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From Cropland to Concrete: The Urbanization of Farmland in Virginia

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The average farmer in the Old Dominion is 58 years old, and he's made a profit in only five of the past ten years. Little wonder, then, that Virginia, like most of the United States, is losing prime farmland at an alarming rate. But as certain as the world's population will continue to rise and the energy shortage worsen, we're going to need that land. Steps must be taken to control its conversion to other uses.

A majority of Americans, according to a recent Harris poll, now consider the loss of prime farmland a serious problem.[1] While the conversion of farmland to nonagricultural purposes could have severe consequences in the future, its primary significance, both nationally and in Virginia, may be as a symptom of a more general problem. The basic issue raised by the escalating rate of farmland conversion is how can society accommodate the various competing, equally valid, and often contradictory claims on the fixed supply of land? Virginia provides an excellent example of the difficulties, conflicts, and potential solutions surrounding land use practices in the United States.

Traditionally, Americans have defined land in narrow terms and viewed it as an expendable and unlimited commodity. Land was considered a resource to be exploited rather than an environment to be shared by all living things, and belief in private ownership, free enterprise, and manifest destiny shaped policies toward land disposal and development.[2] Sociopolitical institutions and customs reinforced these concepts. For instance, attitudes toward zoning, which exists in only thirty-nine of Virginia's ninety-five counties, are one manifestation of a nationwide belief in the right of individuals to utilize, develop, and dispose of land unhampered by legal or social restrictions.

The force of events also has contributed to poor land use policies. Few resources were available for construction during the Depression and World War II. By 1945 a burgeoning population had outgrown the available supply of housing, shopping facilities, and roads. Development exploded to meet the demand, and the United States provided new housing for 70 million citizens in the years following the Second World War.[3] Problems were bound to accompany such a rapid rate of expansion. Urban sprawl, strip development, destruction of farmland and wildlife habitats, and a lack of open space were only some of the results of the nation's attitudes and exponential growth.

However, these unwanted and unforseen spillover effects gradually have led to a reconsideration of the relationship between land and society. Scientists and citizens increasingly recognize that land includes more than a specific area of soil. Hydrology, geology, atmospheric conditions, plant life, and human and animal activity all form part of the land.[4] The loss of agricultural land has attracted much attention because agricultural activity is the juncture of many of these elements. In addition to its ability to produce food, agricultural land helps to purify underground aquifers by filtering precipitation, provides a way to reduce wastewater treatment costs, and often serves as a wildlife habitat. The current focus

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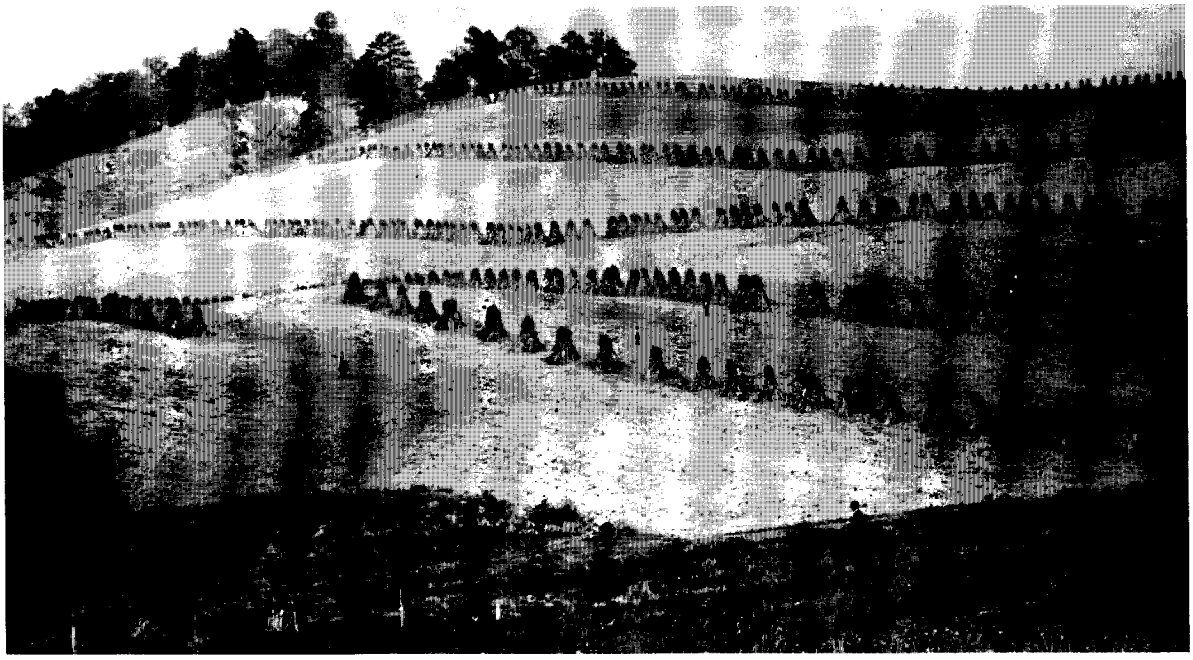


Corn Harvest in Virginia
Photo by Huestis Cook, n.d.

on retaining agricultural land demonstratesthe need to develop planning priorities and a clear set of objectives across the entire spectrum of land use activities. Agricultural land use practices offer a paradigm for the interrelationship, complexity, and implications of past, present, and projected land use policies in Virginia and throughout the United States.

The National Situation

In the United States today there are 400 million acres of farmland (an area more than fifteen times the size of Virginia) under cultivation. A recent U.S. Department of Agriculture study indicates that, for at least the next fifty years, sufficient land will be available to meet domestic needs and to double current exports5 Dire predictions of deficits appear alien to a farm structure whose government paid it not to plant in sixteen of the past twenty-three years and which withheld 62.7 million acresfrom production in 1972. In 1975 American farmers generated 112 percent more output from 9 percent less cropland than it utilized in 1930.6 What, then, is the factual basis for current fears about the disappearance of agricultural lands?

