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AGRICULTURAL DISTRICTS AND LAND USE: A PILOT STUDY

Roger W. Hexem
Nelson L. Bills
Sally Ball

Department of Agricultural Economics
Cornell University Agricultural Experiment Station
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York 14853

In Cooperation With

Natural Resource Economics Division
Economics and Statistics Service
U.S. Department of Agriculture

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AGRICULTURAL DISTRICTS AND RURAL LAND USE: A PILOT STUDY

by

Roger W. Hexem, Nelson L. Bills, and Sally Ball*

State and local governments have traditionally exerted broad authority over use of privately owned land. During the past two decades, increasing numbers of these governmental units have experimented with policies designed to influence the rate at which farmland is converted to nonagricultural uses. In 1971, the State of New York passed the Agriculture and Markets Law, Article 25AA (popularly known as the Agricultural District Law), coupling provisions for property tax relief through use-value farmland assessments with other measures which are expected to alter landowner's and policy-maker's expectations about the future of agriculture within the State. The vehicle for alteration involves community-wide efforts to form an agricultural district -- a geographic area of 500 or more acres. Farming is to represent the principal land use within the boundaries of an agricultural district.

Landowners and county legislatures have considerable interest in the Agricultural District Program. As of March 1980, 408 districts involving 5.9 million acres have been proposed by landowners and ratified by county legislatures [Agricultural Resources Commission]. Only six district proposals have been rejcted by county legislatures after public hearings and reviews at the local and state level. Agricultural districts are found in 48 of 57 New York counties and include more than 19 percent of the State's land area.

The New York approach affecting use of agricultural land is unique and of regional and national interest. To assess the impact of the district program on land-use decisions, a pilot study of land-use changes within portions of Erie County, New York was conducted. This analysis is prefaced by a brief description of provisions of the Agricultural District Law and the conceptual and methodological issues associated with determining the Law's effects on rural land use.

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*Hexem and Bills are Agricultural Economists, USDA-ESS-NRED. Hexem is stationed in the Department of Agricultural Economics, University of Georgia; Bills is stationed in the Department of Agricultural Economics, Cornell University; and Ball is a former Research Aide in the Department of Agricultural Economics, Cornell University.

The Agricultural District Law

The Law contains the following provisions which apply within agricultural districts:

(1) Owners of 10 or more acres generating at least $10,000 in yearly average gross sales within the preceding two years may make annual application for use-value assessment of their farmland. Sales of commodities produced on rented land may be added to those from owned land to meet the $10,000 requirement. If any land so assessed is converted to a nonagricultural use, a rollback tax without interest or penalty is applicable to this land for each of the preceding five years or the number of years during which use-value assessments were levied, whichever is less. Land in the tax parcel remaining in agricultural uses continues to be eligible for use-value assessments.1/

(2) Local governments are prohibited from enacting laws or ordinances which would unreasonably restrict or regulate farm structures or farming practices not consistent with the purposes of the Law unless these restrictions or regulations are directly related to public health or safety.

(3) All state agencies are to modify administrative regulations and procedures so as to encourage the maintenance of viable farming within agricultural districts but not to the detriment of public health and safety.

(4) The right of public agencies to (i) acquire through eminent domain interest in land constituting more than 10 acres from any one actively operated farm or a total of more than 100 acres within a district or (ii) advance funds within a district for construction of nonfarm buildings and facilities, including water or sewer facilities to service nonfarm structures, must be preceded by filing a notice of intent at least 30 days prior to any action. Such notices are reviewed at the state level. If proposed actions are expected to unreasonably adversely affect the viability of farming, public hearings and wide dissemination of the findings must be made prior to final decisions on implementation of proposed actions.

1/ Those meeting the same eligibility requirements but having land outside a district can also apply for use-value assessments. They must annually make an eight-year commitment to exclusively use this land for agricultural production. If any land is converted to nonagricultural uses during the eight-year period, all land included in the original commitment becomes ineligible for assessment at use-value. A tax penalty of two times the taxes assessed at market value in the year following the break of commitment on all land previously under the commitment is added to the taxes determined for that year.

(5) Unless imposed for town improvements prior to formation of the district, no benefit assessments or special ad valorem levies may be imposed on land used primarily for agricultural production within a district. Lots of less than one-half acre on which any dwelling or nonfarm structure is located are excepted.

Landowners petitioning county legislatures for formation of districts must collectively own 500 acres or 10 percent of the land in the proposed district, whichever is greater. The petition is referred to the county planning board and a county agricultural advisory committee for consideration.2/ These groups then make reports to the county legislature, public hearings are held, and the proposal is forwarded to the Commissioner, Department of Environmental Conservation for certification. The New York State Agricultural Resources Commission and the Secretary of State are consulted prior to certification by the Commissioner. Following certification, the county legislature takes final action to ratify the proposal and create the district.3/ An agricultural district must be reviewed by local and state agencies every eight years after formation.

