

## Farmland Conversion: Perceptions and Realities

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Converting farmland into homes and other urban uses is a public issue in every agricultural region experiencing rapid urbanization. In California, the nation's leading farm state, the issue is complicated by widely varying numbers about the extent of conversion and contrasting opinions about the causes and consequences of farmland loss.

How extensive is farmland conversion in California and what are the consequences? Is farmland all-too rapidly disappearing as new homes, shopping centers, and office buildings move out into the countryside, threatening the continued viability of the state's agriculture? Or are there so many acres devoted to agriculture—especially in the vast Central Valley—that the present pace of urban development can continue for decades without seriously affecting farm production?

In this Issues Brief, we examine both the numbers that measure farmland conversions and the related public perceptions about the causes and consequences of conversion—the basis of arguments about the seriousness of the problem and its policy solutions. Our analysis draws from the most reliable sources of information about farmland trends and the economics of agriculture in California.

### Measuring Farmland Conversion

California has 100 million acres of land, split almost evenly between public and private ownership. About half of the private land is used for agriculture (27 million acres<sup>2</sup>) and about one third of the public land is in grazing allotments (16 million acres)—mostly extensive rangeland in the desert and mountains. In total, about 43 million acres<sup>3</sup> (43%) of the state's lands are in agriculture, compared to about 5.5 million acres in urban use.

We estimate that about 497,000 acres of California farmland were urbanized in the 1988-98 decade, or about 49,700 acres a year (Table 1). Our estimate is based largely on the numbers provided by the source of information that most closely tracks statewide agricultural land conversion trends. This is the Farmland Mapping and Monitoring Program (FMMP) of the State Department of Conservation, which since the mid 1980s has been measuring urban conversions and other land use changes at two-year intervals. The FMMP maps these changes statewide and for individual counties, using aerial photography and modern soil surveys.

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<sup>2</sup>This estimate is based on our adjustments to Farmland Mapping and Monitoring Program data. The *Census of Agriculture* reports a smaller total of about 26 million acres. Surprisingly, the amount of privately owned agricultural land is an unsettled question.

<sup>3</sup>This estimate, based on 1997 data, may seem large to those familiar with agricultural land use figures. Our calculations are explained in Appendix 1 to the online version of this Brief, available on the AIC web page, <http://aic.ucdavis.edu/oa/briefs.html>

**Table 1: California Agricultural Acres Converted to Urban and Built-up Uses, 1988-1998 (AIC Calculations based on FMMP data)**

	Cropland	Grazing Land	Other Land	Total Conversion
1988-90	50,043	47,029	60,371	157,443
1990-92	51,446	19,685	47,358	118,489
1992-94	25,324	11,981	21,109	58,414
1994-96	29,592	14,588	19,861	64,041
1996-98	42,985	18,637	36,150	98,224
<b>Total</b>	<b>199,389</b>	<b>111,921</b>	<b>184,848</b>	<b>496,610</b>

To generate an estimate of total California farmland that was urbanized in 1988-98 we begin with the 420,000 acres measured by FMMP as converted from agricultural and “other”<sup>4</sup> land to urban uses. However, FMMP’s measure does not include urban development on parcels smaller than 10 acres that are surrounded by farmland, and certain types of low-density residential development. In addition, FMMP does not map about 10% of the state’s private land. To develop our estimate of almost 497,000 acres, we added to the FMMP total another 77,000 acres to account for these conversions.<sup>5</sup>

Much larger conversion numbers are reported by other sources. For example, the *National Resources Inventory* (NRI), a program of the USDA Natural Resources Conservation Service, reported for 1992-97 an increase in California’s “developed acres” of about 112,000 acres a year—more than double the annual average implied by our calculations. In place of the state’s comprehensive aerial mapping system, the NRI uses sample landscape points to estimate land use changes.

**Competing perceptions: “Urban growth is paving over California farmland” versus “We have sufficient farmland—there is no conversion problem.”**

<sup>4</sup>We include “other” in the calculation of total urban conversions because in the development process, farmland is often taken out of production and reclassified as “other” by the FMMP for several years before actual building occurs.