Between 1940 and 1974 the number of farms in this country dropped from 6.1 million to 2.3 million while the average size of a farm increased from 175 acres to 440 acres.? Nationally, more than 106 million acres have been taken out of agricultural production since 1959, and between 1950 and 197C the farm population has shrunk from 15.3 percent to 3.9 percent of all Americans. The largest amount of conversion seems to have occurred between 1960 and 1969 when the nation lost 68 million acres, 2.4 million of them in Virginia. Moreover, the average age of the American farmer is now 51.7 years, and inflated land and equipment prices,whichhaveraised initial farm investment costs to a minimum of $500,000, are severely limiting the number of new farmers. The country still retains a reserve of 135 million acres but only 22 million acres (an acre a little less than the size of Virginia) are prime agricultural land.

Prime landsare those best suited toagricultural production. They also possess the best potential for development and are subject to the most pressure from expanding urban populations. Presently, the United States loses four square miles of its best farmland every day. Once these lands are lost to erosion, interstate highways, housing developments, and flooding for reservoirs or recreational lakes, they cannot, in the forseeable future, be returned to productivity. Moreover, repercussions are possible even if the conversion of cropland to nonfarm uses poses no immediate threat to the nation's ability to feed itself. Farm exports account for 20 percent of the United States balance of trade. Cutbacks in such exports could worsen the country's trade deficit. Future farmland conversions also could threaten America's ability to help feed less fortunate coun-

tries and the capacity of certain sections of the country to face local shortages or to provide specific unique crops and fresh produce. At the same time, then, that sharp increases in the demand for fooc and forest products are expected, the available food fiber land base is diminishing.

Virginia's Perspective

Virginia is an example of the difficulties engendered by past land use practices and of the attempt to dis cover viable and equitable solutions to these prob lems. Agriculture is Virginia's largest industry. It., 59,000 farms employ more than 450,000 person , (50 percent of the state's manufacturing workforce or a number equal to about 20 percent of all non farm jobs) and can supply about 50 percent of the state's food demands. Every dollar spent by a farmer means about $2.80 to the state's total economy, and gross farm income in Virginia is expected tc reach $1.65 billion for 1979.[8]

Yet agriculture in Virginia exemplifies all the difficulties experienced by farmers throughout the United States. I n 1954 the state possessed 14.6 million acres of farmland. This represented 57.5 percent of the Commonwealth's land. By 1969 the total acreage in farms had shrunk to 41.5 percent (10.6 million acres.) Only 9.7 million acres, or 38 percent, remain in farms today. This represents a 33 percent decrease between 1954 and 1978 in the amount of land in farms. *Table 1* demonstrates that this trend occurred in all parts of the state.

The major farm problem in Virginia, as nationally, is the low return derived from farm investments. In 1978, 68 percentof Virginia's farms were profitable. The typical Virginia farmer made a profit in only five out of the past ten years.[9] Experts project that the current trend, under which production expenses increase faster than cash receipts, will continue and that in 1990 net farm income will be the same as in 1978 despite "more than a 50 percent increase in gross income per farm."[10] Nationally, the cost/ profit squeeze will have the greatest impact on the

TABLE 1

Land in Farms in Virginia

	1959		1964		1969		1974		
	Total Acreage in Farms	Proportion of Land	Total Acreage in Farms	Proportion of Land	Total Acreage in Farms	Proportion of Land	Total Acreage in Farms	Proportion of Land	Percent Change 1959-74
Mountain									
Alleghany	65,000	22.4	45,000	15.6	45,000	15.4	34,000	11.8	-47.7
Augusta	338,000	52.8	316,00	49.3	292,000	45.5	312,000	48.7	-07.7
Franklin	279,000	60.8	259,000	56.3	227,000	49.4	203,000	44.2	-27.2
Louisa	158,000	48.1	138,000	42.1	97,000	29.3	101,000	30.6	-36.1
Scott	197,000	57.2	178,000	51.7	187,000	54.1	142,000	41.1	-27.9
Tazewell	169,000	50.7	166,000	49.6	160,000	47.8	147,000	33.6	-13.0
Warren	74,000	52.7	71,000	50.5	64,000	46.0	47,000	33.6	-36.5
Wythe	183,000	62.0	178,000	60.4	168,000	56.9	158,000	53.6	-13.7
Piedmont									
Halifax	403,000	78.4	391,000	76.2	328,000	64.0	265,000	51.8	-34.2
Hanover	154,000	51.7	145,000	48.7	142,000	47.8	127,000	42.6	-17.5
Henrico	65,000	37.5	50,000	28.8	40,000	21.8	38,000	20.5	-41_5
Loudoun	253,000	76.4	234,000	70.8	217,000	65.5	221,000	66.9	-12.6
Prince Edward	129,000	56.3	120,000	52.4	Not Available		92,000	40.3	-28.7
Prince George	79,000	42.7	75,000	40.8	40,000	36.0	61,000	33.6	-22.8
Stafford	58,000	33.2	46,000	26.5	36,000	20.6	28,000	16.1	-51.7
Tidewater									
Accomack	112,000	37.3	114,000	38.0	105,000	34.5	97,000	31.7	-13.4
Chesterfield	71,000	23.7	57,000	19.0	32,000	11.1	34,000	11.9	-52.1
Lancaster	27,000	29.4	23,000	25.5	26,000	30.3	25,000	28.2	-07.4
New Kent	43,000	31.8	34,000	25.1	30,000	22.6	30,000	22.6	-30.2

Source: Department of Commerce, City and County Data Book

family farm and 85 percent of Virginia's farms are family owned and operated. The average farmer in the Commonwealth is 57.9 years old, and high costs are prohibiting many younger individuals from entering the industry. It is very difficult for small family-owned businesses to keep pace with the price increases that occurred between 1967 and 1978: a 375 percent jump in the cost of a grain combine, a 99 percent increase in fertilizer prices, and a 142 percent rise in the price of insecticide11 Yet these materials are essential to continued farm productivity. There also are factors which increase farm costs without aiding productivity. Environmental and safety regulations, higher real estate taxes, and the increased costs of transporting goods to market all add to farm costs without increasing the number of bushels produced peracre. The Virginia Agricultural Opportunities Commission found recently that 56 percent of the farmers surveyed in thestate felt that high farm input costs were the biggest problem facing farmers and 31 percent believed that the best way to increase farm profitability was to reduce the cost/price squeeze. [12]

Low profits, however, are not the only reason for the rising number of farmland conversions in Virginia. Experts predict that the world population will reach six billion within the next thirty years and that urban spillover effects could consume 17.5 percent of the nation's total cropland reserve. Virginia is particularly susceptible to many of the pressures generated by increased population expansion and urbanization. The East Coast is growing more rapidly than many sections of the country, and Virginia is expected to rank sixth among all the states in population gains during the next decade. [13] Further, population migrations, especially since 1960, have transformed the South from an area that was 70 percent rural to one that is now 70 percent urban. Industrializationand urbanization both initiated and resulted in this change,which has consumed large sections of agricultural land.