The creation process is complex and time consuming. Six months or more often expire before a district proposal is ultimately ratified by the county legislature.

Analyzing the Law's Land-Use Effects

The point of departure for assessing the effect of the Law on land use is an interpretation of legislative intent and identification of the incentives and disincentives confronting participating landowners. The former connotes the goal of the Law and provides a basis for comparing land-use goals with subsequent land-use patterns. The latter allows deduction of the possible consequences of participation for comparison with consequences observed empirically.

Legislative Intent

The following is abstracted from the New York Agricultural District Law:

2/ A county agricultural advisory committee is appointed by the county legislature and consists of four active farmers, four agribusinessmen, and one member of the county legislative body.

3/ In September of 1975, the Commissioner of Environmental Conservation was granted authority to create districts of 2,000 or more acres to encompass "unique and irreplaceable agricultural lands" [Agriculture and Markets Law, Art. 25AA, Sec. 304]. The Commissioner must consult local people, the Agricultural Resources Commission, and the Secretary of State before any action is taken. To date, no efforts to create such a district have been made.

> "It is the declared policy of the state to conserve and protect and to encourage the development and improvement of its agricultural lands for the production of food and other agricultural products. It is also the declared policy of the state to conserve and protect agricultural lands as valued natural and ecological resources which provide needed open spaces for clean air sheds, as well as for aesthetic purposes";
>
> "... to provide a means by which agricultural land may be protected and enhanced as a viable segment of the state's economy and as an economic and environmental resource of major importance" [Art. 25AA, Sec. 300]; and
>
> "... shall review the proposed action (eminent domain and advance of public funds) to determine what the effect of such action would be upon the preservation and enhancement of agriculture and agricultural resources within the district ..." [Art. 25AA, Sec. 305].

While efforts to conserve and protect agricultural lands are a matter of state policy, the Legislature's goal with regard to agricultural districts as a conservation and protection mechanism is general in scope. The legislation is a "process-oriented" measure wherein the specific effects on land use are not embodied in the legislation but are the consequences of the influence of the Law together with other factors on land-use decisions by landowners [Fohner]. Consequently, terms such as "protection", "enhancement", "viable", and "preservation" likely connote different meanings and expectations to different individuals.

Bryant and Conklin have suggested that the Law is designed to encourage the continuance of a strong agricultural industry in the face of growing urban pressure, including land speculation. They also state that the district mechanism offers farmers the opportunity to rededicate themselves to farming and to assure each other that they want to remain in agriculture. The district formation process involves petitions, public hearings, and reviews by public agencies thereby making rural residents and public officials more aware of farming as an industry and as a major user of the community's land resources.

Incentives for Participation

Monetary incentives to participants in the short to intermediate-term are largely confined to property tax relief through assessing farmland according to current use-value. Other provisions of the Law can be looked upon as "conditioning" factors expected to improve farmers' and public perceptions of agriculture's legitimacy as a priority land use in the future.

There are few discernable disincentives to participation. Land assessed at agricultural use-value and subsequently converted to a nonagricultural use is only subject to a rollback tax without interest or penalty. Some may view the prospects for selling land to developers as being dampened because of the restriction on special assessments on farmland for water and sewer services -- a restriction that would raise costs to developers installing these services. Such higher costs, however, may be more than offset by lower

construction costs of housing on good farmland and by the appeal of housing in a rural environment. Potential developers may encounter difficulties in obtaining rezoning from agricultural to residential uses, if such prior zoning exists.

Tax relief through assessing land at agricultural use-value requires closer examination. New York's agricultural economy is oriented toward the production of livestock and livestock products, dairying in particular.4/ Farm owners must sustain relatively large investments in taxable land improvements to support a livestock enterprise; the value of these improvements cannot be exempted under the Law's provisions for use-value assessment on land.5/ The impact of use-value assessment on the total property tax bill is dampened accordingly [Boisvert, et al.]. Determinations of use-value are made at the State level and are based on recent farm sales and appraisal data [McCord]. Assessing officers in New York often practice fractional rather than constitutionally mandated full value assessment based on market value [Mason and Lutz]. Consequently, many owners have no incentive to apply for tax relief under the Law since the assessed value of their farmland is less than its use-value. Revaluation of property according to market value shifts tax burdens to farmland owners previously benefiting from fractional assessments [Carey]. These shifts are generally required to induce farmers to apply for use-value assessments. Revaluations are underway in some taxing jurisdictions [Temporary State Commission on the Real Property Tax], but the timing and the level of new assessments on farmland are completely outside the purview of the Agricultural District Law.

