

Agricultural land use policy:



Protecting productive farmland depends on state government policies; local governments can protect amenity value

The loss of agricultural land, particularly the conversion of farmland to urban uses, has been a topic of interest in California for decades. Recently, changing economic and political conditions, criticism of potential new technologies, and a growing appreciation of environmental amenities have contributed to a renewed call for the state to protect farmland.

The varied reasons for protecting farmland have led to disagreement about the most appropriate land use policies for the state to follow. This situation has arisen, in large measure, from a failure to clearly separate two perceptions of the utility of farmland: the land's capacity to produce food and fiber and its amenity value. Our purpose here is to analyze each perception, identify the policy implications, and determine the extent to which the diverse views can be accommodated in common policy proposals.

Capacity

The common view of capacity is the ability to feed growing populations; the need to retain maximum acreage for human food supply. However, this view ignores economic and technical relationships as well as the distinction between food as calories and nutrients and food as commodities which cater to consumer preference.

In economic terms, capacity is the ability of agricultural land to produce a surplus of returns above the cost of utilization. To produce agricultural commodities, land is combined with other inputs, such as labor, water, seeds, fertilizer, and pesticides. The mix is adjusted as the price of an input rises or falls; as land prices rise, a farmer may substitute less costly fertilizer or water for land. New technologies can also reduce the amount of land needed for crop production.

If costs of the other inputs are also rising, however, and no new technologies or alternative inputs are available, either commodity prices must increase or land must be taken out of production. Inability to raise product prices will push agricultural land use beyond its economic margin; the result may be conversion of the land to other uses.

Several factors are important to maintaining the capacity to produce food and

implications for state and local government

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fiber: the available and potential supply of cropland, trends in yield per acre, costs of additional production inputs, and demand for agricultural commodities.

Between 1964 and 1978, total land in farms and ranches decreased by approximately 4 million acres in California. During this time period, however, there has been little change in total available cropland for production. Acres of harvested cropland and irrigated land have steadily increased, especially during the late 1970s (see table). While farmland has been lost to expanding urban and rural residential uses, new land that was once woodland, woodland pasture, rangeland, or idle land has been brought into production.

For specific commodity groups, the changes in harvested acreage are mixed. Harvested field crop acreage increased steadily between 1971 and 1981. Led by cotton, wheat, and rice, total acreage harvested (7.1 million acres) and total production (30.5 million tons) reached a record level in 1981. However, weakening export markets, a strong American dollar, and the general state of the domestic economy have led to decreased returns from \$593/acre to \$492 between 1980 and 1982. In 1982 approximately one half million acres was taken out of production and farmers withdrew an additional 2.3 million acres of rice, wheat, cotton and corn in response to the Federal PIK (Payment-In-Kind) program in 1983.

Harvested acreage for fresh fruit and vegetable crops rose to 922,000 acres in 1975 but has been declining by approximately 9,000 acres per year since that time. Recent acreage reductions have occurred in processing tomatoes, let-

tuce, and strawberries.

Other commodities have steadily increased in total harvested acreage, especially fruit and nut crops with 1.8 million acres in 1982, led by grapes (all types), almonds, avocados, pistachios, and citrus.

Yields during the 1970s did not show any noticeable downward trends. For selected crops, data from the California Crop and Livestock Reporting Service suggest a leveling off or a slower rate of increase.

Several reasons have been offered to explain this situation. Rising fertilizer prices have induced farmers to adjust application timing and the amount applied. The productivity of the land may have reached a point where additional fertilizer will not increase yields. Certainly contributing to lower yields is the lower quality, marginal land being brought into production.

The portion of available land actually put into production depends on the costs of other production inputs. Between 1950 and 1978, land prices, farm wages, energy expenses, and fertilizer costs have risen at an annual rate of 23, 14, 5 and 3 percent, respectively. These trends illustrate why cheaper inputs, such as fertilizer and machinery, have been substituted for land and labor. Recent cost increases for energy, which has increased at more than 12 percent per year since 1970, irrigation water, fertilizer, and pesticides have raised questions about the continued substitution of these inputs for land.

Bringing new land into production is also more costly than previously because of the need for additional water supplies. Aside from the controversy over associated environmental issues, farmers are concerned that conveying

new water supplies will cost too much to be economically feasible for crop production.

Input costs are likely to continue increasing. Should commodity prices remain low, farmers will face difficult choices regarding the amount of land to place in production.

Because of increasing demand from foreign markets, production of several California commodities, especially fruits and nuts, has expanded. Although recent economic and political events have resulted in decreased foreign demand and overproduction of these commodities, future demand for agricultural exports is projected to increase. U.S. demand for California's food and fiber products is also expected to be high.

The state appears to have the capacity to continue producing food and fiber. Rural land exists that can be converted to cropland, although the amount shrinks every year. At some time in the future, loss of farmland may pose a threat to capacity, but trends in yield per acre do not as yet signal this development. Consumer demand, with improvement in the world economy, has the potential to expand and strengthen the returns to agriculture.

Only the cost of purchased inputs, especially labor, energy, fertilizer, and water, may force farmers to adjust farming practices. One option would be to reduce the amount of land in cultivation.