Weaknesses in zoning regulations have encouraged the conversion of agricultural land to nonfarm uses in rapidly urbanizing areas. In many states-and Virginia is no exception-zoning classifications, where they exist at all, are imprecise. Agricultural land often is a residual category designated for lands for which "no better use" yet has been proposed. Developers have little trouble convincing local zoning boards to rezone upon request because the rezoning of undeveloped agricultural land seldom generates controversy.

Piecemeal zoning and development of farmland has had several important impacts on agriculture beyond the immediate problem of cropland loss. As development proceeded, land prices, and therefore real estate taxes, escalated. By 1990 the price of an acre of land in the Commonwealth is expected to top $1,300. [14] Once initial growth began, speculators bid up land prices in the expectation of further residential or commercial development. This made it difficult for farmers to expand their operations and for new farmers to enter the market. Moreover, farmland may be worth more when developed than the price received by the farmer for the goods it produces. Many farmers have been unable to meet the pressures produced by the combination of high land values, which have meant increased property taxes, and rising production costs.

Poor zoning practices also have promoted "scattershot" or "leap-frog" development. Areas that formerly were totally agricultural now resemble a patchwork quilt of farms, residences, and industries. Leap-frog development frequently has brought hardships to working farmers. Local assessments have risen in order to provide water, sewer, and other services to the newcomers. Problems have developed between farmers and new homeowners and farms have become the target of vandalism. In turn, subdivision residents have complained about such normal farm activities as spraying, manure spreading, and the night use of farm equipment. Ultimately, many localities have imposed zoning restrictions that have made agricultural operations in the area impractical. Finally, increased urbanization has imposed severe hardships on farming's support structure. When the farms disappeared, so too did the feed, fertilizer, and farm equipment suppliers. Just as farm income produces a ripple in thecommunity, so too does the removal of farm jobs and expenditures.

Erosion also has contributed to the loss of agricultural land. Only half of the United States's estimated annual cropland loss is due to urbanization. The remainder is lost to soil erosion. Nearly half the cropland currently under cultivation consists of soil classified as having a high erosion potential. [15] The average annual rate of farmland erosion is 4.8 tons per acre per year. Because of its rolling topography, Virginia's loss, 6.6 tons per acre per year, is substantially greater. Erosion has a detrimental effect on crop yields. The Missouri office of the U.S. Conservation Service recently reported that, because of the reduction of the available amount of plant nutrients, "yields of 120 bushels of corn are reduced to 96 bushels by moderate erosion and to 75 bushels by severe erosion."[16] It also damages the ability of

Captain James B. Baylor's Wheat Crop, 1917
New Market Plantation, near Milford, Caroline County

the soil to breakdown toxic substances. The adoption of good soil conservation practices could reduce some of the loss. However, constriction of the amount of farmland under cultivation hampers this effort because using the same land every year reduces the amount of organic material that holds water and keeps the soil in place.

Besides fostering erosion, too much dependence on the same land base or on marginal agricultural lands could substantially increasefarm and consumer costs. Seventy-six million acres of this country's cropland reserve have impediments that hinder rapid conversion and production of high yields. [17] Costs of production on such lands are high because of their dependence on energy-based fertilizers and technologies and other soil conservation requirements. Contour planting, for instance, requires a 5 to 7 percent increase in both farming time and fuel use.[18]

Moreover, America may have reached the limit of its ability to increase crop yields through technology. Commercial pesticides and fertilizersare petroleum-based products and require large energy expenditures for application. As energy costs increase, so do the costs of fertilizers and feeds. Farmers will require more land to produce the same amount of food if high costs force the abandonment of some current farming techniques. For example, the amount of corn that can be produced on 100 acres with the application of 120 pounds of nitrogen fertilizer per acre would require up to 300 acres to produce without fertilizer. [19] At present consumption rates, the extra cropland needed to meet such an exigency soon will be unavailable.

Farmers also may need more land in the future to compensate for climatological shifts. The years 1930-1968 seem to have been the mildest in the past **11,000** years.[20] Such weather conditions cannot be expected to continue indefinitely. Thus, despite predictions of adequate agricultural yields in the near

TABLE 2

Major State and Federal Statutes and Regulations Which Affect Agriculture

Federal Law	Affected Aspect
Resource Conservation and Recovery Act	land application of wastes
Clean Water Act of 1977	land application of wastes, nonpoint pollution
Federal Water Pollution Control Act	land application of wastes, nonpoint pollution
Clean Air Act of 1963	open burning
Federal Food, Drug, and Cosmetic Act	labeling, regulation of food additives
Federal Insecticide, Fungicide and Rodenticide Act	safe use of certain chemicals
Alien Laws	regulates employment of aliens
Fair Labor Standards Act	minimum wage, child labor, pay records, etc.
Agricultural Foreign Investment Disclosure Act of 1978	information of foreigners holding farm land

State Law	Affected Aspect
Solid and Hazardous Waste Management	land application of wastes
State Water Control Law	land application of wastes, nonpoint pollution
Air Pollution Control Act	open burning
Virginia Pesticide Law	safe use of certain chemicals
Virginia Pesticide Use and Application Act	safe use of certain chemicals
Virginia Meat and Poultry Products Inspection Act	labeling, regulation of additives
Virginia Food Law	labeling, regulation of additives
Virginia Commercial Feed Law	labeling
Virginia Canned Animal Food Law	labeling, safety
Virginia Foreign Agricultural Investment Act	monitoring land owned by foreigners
1971 Constitutional Amendment	allowed use-value assessments
1972 Land Use Assessment	implemented preferential tax assessments
Personal Property Taxation Statute	allows for taxation of all personal property; some localities exempt farm equipment
Virginia Retail Sales and Use Tax	applies to any retail sale of farm products; although certain products may be excluded