<sup>5</sup>Our calculations are explained in more detail in Appendix 2 to the online version of this Brief, <http://aic.ucdavis.edu/oa/briefs.html>

Either the “paving over” or the “sufficient farmland” perception can be supported by our estimate of recent conversion acreage, depending on context and personal values. The conversion of more than a half million acres over ten years—or 49,700 per year—is a substantial amount that

many Californians see as an immediate and very serious environmental threat to their rural landscape. Turning that much farmland into developed acres is roughly equivalent to creating three new cities the geographic size of Modesto every year.

Yet the conversion numbers seem small when compared to California’s supply of privately owned farmland, about 27 million acres as of 1997. The 497,000 acres converted in 1988-98 were only 1.8 percent of this agricultural land base in 1988, amounting to an annual rate of less than two-tenths of one percent (0.18%). At that rate, others have suggested, the present pace of urban development could continue for decades without severely affecting the total production of California agriculture.

In fact California agriculture prospered economically in the last half of the 20<sup>th</sup> Century, a period of rapid and extensive urbanization. During these 50 years the state’s agricultural landscape was substantially changed as urban and suburban development cut sharply into the agricultural production of coastal areas, particularly in the Los Angeles and San Francisco Bay regions. Yet California’s farm production and market value increased greatly during this period, with agricultural cash receipts almost doubling from \$13 billion in 1950 to \$25 billion in

1997 and net farm income increasing from \$4.8 billion to \$6.1 billion (both in constant 1996 dollars). Several developments made this possible: (1) Expanded fruit, vegetable, nut and vine production in the Central Valley, (2) Increased water supplies from federal and state reservoirs and canals for agricultural use in the Central Valley, leading particularly to new plantings on the Valley's west side, and (3) Improvements in farm technology that increased per acre productivity.

## Future prospects

If we base future projections on FMMP data for the past ten years, it is easy to assume that urbanization will not seriously threaten California's enormous farmland base for many years to come. The Central Valley, with its horizon-to-horizon agricultural landscape, seems to contain an almost inexhaustible supply of productive farmland—currently about 6.7 million cropland acres and another 6.9 million devoted to grazing. This is a major point made by opponents of strong farmland protection and growth control measures.

But a number of uncertainties complicate the picture and suggest that farmland conversion is a more serious matter than implied by the FMMP numbers. Here are several factors that should be considered in any comprehensive deliberation about California's farmland base:

(1) Most significantly, direct urbanization is only one form of farmland loss. Agricultural acres are also converted to environmental uses or, for economic reasons, are left idle for long periods or permanently taken out of production. The FMMP does not count such changes as direct urbanization, but includes them in the broad "other land" category. Agricultural to "other" conversions can include land converted to wetlands and wildlife habitat, land temporarily idled before eventual development (at least 4 years), and land taken out of production because of higher prices for inputs, such as water, or lower crop prices. According to our calculations based on FMMP data, farmland transferred to the "other" category in 1988-98 totaled about 167,000 net acres—about half of

the direct agricultural-urban conversion total of 311,000 acres. During the 1996-98 period, agricultural to "other" transfers sharply increased, rising to 74,000 acres from 40,500 in 1994-96.

It is likely that the retirement of farmland for these environmental and water-related reasons will increase in the near future, especially in the Central Valley, exceeding urbanization as the principal contributor to conversions. Several indications point in this direction, including the steady expansion of the habitat and wetlands restoration programs of federal and state governments and nonprofit organizations, the transfer of water from agricultural to environmental uses through the CalFed process, and the increasing retirement of farmland on the west side of the San Joaquin Valley due to the buildup of salts and the lack of effective drainage. In the last few months the Westlands Water District, in response to water and drainage problems, announced plans to seek a federal/state buyout of 200,000 farmland acres—an amount equal to four years of statewide urban conversions.