Policy implications

For groups seeking to protect agricultural land by state regulation, based on capacity considerations, the case rests on the economic importance of agriculture to the state and the imprecise notion of an "adequate food supply," which is a function of price, commodity mix, and consumer preference. Interested parties have yet to set forth a rationale, based on substantive analysis, for state involvement in agricultural land retention. The critical points as yet unaddressed are consumer preference for specific commodities — a major cause of price fluctuations — and time, the gap between present market signals for reducing commodity supply and future demand by a larger and more effectively demanding population. A statewide rationale based on capacity considerations

Year	Total cropland (×1000)* acres	Percent of total land in farms %	Harvested cropland (×1000) acres	Percent of total cropland %	Irrigated land (×1000) acres	Percent of total land in farms %
1964	11,815	32	7,846	66	7,599	21
1969	11,245	32	7,649	68	7,240	21
1974	10,630	32	8,307	78	7,479	23
1978	11,721	35	8,899	76	8,604	26

Source: U.S. Bureau of the Census, Census of Agriculture, 1969, 1974, 1978.
*Includes harvested cropland, cropland used only for pasture, and other cropland.

would provide the needed starting point for controlling conversion of farmland to other uses.

Rising production costs, coupled with stagnant or decreasing commodity prices, indicate not that the capacity to produce is being reached, but that current input-output relationships are inappropriate. Should production costs continue to rise, significant social effects could result from higher food prices, weakening export markets, and a rekindling of inflation. State intervention is therefore advocated by some on the grounds that the public welfare needs to be protected by slowing down the conversion of farmland. Policy alternatives directed at maintaining the capacity to produce should focus on research and development of new land saving technologies. Further, existing policies pertaining to other agricultural production inputs need to be examined as to their compatibility to land retention policies.

Federal support for agricultural research has significantly declined over the last decade, even though the benefits from agricultural research have greatly exceeded costs. New technologies are needed to reduce the demand for land and other "scarce" inputs. The state could fill the gap by increasing financial support of agricultural research in new land-saving technologies through long-term funding commitments by the legislature.

Mandatorily retained agricultural land will not necessarily be cultivated if economics preclude an adequate return to farmers. Policy to maintain capacity must consider all production inputs. Where policies dealing with production inputs have been enacted, they should be consistent with those designed to retain farmland. Thus, state policies directed toward water, energy, farm labor, pesticides, and other agricultural inputs must be examined to determine their effect on farmland. Inconsistent policies tend to undermine program objectives for protecting farmland.

A policy to maintain farmland raises the issue of subsidy. If rising production costs for inputs already under state authority, such as water, energy, labor, and pesticides, are the critical problem, the state may have to expand its role in subsidizing agriculture.

Amenity

At the local level, people are concerned about conversion of agricultural land because of amenity values associated with open space, locally produced commodities, and rural residential living. Preference for rural living increased during the 1970s, when many

urban residents moved to the country, particularly in California's coastal and foothill regions. Today, hobby farms or rural ranch estates appear to be one of the fastest growing sectors of the state's agricultural economy.

Since many of the amenities associated with rural areas are "free goods" and not usually included in market transactions, efforts to retain farmland tend to focus on political action. Interest is local, because amenities are usually site-specific. State involvement is sought, because proposals to protect capacity may also meet amenity objectives, and local political action is not always successful.

People moving from urban to rural locations bring with them values, perceptions, and expectations concerning rural life, which may differ from those of farmers. Differences in perceived amenities (what is scenic to one person may not be scenic to another) have caused difficulties in analyzing many local land use controversies. Regardless of the degree of conflict between farmer and rural nonfarm resident, the courts have upheld and the legislature supports the concept that people should have access to open space. The loss of agricultural land to urban development threatens amenity values by reducing the total amount of open space. Ironically, the demand for rural ranchette residences may affect agriculture's capacity to produce by taking land out of production, at least for the more traditional crops.

Policy implications

Land conversion that affects open space and environmental services is primarily a local issue. The state has entrusted local government with a variety of land use control measures. However, from a policy perspective, several state options warrant consideration:

Provision of technical information. For example, the farmland mapping and monitoring program provides citizens and local decision makers with necessary information regarding agricultural land use changes at the local level.

Grants to county governments to develop local data bases. Fresno County's EMIS (Environmental Management Information System) is one such computerized data base that, when fully operational (all variables mapped), will make it possible to monitor changing land use characteristics, including parcel size, land values, rural residential locations, and zoning designations. EMIS, or a similar information system, could aid counties in decision making as they deal with both capacity and amenity issues.

State sponsorship of local workshops to facilitate discussion among the parties involved in land use decision making. The purpose is to clarify individual intentions, group objectives, tradeoffs required, and decision-making resources available (such as information from other areas). From this effort, local officials can begin to design a politically acceptable strategy for agricultural land use planning in their county.

Compensation of landowners. Programs that restrict farm owners' options in the use of their land raise an equity issue of who should bear the cost of providing amenities. In most cases of effective farmland retention policy, costs are imposed on the agricultural sector. In amenity conversion situations, state participation may be needed to compensate farmers. Compensation could be in the form of purchase of development rights, property tax reductions, or income tax credits.

Conclusion

Failure to distinguish between conversion that affects the capacity of agriculture to produce food and fiber and conversion that affects the amenities associated with open space and rural residential life has led to confusion in the effort to develop relevant farmland proposals. If the objective is to protect productive capacity on the grounds that the state relies heavily on a strong agriculture and is a major supplier to food supplies, state involvement in farmland use appears critical.

Any such effort must consider the quantities and relative prices of the various production inputs. Since policy decisions to protect amenities generally reside with local government, the role of the state is limited. State policies must therefore consider equity questions of who bears the costs and receives the benefits, as well as how closely any amenity-oriented policy coincides with the economic reality of agricultural production.

Regardless of what action is taken by state and local governments, urban, suburban, and rural nonfarm residential development will continue to exert pressure on land in agricultural production. Retained farmland will not necessarily produce crops if costs exceed returns or production is incompatible with nonfarm residents. The best-designed policies may be ineffective if farm operators conclude that production is no longer feasible on land legally retained for agriculture.

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