Federal Regulations	Affected Aspect
Hazardous Waste Guidelines	land application of wastes
Solid Waste Disposal Facilities	land application of wastes
Federal Regulations for administering of Federal Insecticide, Fungicide, and Rodenticide Act	safe use of chemicals
Federal Regulation for administering Food, Drug, and Cosmetic Act	labeling, regulations of additives
Migrant Housing Regulations	regulates migrant worker's living conditions
Labor Certification Process	regulates hiring of alien workers

State Regulations	Affected Aspect
Solid Waste Management Plan	land application of wastes
Sewage Regulations	land application of wastes
Solid Waste Regulations	land application of wastes
Rules and Regulations for Enforcement of Virginia Pesticide Act	safe use of certain chemicals
Safety and Health Standards for Agriculture	occupational health and safety
State Migrant Housing Standards	living conditions of seasonal employees

Unemployment Insurance	employment conditions
Regulations for the Control and Abatement of Air Pollution	open burning
Animal Wastes No-Discharge Certification Manual	nonpoint pollution
Board Approved Animal Waste Policy	nonpoint pollution

Best Management Practices	Affected Aspect
Land Application of Sludge, Liquid Effluent, and other Wastes	land application of wastes
Federal Water Pollution Control Act	nonpoint pollution
Federal Environmental Pesticide Control Act of 1972	safe use of chemicals
Federal Insecticide, Fungicide, and Rodenticide Act	safe use of chemicals
State Water Control Act	nonpoint pollution

Source: Report of Virginia Agricultural Opportunities Commission, 1979

future, it is clear that this country cannot afford uncontrolled conversion of its best agricultural acres.

Finally, various federal and state laws and agency activities have an impact on agricultural practices and profitability. *Table 2* lists the major laws, regulations, and programs which affect agriculture and forestry in the Commonwealth. Some of these laws impose higher costs on farm operations in their attempts to improve the total environmental quality. Yet many have added to agricultural productivity by mandating good soil, crops, and livestock management practices.

One important set of regulations covers the land application of solid and liquid wastes. Properly managed, sludge and liquid effluent can provide important crop nutrients, materials necessary to the maintenance of high soil quality, and proper balance in soil pH. However, the application of the wrong types of waste, improper application techniques, or inadequate monitoring of waste products can introduce toxic substances into the food chain. The Resource Conservation and Recovery Act of 1976, the federal Clean Water Act, the federal Water Pollution Control Act, and Virginia's Solid and Hazardous Waste Management Act and State Water Control Law all seek the creation and implementation of plans to safely utilize and monitor the appli-cation of wastes to agricultural lands.

The Clean Water Act of 1977, the federal Water Pollution Control Act of 1972 and the Virginia State Water Control Law set a policy objective of no discharge of pollutants into the nation's waters. This goal has imposed costs on agriculture where the installation of rainfall runoff structures and the relocation of livestock facilities have been necessary. In some cases regulations promugated underthese laws have forced delays in expanding herds and imposed hardships on small operators. On the other hand, they have led to improved water quality, better soil and water conservation practices, and the recycling of organic nutrients.

Perhaps the most important regulations are those affecting the use of pesticides, and herbicides. The federal Insecticide, Fungicide, and Rodenticide Act, the federal Food, Drug, and Cosmetic Act, the Virginia Pesticide Law, and the Virginia Pesticide Use and Application Act of 1975 affect farm operations. The federal government has utilized these acts to ban, as harmful to the public health, some chemicals often relied on for successful farming.

Federal food and drug regulations, and those of Virginia, have increased production costs. They also have helped to ensure that food supplies are safe for both human and animal consumption. Further, several federal and state programs mandate farm implementation of Best Management Practices for the control of nonpoint pollution. These practices should result in less erosion, more efficient use of crop nutrients, improved management of livestock and their wastes, and better and more ample water supplies. In the long run these practices can increase farm profitability. However, their introduction imposes both direct costs, such as equipment purchases, and indirect costs, such as the removal of land from production or its switch from a more productive (in the short-term) use.

Many federal and state agencies also indirectly affect efforts to maintain an adequate stock of farmland.

For instance, the Environmental Protection Agency influences the amount and viability of farmland under cultivation through-

1. decisions on the location of sewage treatment plants;

2. rulings on the sitings of new sources of pollution;

