

## Resources & Environment



Thomas McDonald

# Development at & Beyond The Urban Fringe: Impacts on Agriculture

Land and development in the U.S. is generally following two routes: expansion of urban areas and large-lot development (greater than 1 acre per house) in rural areas. In the past decade, this proliferating development has been tagged with the unflattering epithet of “urban sprawl.”

Both kinds of growth affect the amount and productivity of U.S. agricultural land. They also create problems due to greater costs for infrastructure like roads and sewers, as well as increased traffic congestion and energy used for transportation. Sprawl can impose higher costs on local communities for services, degrade the environment, clutter landscapes, interrupt open space, and erode the sense of community in formerly rural areas. Concerns about development around urban areas are not new, having arisen periodically during most of the last century, and certainly since automobile ownership became widespread after World War II.

Land-use changes flow from population growth, household formation, and economic development. Metro areas (see box) have expanded as rural people moved off farms and residents of densely

populated central cities dispersed to surrounding suburbs. Growth has spilled out of urban areas as population disperses to rural parts of metro counties and previously rural nonmetro counties. Investments in infrastructure—such as roads, sewers, and water supplies—have enabled this dispersion. New retail, office, warehouse, and other commercial development follows in the wake of new housing development, to serve the new population and to employ the relocated labor force.

Urban area, as measured by the Census Bureau, despite doubling since 1960, still made up less than 3 percent of U.S. land area in 1990 (excluding Alaska). Developed area—which includes urban area and land used for transportation—made up 5 percent in 1997, as measured by USDA’s National Resources Inventory (NRI).

While the increase in urban area poses no immediate threat to overall U.S. food and fiber production, some crops in some areas are particularly vulnerable to development. For example, 61 percent of U.S. vegetable production is located in metro areas. Land used for winter vegetables in Florida, California, and Arizona could be

developed because the climate in those states also attracts population.

U.S. agriculture can adapt to urban development by changing the products and services offered. While low-density, fragmented settlement patterns can disrupt traditional agricultural landscapes, they do leave room for some agriculture production to continue. Farms in metro areas are an increasingly important segment of U.S. agriculture, making up 33 percent of all farms, 18 percent of farmland, and a third of the value of U.S. agricultural output. However, to adapt to rising land values and increasing contact with new residents, metro-area farmers may have to change their operations to emphasize higher value products, more intensive production, and urban marketing savvy.

### *What Is Sprawl?*

The U.S. General Accounting Office has concluded that there is no widely accepted definition of sprawl. Definitions range from the expansive...

“When you cannot tell where the country ends and a community begins, that is sprawl. Small towns sprawl, suburbs sprawl, big cities sprawl, and metro areas stretch into giant megalopolises—formless webs of urban development like Swiss cheeses with more holes than cheese.” (U.S. House of Representatives, 1980)

...to the prescriptive:

“...a spreading, low-density, automobile-dependent development pattern of housing, shopping centers, and business parks that wastes land needlessly.” (Pennsylvania 21st Century Environment Commission).

Most definitions have some common elements, including:

- low-density development that is dispersed and uses a lot of land;
- geographic separation of essential places such as work, homes, schools, and shopping; and
- almost complete dependence on automobiles for travel.

## Resources & Environment

### Metro, Urban, & Rural Geography

Statistics describing trends in land use are based on geographic entities defined by the Census Bureau or the USDA National Resource Inventory (NRI).

**Metro area** (Census)—a core area containing a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that core. Metro areas are defined in terms of entire counties (except in New England, where towns are used) and contain a mix of land uses, ranging from the densest urban core to suburban landscapes to deserts, farms, and forests.

**Urban area** (Census) comprises all territory, population, and housing units located in “urbanized areas” (continuously built-up areas with a population of 50,000 or more with a central core), defined in terms of Census tracts (not counties), and in “urbanized places” (places of 2,500 or more inhabitants outside urbanized areas). Places not classified as urban are *rural*.

**Urban fringe** consists of rural areas in metro counties. The part of the fringe existing nearest to existing urban areas is likely to grow the fastest and eventually be absorbed when densities rise to urban levels.

**Urban and built-up areas** (NRI) consists of residential, industrial, commercial, and institutional land; construction and public administrative sites; railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage plants, water control structures, small parks, and transportation facilities with urban areas. Due to differences in data collection techniques and definitions, NRI estimates of “urban and built-up areas” are usually higher than Census “urban area” estimates for nearly all states.

**Developed land** (NRI) consists of urban and built-up areas and land devoted to rural transportation, which includes highways, roads, railroads, and right-of-way outside urban and built-up areas.

Without a consensus definition, any growth in suburban areas may be accused of sprawling. Short of a return to dense urban living not widely seen since before World War II, it is not clear how growth can be accommodated without incurring the worst features of sprawl.