(2) Statewide numbers mask local variations. What most stimulates public concern about conversions is the sight of farm fields giving way to new residential subdivisions and shopping centers, and office buildings accompanied by vast parking lots. These signs of conversion are vivid around rapidly expanding cities in agricultural areas such as Tracy, Bakersfield, Stockton, Brentwood, Manteca, and Morgan Hill. Conversion activity in such locations is immediately visible to urban and suburban people, while most of California's agricultural acres are in more remote areas where relatively little urbanization occurs.

(3) The best cropland is more likely to be converted to urban uses. Between 1988 and 1998, prime cropland accounted for about 30 percent of farmland acres converted, although it represented only 18 percent of the state's total agricultural land. Similarly, other cropland constituted 36 percent of conversions and 25 percent of the agricultural land base. In contrast, grazing acreage accounted for only 34 percent of the converted acres, but 57 percent of the agricultural land base (FMMP). The greater share of

prime cropland converted is largely due to its suitability for development and its proximity to existing development. Grazing land tends to be more remote from urban areas or located on harder-to-develop hillsides.

(4) The future rate of farmland-to-urban conversion is uncertain and could increase as previous development makes urban infrastructure more available. Development density and population growth are additional sources of uncertainty. Between 1988 and 1998 California's population grew by about 19%, or 5.4 million, (California Department of Finance) while, by our estimate, about 497,000 acres of the state's farmland were converted to urban uses. This translates to an average development density of about 0.1 acres of converted farmland per new resident. The California Department of Finance projects that California's population will grow to 58.7 million by 2040. If we assume a continuation of the 0.1 development density, this population increase would correspond to about 2.5 million acres of farmland converted. A lower development density or higher-than-projected population growth would imply even more conversion.

## Perceptions about the Causes of Farmland Conversions

### **“High prices or revenue through government support can slow or stop farmland conversion”**

Some argue that slowing farmland conversion can be accomplished by giving farmers higher prices for their commodities through increased federal government farm subsidies. In theory this could be true. Farmers, like other business people, balance the profit they get from their investment in land across various uses. Therefore more total money in farming may reduce land transfers out of farming. However, the relative

prices involved make it very implausible that government payments will keep much land from shifting out of farming.

The difference in the price per acre for land in agricultural production and agricultural land for development is typically large. In urbanizing areas, bare ground sold for development regularly exceeds \$40,000 per acre, considerably more if urban improvements are in place. Meanwhile, the average agricultural land prices in California are much smaller—\$1,050 for grazing land and \$5,500 for fruit, tree-nut and vegetable areas (National Agricultural Statistics Service).<sup>6</sup> Further, the differences between urban and agricultural land prices are largest for those crops that have had government subsidy programs—generally field crops such as grains and cotton. This difference is so large that raising commodity prices high enough to effectively outbid developers would require such massive per unit crop subsidies that budget costs would be prohibitive. For example, if it took \$30,000 per acre to keep cotton land from being developed, price supports would have to be about \$2.87 per pound, compared to market prices of roughly \$0.75.<sup>7</sup> Even for high value crops such as wine grapes or fresh vegetables, farmland values do not approach the value of the land for urban uses. And these crops have not been the subject of farm price policy.

Naturally, we might expect more farmland conversion during times of lower prices or when government payments are not available. In these cases, cash flow problems may encourage the sale now, rather than in a few years. Of course, some landowners like to farm and will keep their land in farming if they can earn a minimum return. For them, agricultural earnings do not have to compete with the sale price of land for urban development. However, farmland owners who want to continue to farm often can sell acreage in an urbanized location and shift their farming operations to a more remote area. Indeed, this move has allowed

<sup>6</sup>In extreme cases, farmland can be more expensive. Napa County vineyards, for example, have sold for as much as \$90,000 per acre (American Society of Farm Managers and Rural Appraisers).

<sup>7</sup>This assumes the per acre price of cotton land is about \$3,000, which we infer to be conservatively large given land prices for field crops listed in *Trends in Agricultural Land and Lease Values*. We also assume the discount rate is 12%, reflecting farmers' uncertainty about the specifics of the program's future.

many farmers access to capital to expand their operation and solidify their future in farming.