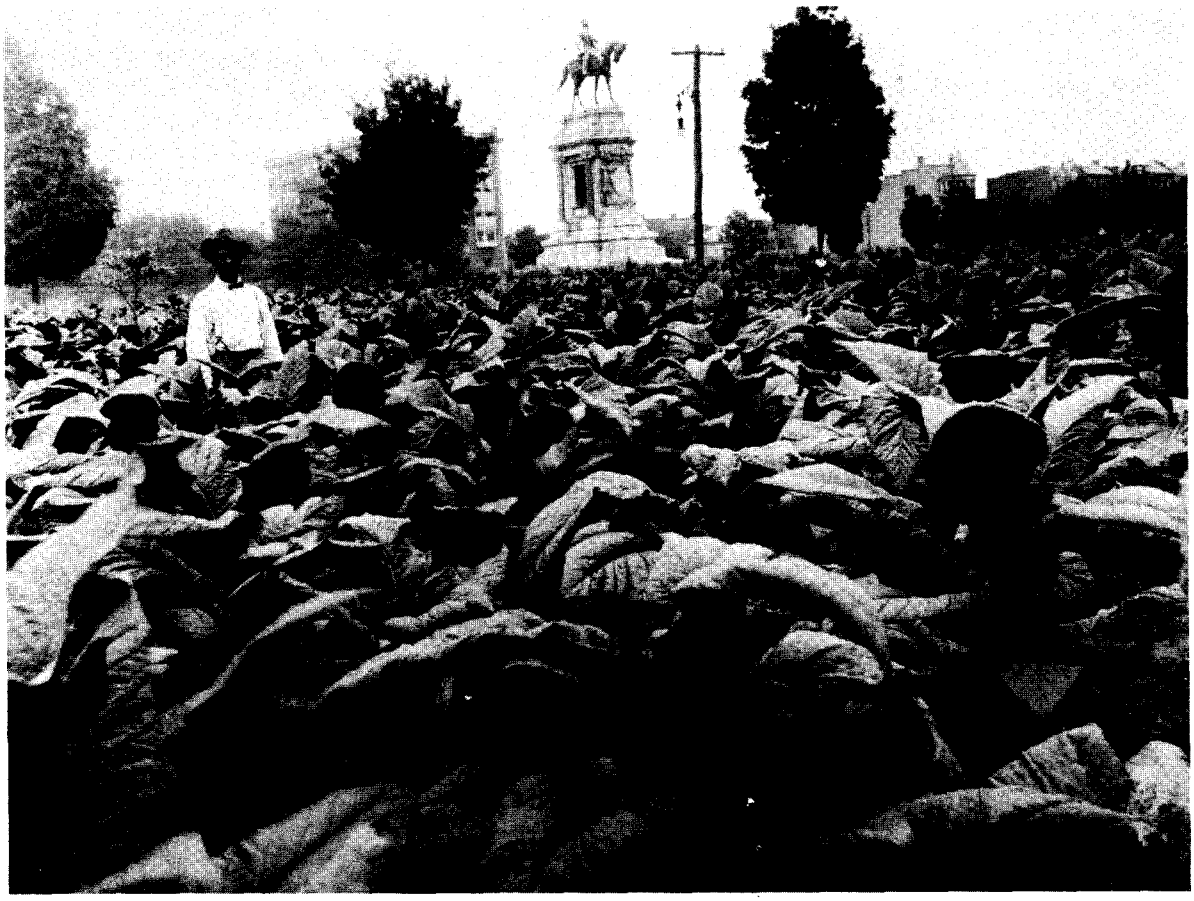
3. assistance to local governments planning wastewater treatment facilities;

4. the placement of new landfills; and

5. its review of the environmental impact statements of other federal agencies.21

The Army Corps of Engineers influences the available supply of cropland whenever it makes recommendations on the placement of new dams and water projects because dams often flood prime cropland. The provision of water and sewer facilitiesandl the building of new highways have an immediate impact by consuming undeveloped land. They also have secondary effects by encouraging the scattershot development which presently threatens American agriculture.

None of the laws or activities discussed will determine the future viability or productivity of Virginia's farm operations. They do, however, highlight two important considerations. They demonstrate the importance of attempting to study the consequences of public policy decisions. Many of these laws are not directed specifically at agriculture, yet they have had important impacts and, in some cases, have imposed significant costs on agriculture. If Americans genuinely believe that the future of American farming is in jeopardy, then legislatorsand administrators must examine policies to ensurethat they do not have hidden, potentially detrimental consequences for the goal of agricultural land retention. Second, these policies demonstrate the complex interrelationship of all types of land use activities. Good agricultural practices promote clean air and water, and a quality environment promotes the conservation and protection of cropland. Wildlife



Tobacco Field, Richmond
Lee Monument is in the background

benefit from and help preserve all aspects of the land-soil, water, air, and animal and human activity. Thus, policies aimed at any one aspect of land use should include consideration of its relationship to the remainder of the environmental web.

Federal Farmland Retention Programs

All levels of government have begun to take action to remedy some of the adverse consequences of past measures and to promote the retention of America's remaining prime agricultural base. There probably is enough undeveloped land in the United States to satisfy both development needs and the country's domestic and export food requirements-if it is managed wisely. The primary necessity is to ensure the future agricultural potential of prime croplands. This is the focus of most governmental programs aimed at decreasing the conversion of farmland to other purposes.

At the federal level, the United States Secretary of Agriculture and the Chairman of the Council on Environmental Quality initiated in June 1979 the National Agricultural Lands Study. Its purpose is to examine the quantity, quality, and availability of the nation's farmland resources; the extent and causes of the land's conversion to nonfarm uses; the economic, environmental, and social effects of farmland conversions; the impacts of federal policies on agricultural lands; and the various ways these lands might be retained for agriculture.

The USDA Soil Conservation Service began an inventory of important farmlands in 1975. Itselected throughout the United States 1,200 counties that have significant acreages of prime farmland subject to urbanizing pressures. It hopes to have completed its survey and classification of the farmland in these counties by 1981. The results will be madeavailable to localities seeking to encourage development on marginal rather than on prime or unique farmlands.

The Department of Agriculture and the U.S. Environmental Protection Agency have undertaken policy reviews to determine the impact of agency actions on agricultural lands. Both organizations have ordered the consideration of project effects on agricultural land, and the USDA has directed its subgroups to avoid actions that could reduce the amount of land available for food production.

Attempts to promote the retention of agricultural lands, however, have failed in the last two sessions of Congress. The Agricultural Land Retention Act (HR 2551) had three main functions. It would have established-

1. a federal policy concerning the protection of agricultural lands;

2. a Study Committee on the Protection of Agricultural Lands, which would have examined "the quantity, quality, availability and ownership of agricultural lands, the inter-relationship of agricultural activities and urban and industrial activities, the effects of federal laws on the use and productivity of farm lands, and the effects of agricultural and nonagricultural demands on the quantity and quality of availa-ble water supplies"; and

3. a demonstration program and a technical program to fund methods designed to protect certain farmlands. 22

This bill was defeated last spring on the Housefloor because of fears that it would authorize federal land use planning.