#### Two Kinds of Growth

Regardless of how sprawl is defined, government officials, housing consumers, farmers, and other interest groups appear concerned about two kinds of growth:

*At the urban fringe.* The urban “fringe” is that part of metro counties not settled densely enough to be called “urban.” New roads, commercial buildings, and low-density housing (two or fewer houses per acre) cause urban areas to grow farther out into the countryside, increasing the density of settlement in formerly rural areas.

*Beyond the urban fringe.* Another kind of development occurs farther out in the rural countryside, beyond the edge of existing urban areas in metro counties and often in adjacent nonmetro counties.

Instead of relatively dense development of four to six houses per acre, exurban development consists of scattered single houses on large parcels (often 10 acres or more). This type of development is more likely to remove land from agricultural production and changes the nature of open space, but is not “urban.”

Growth at the edge of existing developed areas gradually changes into more fragmented developments farther into the countryside, so there is no clear geographic dividing line between the two kinds of growth. While related, these two forms of growth have different causes and consequences, especially for agriculture and the environment.

Total “urban area,” as defined by the Census Bureau, has more than doubled over the last 40 years from 25.5 million acres in 1960 to 55.9 million acres in 1990. Urbanized areas alone increased by a factor of 2.5, from 15.9 million acres in 1960 to 39 million acres in 1990. The next estimate of urban area will be issued by the Census Bureau next year, based on the 2000 population census.

“Urban and built-up areas” in USDA’s NRI include those measured by the Census Bureau, as well as developed areas as small as 0.25 acre outside urban areas encompassing some, but not all, large-lot development. NRI urban and built-up area increased from 51.9 million acres in 1982 to 76.5 million acres in 1997, averaging 2.2 million acres per year. “Developed land” defined by NRI also includes the area in rural roads, railroad corridors, and other transportation-related parcels. By this definition, developed area grew from 73.2 million acres in 1982 to 98.3 million acres in 1997 (roughly the size of Ohio).

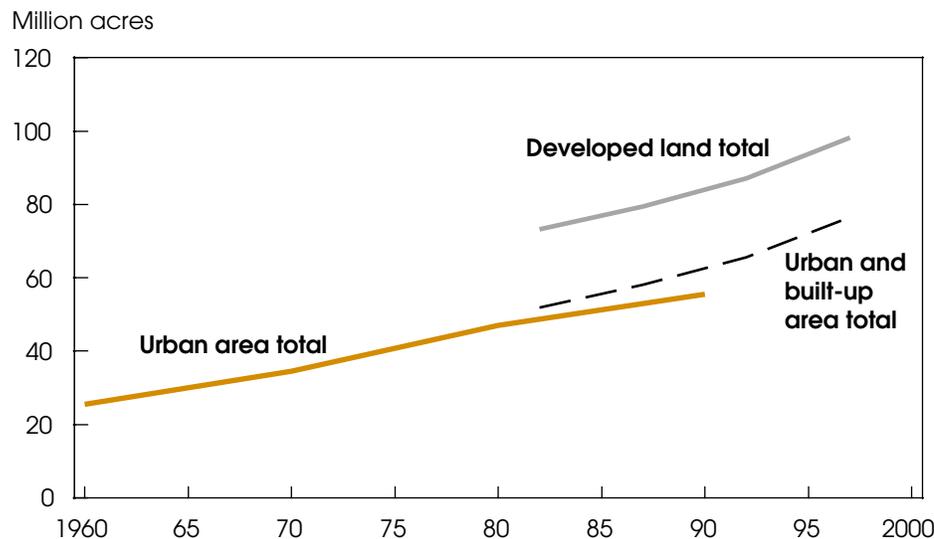
Growth in area used for housing has risen steadily throughout the last century, driven by large-lot development. Since at least 1970, growth in large-lot development appears to have accelerated in periods of prosperity and declined during recession. Houses on lots greater than 1 acre accounted for 35 percent of new housing construction in 1994-97, but occupied 88 percent of new area devoted to housing. Lots greater than 10 acres were only 5 percent of new construction, but comprised 60 percent of the land in new housing constructed between 1994 and 1997.

In addition to the trend toward larger lots for individual houses, much of the land for newly constructed housing in recent years is in nonmetro areas. Only about 16 percent of the acreage used by houses built between 1994 and 1997 is in existing urban areas within metro areas, as defined by the Census Bureau. An additional 5 percent is on farms in nonmetro areas. Thus, nearly 80 percent of the acreage used for recently constructed housing—about 2 million acres—is nonmetro land that is not part of existing farms. Almost all of this land (94 percent) is in lots of 1 acre or larger, with 57 percent on lots 10 acres or larger.

