in the rate of farmland conversion in the county rather than just the acres preserved. In their research, Liu and Lynch define farmland as land used for crops, pasture, or grazing, and Conservation Reserve and Wetland Reserve Program acreage; woodland and wasteland are included if these are on an actively farmed parcel. Farmland loss is simply the difference in total farmland from one time period to the next. The rate of farmland loss is the farmland loss divided by the initial amount of farmland.

**How do we know if they're working?**

So why is it so hard to measure the effectiveness of these programs? Well, the effect of a PDR program is the farmland loss if there is a PDR program minus the farmland loss if there is not a PDR program. Liu and Lynch know if a county has a PDR program, and they know how much farmland loss there is in counties with PDR programs, but they don't have any way of knowing how much farmland loss there would have been without the program. They can't just compare the farmland loss in counties with programs to the loss in counties without programs because there may be specific reasons that some counties have a PDR program. For example, it would make sense if counties with high rates of farmland loss or fewer acres of farmland implemented PDR programs. Similarly, if counties are not experiencing any farmland loss, why would they bother to start

**Fig 6: Decline in Farmland from 1949 to 1997 for the U.S. and Mid-Atlantic States**

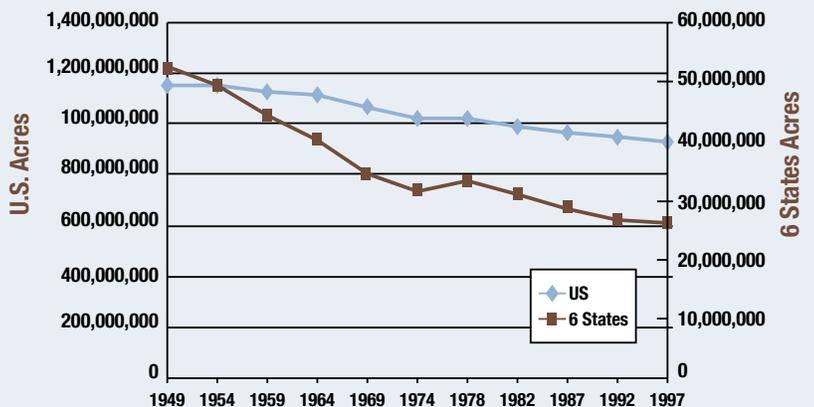




PHOTO: EDWIN REMSBERG

**Counties that have established PDR program have reduced their rate of farmland loss by 3 to 4 percentage points on average. Similarly, a county with a PDR program will lose between 375 and 550 acres less per year.**

a farmland preservation program? Comparing the counties with PDR programs to counties without programs that start out with lower rates of farmland loss would make it look like PDR programs actually increase the rate of farmland loss, so it's important to compare counties that are similar to get at the real effect of the program.

Ideally, Liu and Lynch want to compare counties that are identical in all other ways except for the presence of a PDR program but this is impossible. One alternative way is to compare counties that have the same propensity of having a PDR program. In other words, instead of matching counties based on all possible county characteristics, they only need to match counties based on characteristics that affect farmland loss and whether the county has a PDR program. Although you might think comparing a county to itself a

few years ago would be a good match, economic conditions such as housing value, family income, and population density can change a lot over time, so different strategies are used. In some cases, counties can

*“Preservation efforts may raise the value of neighboring land as people realize they will have farmland near them forever.*

*This increases the demand for housing and thus increasing the pressure to convert the neighboring parcel.*

*Thus, an unexpected consequence of preservation could be an increase in farmland conversion for the neighboring parcels.”*

be compared to any county in the six states and in any time period. In others, counties are only compared with other counties in the same time period. Liu and Lynch use the following characteristics to match counties: viability of the agricultural sector, agricultural profitability, demand on land for nonagricultural uses and for open space, and alternative employment opportunities for farmers. They compare counties that have the same levels of these qualities and conclude that a difference in farmland loss is caused by the presence of a PDR program.

### **What do they find?**

Liu and Lynch find that counties with high agricultural profits and more farms but not necessarily more farmland are more likely to establish PDR programs. Increased opportunity for off-farm work, higher housing values, higher median family income and being within a metropolitan area are also associated with the establishment of a PDR program. Liu and Lynch estimate that a PDR program reduces the rate of farmland loss by 3 to 4 percentage points on average, i.e., a 40%-55% decrease in the rate of loss in the 6 Mid-Atlantic states (figure 2) over 1978 to 1997. Similarly, a county with a PDR program will lose between 375 and 550 acres less per year, i.e., between 20% and 30% fewer acres lost per year in the states they are studying.

There are a few limitations to this study. Liu and Lynch do not know what the land is being converted into; if it is being converted from farmland into forest, tourism, or recreational uses the land still offers many environmental and open space benefits. They know, however, that



**Dr. Lori Lynch**

in many of the counties, land was being converted as population was growing and addition residential uses were in demand. They are also unaware of the fragmentation of the remaining farmland after conversion. Because large open spaces are viewed differently than small open spaces, a county with a few large open spaces may have a different pattern of suburban development than a county with the same amount of open space that is spread out in several small open spaces. The spatial layout of the preserved land could also have an impact of the open-space amenities and the viability of the agricultural sector.

As is often the case, answers bring more questions: Do PDR programs

cause developers to convert more forested land? Do PDR programs increase or decrease loss of open space? Have the preserved land parcels remained as working farms, which would have an impact on viability of the agricultural sector? Keep an eye on the University of Maryland Department of Agricultural and Resource Economics for answers to questions such as these. ■

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