Development Rights Purchase

Many states and localities have adopted programs to encourage the retention of important farm lands. *Table 3* lists the major programs and the states participating in them. Suffolk County, New York, Howard County, Maryland, and King County, Washington, have implemented programs to purchase farmers' development rights (DRP.) Such programs pay the farmer the difference between the value of the land if farmed and its value, generally higher, if sold for development. As of October 1979, fifty parcels in Suffolk County, totaling about 3,300 acres had been acquired at an approximate cost of $10 million. Maryland also has a state-level program whereby farmers can sell easements to an Agricultural Land Preservation Foundation. Easements available to the state are rated according to the following formula:

$$\text{ratio} = \frac{\text{easement value - asking price}}{\text{easement value}}$$

The value of the easement is defined as the difference between what the farmer would receive if he sold the land for development and the amount he could derive from it if he remained in or sold it for farming. It is the same as the value of a development right under New York's law. If a landowner sets his asking price for an easement at a level equal to the value of the development right the ratio will be zero. If he is more anxious to remain in farming and sets his asking price lower than the easement value, his ratio will be some percentage of 1. The

ratios are used to determine rankings which in turn determine the order in which thestatewill purchase easements. Howard County, Maryland, has established its own local DRP program but Calvert County, Maryland, has utilized another approach-the transfer of development rights.

TABLE 3

Farmland Preservation Programs

Program	States			
Preferential Property Tax Assessments	Arizona Arkansas Colorado Connecticut	Delaware Florida Idaho Indiana	Iowa Louisiana Missouri New Mexico	North Dakota Oklahoma South Carolina West Virginia Wyoming
Preferential Property Tax Assessments with Deferred Taxation	Alabama Alaska Illinois Kansas Kentucky Maine	Maryland Massachusetts Minnesota Montana Nebraska Nevada	New Jersey New York North Carolina Ohio Oregon Pennsylvania Rhode Island	South Carolina Tennessee Texas Utah Vermont Virginia Washington
Preferential Taxation with Restrictive Agreements	California Hawaii Michigan	New Hampshire Pennsylvania Wisconsin		
Circuit Breaker Income Tax Credits	Michigan	Wisconsin		
Inheritance and Estate Taxation Relief	Connecticut Kansas Kentucky	Michigan New York Tennessee		
Sliding Scale Land Gains Taxation	Vermont	Montana		
Agricultural Districts	New York	Virginia		
Agricultural Zoning	Hawaii	Oregon	Wisconsin	
Developments Rights Purchase	Connecticut Maine	Maryland Massachusetts	New Jersey New York	
Land Use Commissions	Hawaii	Iowa		
Land Banking	Alaska			
Transfer of Development Rights	Alaska Maryland	New Jersey New York		
Fee-Simple Ownership	Hawaii Massachusetts	Pennsylvania Tennessee	Washington	

Source: "Survey of State Programs to Preserve Farmland-Council on Environmental Quality."

Transfer of Development Rights

Density transfers, or the transfer of development rights (TDR), are an attempt to solve the biggest problem encountered by Development Rights Purchase plans-prohibitive costs. The rights purchased by Suffolk County cost taxpayers approximately $3,000 an acre. TDR programs empower local governments to delineate preservation and transfer zones and to create the machinery necessary forthe transmittal of development rights between zones. The process begins with the adoption of a local comprehensive plan which outlines desired land uses and densities for each part of the locality. It sets the density for the receiving zone at a lower level thanthe land normally would bear. Individuals wishing to develop land in the receiving zone at a higher density level would then be able to purchase development rights, or density, from the preservation zone. Under such plans agricultural lands generally are placed in in the preservation or sending zone. The two fold purpose here is to accommodate both development and farmland preservation and to escape the exorbi-tant costs of DRP programs by solving land use problems through a semimarket mechanism. Besides preserving cropland, density transfers create more compact settlement patterns and, thus, reduce public service costs. TDR programs appear to work best when established at an early stage of community growth and development. Otherwise, sprawl becomes entrenched and undermines the socio-economic supports of the farm community and the ability of local governments to control zoning practices. [23] The basic difficulty with TDB's is that the program will not work unless the receiving zone is as attractive to developers as is the land the county wishes to preserve.

Preferential Tax Assessments

The most popular, and perhaps least useful,approach has been the granting of preferential tax assessments to owners who agree to keep their land in agricultural use. Under these programs, enacted by forty-seven states, qualifying lands are taxed at use value-their value for the production of crops-rather than at fair market value. Use-value assessments offer few long-term incentives for the retention of agricultural land. Many states have no penalties for nonconformance and landholders can withdraw whenever they choose without paying a rollback (some portion of the taxes forgiven while under use-value assessment.) Second, any tax savings for a use-value assessment accrue only to the original landholder. Any subsequent purchaser is likely to pay a higher purchase price, which represents the capitalization of any future tax savings 24 Lastly, the amount of tax saving is generally far less than the profit available for selling the land for development. [25] Thus, it appears that use-value assessments have "...relatively little impact on the rate, timing or spatial distribution of the conversion of agricultural land and other uses." [26]

Michigan's Plan

Michigan utilizes a state income tax circuit breaker in its land-use preservation plan. A farmer may enter into a contract with the state to keep his land in agriculture for a certain number of years. As compensation he receives a tax credit equal to the amount by which his property taxes exceed 7 percent of his household income. The state pays the farmer a cash rebate for any surplus of credit overbreakingthecontract. While this program, which presently hasabout 1,100,000 acres enrolled, does help relieve the tax burden of working farmers without imposing a great additional burden on other property holders, it is not a comprehensive approach to land preservation. The tax savings available, as in the case of use value assessments, are no match for the opportunity costs of forgoing development. Moreover, it fails to preserve contiguous blocs of land for farm use . [27]

Agricultural districts are increasingly popular institutional arrangements for the preservation of farmland. The first such districts were created in New York after the passage of enabling legislation in 1971. These programs combine voluntary action by landowners with official enactments by county governing boards. Each district must contain a minimum of 500 acres with a contiguous outer boundary. The district may include one parcel or several and may be the property of one or more owners. Owners must petition their local governing board for the formation of a district. After public hearings, the board may establish, modify, or reject the proposed plan. If the county grants the petition, a district is established for a certain number of years. In return, land may be eligible for use-value assessment, and land generally is exempt from special assessments for such services as water or sewer lines. Further, district formation places restraints on the locality's power of eminent domain and prohibit the expenditure of public funds in a district for nonfarm related purposes. Agricultural districts can help shift development away from more productive acres. [28] However, their success depends on the continued willing-ness of farmers to forgo the higher monetary profits resulting from sale for development and the locality's belief that farmland preservation is important. In Northern Virginia, for instance, farmers have been rebuffed in their attempts to form agricultural districts by some local bodies who believe development is more important than farmland preservation.