### **“Scratch a farmer and you find a developer”**

This popular expression has its basis in the speculative value of land that is being used to grow commodities, a value much greater for urban development than for continued farming as the numbers cited above indicate. This land value is the principal financial asset for most farmland owners, representing economic security for retirement income, bequests, or other uses.

However, the likelihood of an individual farmer becoming a developer is limited. Few farmland owners actually have the immediate or foreseeable opportunity to sell, simply because their parcels are not in the right place—as dictated by local land markets and city and county government growth policies. Thus, opportunities for turning rural land into residential and other urban uses are generally confined to the fringes of expanding cities and other urban areas. Most California farmland, particularly in the Central Valley, North Coast and desert valleys, is located far from the urbanizing fringes.

Patterns of concentrated urbanization in California are partly the result of county planning and land use policies—frequently in cooperation with city governments—that limit new development in agricultural areas, and instead direct it toward cities. This limits cash-out opportunities to a relatively small number of landowners, and also produces more compact development, thus decreasing the volume of farm acres converted to urban uses. Not all California counties follow such a city-oriented growth strategy, but it is the prevalent land use policy in such agricultural counties as Fresno, Tulare, Merced, Yolo, Napa and Solano.

Even many landowners with agricultural properties in the shadow of urban areas prefer to continue farming. Perhaps the path of urbanization is not moving in their direction, but personal and economic factors also are at work. Most farmers generally enjoy their occupation and would like to continue, assuming they can ride out price fluctuations, weather and pests, and are able

to provide adequately for their families. Of course, this attitude varies according to circumstances, with resistance to selling fortified by such factors as family tradition, personal attachment to the land, the farm parcel serving also as a home site, and the direct involvement of the landowner in the farm operation.

## Perceptions about the Effects of Farmland Conversion

### **“Continued urbanization will prevent California from feeding itself”**

Food security and self-sufficiency is one common argument for strong farmland protection programs. Two misconceptions are implicit in this argument. One is that California produces most of its own food and would have shortages if its farmland was developed for urban use. In fact, most food consumed by Californians is brought in from other states and countries, while most California farm production is shipped out-of-state. Californians buy meat, grains, and even some fruits and vegetables from out of state sources, while the state produces more than half the fruit, nut, and vegetable crops consumed in the rest of the United States. For many commodities California is the leading producer and supplier to the rest of the nation. If these trade patterns did not hold, many foods would be much more expensive than they are now.

However, large-scale farmland conversions that reduce the production of certain commodities could affect local and even international food markets. For example, if a large share of California avocado, artichoke or almond land was converted, market prices would be significantly affected, at least while adjustment took place, because California is the dominant producer of these crops. But these are not the crops people typically mean when they refer to “food security.” Also, prices would rise for all consumers, not just those in California.

The second misconception is that gradual decreases in farmland necessarily lead to actual declines in overall food production. This has certainly not been the case up to now in California where agricultural productivity has increased much faster than the agricultural land

base has declined. The real value of average agricultural production per acre (in constant 1996 dollars) increased from \$422 in 1964 to \$928 in 1997, while the relative price of food declined.<sup>8</sup> With a couple of exceptions, production quantities of California crops have increased dramatically since mid-century. For example, while average harvested acres of wheat decreased slightly between 1950-54 and 1995-99, production increased by 350%, outpacing the state's population growth. Other major commodities whose production increases outpaced population growth include rice, lettuce, processing tomatoes and walnuts.

While farmland conversion does not threaten California's food security, it is certainly true that if a large part of the Central Valley were converted the state's agricultural production would decrease. Even if farms were to relocate elsewhere in California, there are no other large areas in the state comparable to the Central Valley in soil quality, water availability and other favorable growing conditions. Thus, it would not be possible to repeat the relocation scenario of the 1950-80 period when production of horticultural crops expanded in the Central Valley while farmland was being urbanized in coastal regions.

### **“Farmland conversion generates public sector costs”**

Studies conducted by the American Farmland Trust and other organizations usually support the generalization that when taxes and other public revenues are balanced against public expenditures, farmland produces a net gain for local jurisdictions while urban land use results in financial costs. However, the type of urban development tends to dictate whether farmland conversion generates a net financial gain or loss for local governments.