#### Farming in the City’s Shadow

Growing areas of U.S. agriculture are influenced by urbanization and development. Metro areas contain 20 percent of U.S. land area and 80 percent of the U.S. population. In 1997, farms in metro areas made up a third of all farms and controlled 39 percent of farm assets. (Excluded from the farm count are service firms, such as horse boarders and landscape services that

### Two Kinds of Growth: Urban Area Expansion Continues as Development Also Occurs Beyond Urban Fringe



Development beyond the urban fringe is the difference between urban area and developed land total. Developed land includes urban and built-up (developed areas of 0.25 acres or more) plus areas in roads and other transportation. Source: Urban area data from the U.S. Census; developed land and urban and built-up area data from the National Resource Inventory. Economic Research Service, USDA

are not directly involved in agricultural production but that also contribute to open space and economic activity.) Metro farms are generally smaller than nonmetro farms, produce more per acre, have more diverse enterprises, and are more focused on high-value production.

Growth and development create conditions in which a variety of metro farm types coexist, reflecting different adaptations to urban influence. Change occurs not only in product and input markets where farmers buy and sell, but also in the actions of local government institutions, which by law and tradition exercise control over property taxes and land use.

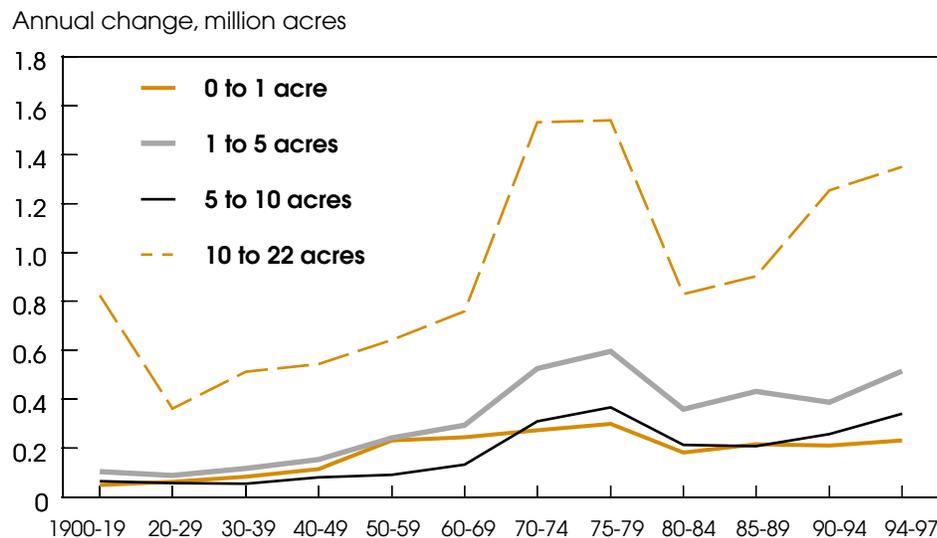
As urbanization proceeds, farmers may seek enterprises and markets that offer returns to land that approach returns from development, in part to offset higher property taxes that reflect the potential for nonagricultural development. Initially, this may involve new crops and innovative marketing techniques. High-value crops—such as fresh fruits, vegetables, herbs, and dairy products—can be sold through restaurants and gourmet grocery outlets or directly to consumers in farmers’ markets,

roadside stands, or U-pick operations. At some point, successfully *adaptive farmers* may become more general rural entrepreneurs, expanding their activities beyond

farming. Some may sell off less productive woodlots and pastureland, concentrating on more intensive production on remaining cropland. Other, more *traditional farmers* may attempt to maintain traditional crops and practices, some merely waiting for the perceived inevitable sale for development. And some farms will go out of business, with the land remaining idle or divided and sold to developers or *recreational* (hobby and part-time) *farmers*, whose primary use of the land is as a residence.

In the 1990s, traditional farms accounted for a third of metro farms, operated 71-77 percent of metro farm acreage, and controlled more than 40 percent of assets, sales, and net cash farm income. Recreational farms made up about half of metro farms, controlled 30 percent of farm-sector assets and equity, and operated 14-17 percent of the land. Recreational farms have little viability as economic enterprises. Adaptive farms accounted for 13-14 percent of metro farms and operated 9-12 percent of metro farm acreage, but they controlled more than their proportional share of metro farm sales, assets, and net cash farm income. These are the farms that have the best chance of continuing under urbanization.