Packing Apple Crop, Nelson County
Photo by Cook, n.d.

Wisconsin's Program

Wisconsin has instituted a unique program of exclusive agricultural zoning. The first part of thistwostep program remains in effect until 1982. It requires any interested landowner to enter into a ten-year contract which retains his land in agricultural use. Such contracts make the individual eligible for deferrec real estate taxation and for credits against his income tax liability. The second step is a local optior program. Counties are not required to participate it it but without local action landowners will be prohibited from participating in the tax credits program. Under this second phase, urban counties mustadop exclusive agricultural zoning by 1982. Adoption o agricultural zoning qualifies landowners for 70 per cent of the available tax credit. If the county also adopts a farmland preservation plan, owners of agri cultural land become eligible for 100 percent of the maximum tax break.

Rural counties that adopt agricultural land preservation plans can offer farmers ten- to twenty-five-year contracts for the retention of cropland. Signing such a contract enables the farmer to apply for 70 percent of the available tax credit. He becomes eligible for the full tax break if the county also adopts exclusive agricultural zoning. Penalties are imposed for breaking the contract, and contracts are bound to the land, that is, they remain in force even if the land is sold.[29] The Wisconsin plan, while somewhat complicated, demonstrates several important features of good land use planning. It attempts to implement an integrated policy relevant to all types of land-use decisions. The formation of exclusive agricultural zones removes much of the temptation to sell out to developers yet does not place the financial burden of preserving agricultural land solely on the farmer. It provides farmers, citizens, and developers with some degree of certainty concerning where development and growth in the area will and will not occur. Finally, although the plan limitstheflexibility of both landowners and developers, it recog-

nizes the legitimacy of competing land claims and attempts to provide some institutionalized manner in which they can be met. Presently, the Wisconsin program has enrolled two million acres and *9,400* owners.[30]

The Commonwealth's Program

Virginia has adopted several farmland preservation programs to meet two specific goals. The Virginia Agricultural Opportunities Commission, in its *1980* report, summarized one of the major assumptions underlying the Commonwealth's farm policy:

> With adequate rates of financial returns to farmers, there appears to be no evidence that indicates a lack of incentive for young persons to enter farming, or for most of our present farmers to remain in farming. Therefore, low returns to farm resources is believed to be the major farm problem in Virginia.[31]

Thus much of the farm legislation proposed during recent general assembly sessions has attempted to promote higher farm profits through research and better marketing practices. During the *1980* session, farm supporters proposed bills to increase truck weight allowances during harvest season, to preserve a rail line used for transporting goods to market, to encourage agricultural education and research into marketing practices, and to encourage farmers to enter new agricultural businesses such as farm wineries and the conversion of grain into industrial ethanol. *Table 4* lists the major farm bills proposed during the *1980* General Assembly and their disposition.

The second major aspect of the state's agricultural policy is its reliance on local initiative. Virginia seeks to ensure that program planning and implementation remain with local governments. Any plans, the state feels, should be voluntary, and the incentives should be "attractive enough to the farming community to result in substantial participation."[32] Virginia, in keeping with this goal, has relied on a use-value assessment, an agricultural and forestal district program, and on local zoning as the main tools in its farmland preservation effort. Sixty-six Virginia localities have adopted use-value assessment ordinances. However, such assessments, even when accompanied by rollback provisions for noncomplying uses, have not been a successful deterrent to farmland conversion either in Virginia or nationally. Localitiesalso havecreated nineteen agricultural and forestal districts holding *48,000* acres. This program has been especially successful in counties such as Loudoun which areexperiencing heavy development pressures from Washington, D.C., suburbs. By next fall, one-seventh of Loudoun will be in agricultural districts.

TABLE 4

Farm Legislation: 1980 General Assembly

Bill		Desposition
SB	427 (Erosion and Sediment Control)	Carried Over
SJR	22 (to promote agricultural and forestal research)	Agreed to
SJR	20 (to formulate a comprehensive plan for higher education in agriculture)	Agreed to
HB	68 (to promote farmer's entry into gasohol production)	Enacted
HB	69 (gasohol)	Enacted
HB	152 (to remove the threat of nuisance ordinances from established farm operations)	Carried Over
HB	310 (to add preservation of agricultural and forestal land to approved purposes of zoning ordinances)	Enacted
HB	311 (to take food and fiber production into consideration in the formulation of comprehensive plans)	Enacted
HB	355 (farm wineries)	Enacted
HB	615 (farm wineries)	P.B.I.*
HB	845 (to allow local governing bodies establishing agricultural and forestal districts to prohibit subdivision of land within the district even if the land is already zoned for subdivision)	Carried Over
HJR	5 (gasohol)	Agreed to
HJR	21 (to setup a committee to study the preservation of Virginia's agricultural and natural resources)	Carried Over
HJR	40 (to monitor local pilot programs)	Agreed to
HJR	42 (to study agricultural marketing practices)	Agreed to
HJR	48 (to establish a Virginia horse center)	Agreed to
HJR	59 (gasohol)	Agreed to

*Passed by Indefinitely

Virginia's localities have turned to agricultural and forestal districts because of the failure of the other local land preservation tool-zoning. Loudoun County is a case in point. It adopted an agricultural and forestal district ordinance when its attempt to preserve cropland through large-lot zoning failed. Instead of preserving farms, large-lot zoning encouraged the splitting of agricultural lands into farmettes, which posed a much larger threat to agricultural resources than did the urbanization occurring in the eastern section of the country.[33] Montgomery County has shared a similar experience. Its agricultural zone covers 90 percent of the county's acres and permits development on the basis of one house per half acre. However, between 1970 and 1977, only 25 percent of residential development went into those areas designated as desirable for growth.[34]