Much of the fiscal gain for local communities from urban development is short-run, generated by initial development and construction activities. In the long run, it is far more costly for local governments to provide public services and facilities to urban than to agricultural areas. The critical distinction is how

different forms of development affect the balance of local revenues and expenditures. Under California's local public revenue system, new housing, factories, and stores do not pay their own way in local tax terms because of limitations on the property tax. However, retail development often generates a net gain for local governments because of sales tax receipts. This is why local governments often aggressively compete for stores but accept residential development with less enthusiasm.

### **“Farmland conversion hurts local economies because of agriculture's economic multiplier effects”**

Each dollar earned by agriculture or any other business stimulates additional indirect economic activity in the input and processing sectors in the form of jobs, income and output. The combined direct and indirect economic impacts of farming accounted for about 6.6 percent of California's income and 7.4 percent of its jobs in 1998. The proportions are much higher where local economies are dominated by agriculture. In the San Joaquin Valley, for example, agriculture accounts for 31.7 percent of local income and 36.9 percent of all jobs.

Nevertheless, communities and regions generally gain in overall economic terms when farmland conversions occur, through economic diversification, new jobs and higher incomes. As in the impacts on public sector finances, much depends on the mix of residential, commercial, industrial and other urban development that replaces farmland. Higher income jobs, for example, are more associated with certain kinds of industrial and office development than with retail stores. The jobs/housing balance of new development also helps determine how urbanization will affect the local economy. Overall, the economic return in income and jobs from urban land use is usually greater on a per acre basis than the return from farming.

Another misleading aspect of this perception is the emphasis on “lost” farm production that results from the conversion of particular parcels. In California's large and flexible agricultural industry, particular

<sup>8</sup>Calculated as the ratio of the Food Retail Price Index to the Consumer Price Index, the relative price declined from 1.1 to 1.0.

conversions do not generally bring about a net decrease in statewide or regional production, since the lost output can be replaced by shifting to other locations.

**“Agricultural land provides open space, environmental, and social amenities”**

Agricultural acres are a major form of open space, leading to one of the most powerful arguments on behalf of farmland protection. The aspect of the farmland conversion issue that most engages urban and suburban residents is the strong belief that nearby agriculture improves a community’s quality of life through its visual and other aesthetic properties, habitat uses, and contrast with urban congestion. Further, access to locally grown products at farmers’ markets and other outlets is appealing to many.

To the extent that farmland provides aesthetic or other non-market values to urban and suburban residents, it becomes a socially valuable public good, having value separate from the economic benefit of producing marketable commodities. A natural policy response would be to provide public funds reflecting the amenity value of farmland to compensate landowners for maintaining their acreage in agriculture.

In California, land use policies are now moving in this direction. State and local governments have long sought to preserve farmland from urbanization through regulatory and planning measures, including agricultural zoning, controls on city expansion, environmental review, and general plans. The current policy shift is to a greater emphasis on market-based compensatory measures for protecting farmland, particularly the purchase of development rights from landowners in the form of conservation easements, and a new version of the Williamson Act that grants a larger property tax cut to farmland owners with longer contracts. Primarily in the form of nonprofit land trusts, local conservation easement programs focused on farmland are rapidly expanding in California, muted somewhat by limited revenue sources and uncertainties on the part of landowners.

## Conclusions

Many in California and elsewhere readily support the preservation of farmland in the face of urbanization. Evidence for this is seen in public opinion poll results, newspaper editorials and letters-to-the editor, as well as public support for policies that promote farmland preservation. Yet both the continuing public debate about the conversion issue and informed public policy require numbers and arguments that do not exaggerate the extent of the problem or misinterpret its causes and consequences.

Farmland conversion is a serious issue in California. The evidence shows that its effects are more long-term than immediate, more visible in particular localities than statewide, and involve more than direct agriculture-to-urban changes. In the future, more land may be taken out of production because of limited water supply and for habitat restoration than because of urban expansion. Whatever the scenario, the numbers reflecting recent and current conversion rates should not be a cause for either complacency or panic.

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