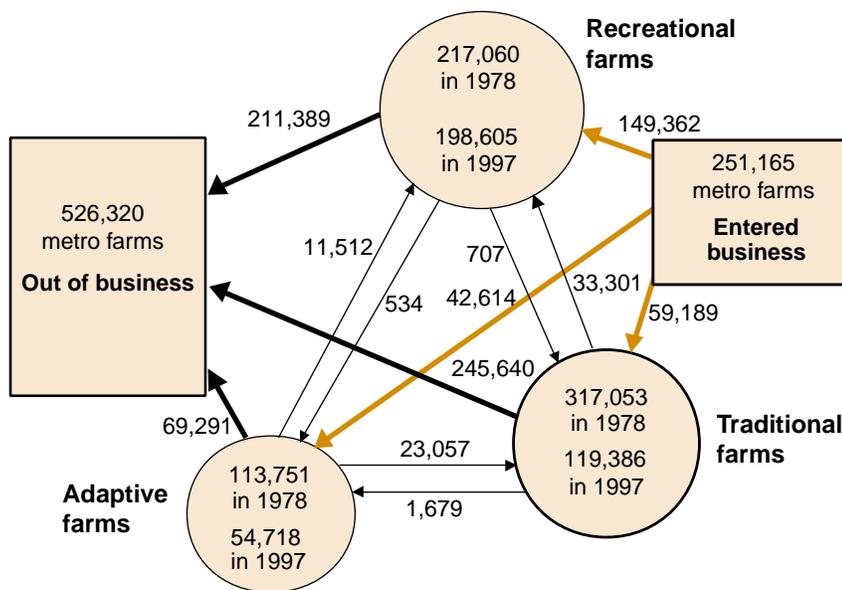
### Large Lots Dominate Land Used for Housing, Especially During Economic Booms



Source: ERS analysis of American Housing Survey, 1997 data. Economic Research Service, USDA

## Resources & Environment

### Metro Area Farms Have Taken a Variety of Business Paths Over Two Decades



Recreational farms are part time with low sales. Adaptive farms have changed to more diverse and higher value production. Traditional farms continue past production patterns. Source: ERS analysis of 1978 to 1997 Census of Agriculture microdata.

Economic Research Service, USDA

### Farm Survival in Metro Areas

Longitudinal data from Censuses of Agriculture (1978-97) were used to follow metro farms existing in 1978 through time. Virtually all metro farms classified as recreational in 1978 were out of business (ceased having sales or sold to another farmer) by 1997, regardless of geographic location. Likewise, more than three-fourths of the 1978 traditional farms had left the business by 1997.

Adaptive farms were much more likely than either recreational or traditional farms to survive the two decades. In the case of adaptive farms, the percentage leaving business varied substantially by geographic area, with farms farther from the metro core less likely to go out of business. Thus, adaptive farms generally have a survival advantage over recreational or traditional farms in urban or metro areas, but they survive better where there is less development.

Although the 20-year survival rates were fairly low for all farm categories in metro counties, they were similar to those for businesses in general. Furthermore, the

fact that individual farms may go out of business does not mean that farms and their land disappear into subdivisions. Metro areas also saw many new farm businesses, utilizing existing agricultural land, during the period.

### Working Landscapes & Rural Amenities

The different types of metro farms and their turnover rates have implications for programs to preserve open space held by farms. While purchase of development rights, "smart growth" policies (AO April 2001), and other efforts to preserve farm land from development may succeed, keeping the land in active farming enterprises may be more difficult. Some farmers are selling development rights to

Federal, state, local, and nongovernmental farmland protection programs. As of April 2001, state and local farmland protection programs have purchased development rights on over 1.06 million acres of farmland.

Adaptive farms are the most likely to survive as farms. Programs to preserve farmland through commercial farming may have minimal impact on traditional and recreational farms, because these farms have difficulty generating enough revenue to resist development.

At the extreme, urbanization brings about the local extinction of farming as an economic activity and as a working landscape. However, some farming activities benefit from greater proximity to urban population—fruit, vegetable, and nursery operations, for example, where transportation costs are high and products are perishable. Unplanned growth makes the rural-to-urban transition more difficult than it might otherwise be because the pattern of development is more haphazard and less certain than development guided through planned growth.

Farming activities adapted to urbanizing areas can provide rural amenities that are profitable for farmers and attractive to the surrounding population. Inevitably, these activities differ from those that went before, and may involve changes in ownership as traditional farmers may not embrace the transition. Different kinds of products and services are produced, in different ways, for markets that are suited to an urbanizing environment. How permanent these adaptations can be in the face of development and how much and in what ways public support for these amenities should be provided are questions yet to be answered. **AO**

Ralph Heimlich (202) 694-5504 and  
William Anderson  
heimlich@ers.usda.gov

### WANT TO KNOW MORE?

#### *Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land*

Contains details on:

- forces driving urbanization and development,
- consequences of growth for farming,
- costs of growth in rural areas,
- local responses to growth, and
- potential Federal role

Read it on the Economic Research Service website, [www.ers.usda.gov/publications/aer803](http://www.ers.usda.gov/publications/aer803), or call 1-800-999-6779 to order hard copies (stock number AER-803).