Part of the problem is that agriculture needs to be recognized as a legitimate land use category in the Commonwealth.[35] Land classified as agricultural in Virginia, as in many other states, is land that is leftover after all other claims have been met. Rezoning for commercial or residential use generally is available upon request. Moreover, it has been difficult to protect farmland through zoning ordinances and comprehensive plans because until 1980 these laws made no specific mention of agriculture as a goal. During the most recent session, the General Assembly passed two bills that add the preservation of agricultural and forestal land to the approved purposes of zoning ordinances and take food and fiber production into consideration in the formation of comprehensive plans. The Assembly also passed a resolution calling for the establishment of a Joint Agricultural Land Preservation Subcommittee to monitor local pilot programs and to evaluate the applicability to Virginia of farmland preservation programs in other states. Several agricultural land retention programs, which are utilized by other states and closely adhere to Virginia's goals of local initiative and voluntary cooperation (such as TDR programs or Wisconsin's exclusive agricultural zoning), depend on local zoning ordinances and comprehensive planning for their implementation. It remainsto be seen whether the actions of this year's legislature will strengthen the Commonwealth's localities sufficiently to remove zoning as a stumbling block to attempts to protect the state's agricultural land base.

Conclusion

The conversion of agricultural land to nonagricultural uses raises several important issues in Virginia and in the nation as a whole. Cropland and open space loss pose the potential for a dimunition of the quality of life in the Commonwealth. Does Virginia wish to face a future of asphalt, billboards, and urban sprawl instead of fields and woods? Excessive development harms water quality and imposes economic, social, and aesthetic costs for clean-up, particularly in view of the Clean Water Act's zero discharge goal. Land used to produce food and fiber products also shelters wildlife and these habitats often cannot be replaced. Uncontrolled conversions necessitate the cultivation of less productive, more erodible acres which results in greater costs to both farmers and consumers and in difficulties in finding fresh foodswhere produce has to be transported long distances. Zoning policies need scrutiny. At present they rarely offer protection to continued agricultural operations. Moreover, current planning, where it exists, is from an urban perspective. Planners worry about how agricultural use affects urban life but not about the effects of urban life on the available supply of farm and forest land. Demands for recreational, industrial, and other water uses result in the flooding of prime crop producing acreage. Increasing population levels exacerbate all these problems.

The effects of property and estate taxation and of the cost/profit squeeze also play important roles in decisions on whether to retain land in production or to dispose of it for development. Government policies may hasten the conversion of cropland to nonagricultural uses. Finally, how can Virginians better understand this problem and its potential solutions? The public lacks information on the nature, extent, and causes of farmland conversions. Further,officials have no complete inventory of the quantity and quality of the available reserve of undeveloped land. Lack of information makes issue and policy evaluation difficult and complicates decisions about the extent to which private property rights can be protected or need to be modified.

All these issues revolve around one central question: How can Virginia better understand and balance the basic value assumptions underlying the competing social, political, economic, and environmental claims on the land? The Commonwealth cannot tackle successfully the problem of preserving agricultural land without first discovering a viable answer to this question. Satisfactory, resolution of this dilemma necessitates, in turn, consideration of the total spectrum of land use activities and their accommodation to the Commonwealth's twin policy goals of local initiative and increased farm profitability. If all land use requirements are respected, balanced, and provided for, there also will be room for the protection of agricultural and forestal lands.

The most essential requirement is the recognition of the complex relationships among all the earth's elements, resources, and inhabitants. Integrated planning for all of these elements will not hamper inordinately or foolishly any legitimate growth activity. It will make the effects of improper land use in one area on other aspects of the land more obvious and will demonstrate that good land use practices should benefit crop production, highway building and maintenance, and air and water quality.

Planning may decrease individual flexibility somewhat, but Virginia can accomplish it without threatening either individual property rights or its own farm policy objectives. Before such planning can occur, however, all the parties involved need more information than is now available. Evaluation of and choices between competing land use proposals rest on an understanding of the capabilities of the natural resource base. The completion of the national Soil Conservation Service survey, new satellite mapping techniques, and, in Virginia, the VARIS project should help meet this need. VARIS (Virginia Resource Information System) would provide Virginia with accurate, up-to-date information on-

1. "land use and land use shifts affecting production,"
2. soils, land classification, and productivity,
3. soil temperature and moisture and other "climatic or environmental factors" affecting crop production,
4. water use,
5. socio-economic factors relating to resources, and
6. the impact of human activities on resources.[36]

With such information it becomes possible to encourage nonfarm development in areas of low productivity to counter the problem of leap-frog development, and to provide an overall planning perspective. Moreover, scientists and public officials must attempt both to educate citizens and to include them in land use decisions. More public information and participation should help increase their understanding of how the various aspects of the land are related and of the implications for one aspect of action in another sphere.

Attempts at integrated planning must meet certain conditions if they are to be successful. First, planners need to recognize the legitimacy of competing land use claims and provide some method of resolving them. There is room for both growth and preservation. Achievement of this goal will necessitate some resolution of the "taking issue." The fifth amendment prohibitsthe "taking" of property without due process of law. This has been interpreted to mean that the states cannot take property without just compensation. However, there is much controversy over this question and over its modification by the state's power to protect the publ is health, safety, and welfare. The basic issue here is property rights. Planners need to develop methods and programs that do not make farmers bear the sole financial burden of agricultural land preservation efforts. TDR plans are one means of accommodating both protection and development.

Another condition forsuccessful integrated land use planning is the attractiveness of urban areas. Cities and their suburbs will have to be more liveable and energy efficient in the future so that they can compete with rural living. If cities become more aesthetically pleasing and convenient, they will attract new residents and developers will seek to build there. This would reduce some of the pressure on agricultural land.

Obviously, there is no simple solution to the farm land retention problem, and its resolution will require the compromise of several divergent philosophic views. Several options are available to Virginia which are consistent with the Commonwealth's policy objectives, although each requires some compromise on the part of affected citizen, farm, or development interests. However, unless land use regulations address the total land problem and direct development toward the less productive land in each community there will be long-run problems for agriculture, the environment, and developers.

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Footnotes

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