Previous Studies

Since features of the Agricultural District Program in New York have not been replicated in other states, there are no companion studies which can be used for comparative analyses of the Law's effects on land-use decisions. However, 48 states now provide for use-value assessments of farmland [U.S. Council on Environmental Quality]. In a few cases, particularly in California, these assessment programs have been studied in sufficient depth to provide useful parallels and contrasts for the New York situation.

Use-value assessment under the California Land Conservation Act, widely known as the Williamson Act, was initiated in 1965. The New York Agricultural District Law and the Williamson Act are related in the sense that the idea of a district or preserve was originally envisaged by the California Legislature [Gustafson and Wallace]. Owners of qualified agricultural land in a preserve -- a geographic area to be designated by local governments -- receive property tax relief in exchange for a contractual agreement to forgo developing their

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4/ Sales of livestock and livestock products account for 70 percent of all New York farm receipts [New York Crop Reporting Service]. Farms classified as dairy farms in the 1974 Census of Agriculture own or control through lease more than 70 percent of the total cropland base.

5/ Improvements account for about 36 percent of the value of New York farm real estate in comparison with 17 percent nationally [U.S. Department of Agriculture].

land for nonagricultural uses for a minimum time period, usually 10 years, thereby providing certainty over land use in the short to intermediate term [Gustafson]. What evolved, however, were contracts initiated by individual landowners which collectively did not constitute contiguous landholdings in a preserve. The resulting geographic pattern of voluntary enrollment has been scattered and skewed toward locations some distance from population centers [Carman and Polson; Gustafson and Wallace]. Consequently, the creation of a preserve or district did not become a salient outcome of the California program. Some districts in New York are also not comprised of contiguous tracts of land [Fohner].

Property tax relief is a key feature of the California program. It has been shown that the present value of potential tax savings are relatively low over a typical contract period [Gustafson and Wallace; Schwartz, Hansen and Foin]. Yet, in fiscal 1975-76, enrollments amounting to 14.4 million acres and involving property tax benefits of $60.5 million were reported in 47 California counties [Gustafson].

Observers have used these empirical findings to conclude that the California law is not an effective means of preserving farmland. They argue that the Act provides insufficient incentives for owners who have the best opportunity to convert their land to a higher use to participate in the program.

As in California, participation in the Agricultural District Program tends to be voluntary. A significant fraction of all districted acreage in New York is found in nonurbanizing areas [Bills, 1977]. Farming is not likely to be greatly affected in the short- and intermediate-term by urban-related factors and pressures in these areas. About 20 percent of all districted acreage is, however, within a 25 mile radius of New York's SMSA central cities [Bills, 1977] where the possibilities of competing nonfarm uses and disruptions caused by proximity to urban areas are more likely to occur.

Allee et al. studied farmland use near large population centers in New York. Two hypotheses were examined: (1) the quality of land for farming purposes is positively correlated with the rate at which land is shifted to urban uses and (2) direct conversion to urban uses has secondary adverse impacts on the economic viability of remaining farmland. The first takes into account the fact that "good" farmland is often highly suited for urban uses as well. The second is based upon the presence of uncertainty in the land market linked with possible premature idling of farmland and disinvestment in farm capital.

Through associating areal interpretations of land use with information on soil quality, Allee reported a disproportionate amount of urban development occurred on high quality land previously used for crops. He concluded that urban growth between 1964 and 1985 would absorb 3.4 percent of New York's cropland, as of 1964, but 5.7 percent of the State's "best" cropland.

Allee's second hypothesis is based on the premise that nonfarm development often tends to generate debilitating indirect side effects resulting from uncertainty over the timing and location of future nonfarm growth including: (1) distorted patterns of investment in real estate improvements, (2) premature idling of land where continued use for farming is economically feasible, and (3) underutilization of farmland not idled. In any single

locality, farmers and agribusinesses providing production inputs and marketing services can literally "give up" on agriculture because they perceive the future of farming to be too uncertain.

One specific sign of giving up is changes in the pattern of farm investment. In a study of farm-related investments in land improvements near Rochester and Syracuse, Conklin and Dymsza concluded that the volume of investment in farming is directly related to distance to the central city with relatively more investment in outlying areas. They attributed this investment pattern to an environment of farmers' uncertainty concerning continuing their farm business during the productive life of the improvements, particularly in urbanizing areas. Net reductions in investment capital can eventually lead to lower farm production and/or idling of the farmland.

The Pilot Study

Since this is the first attempt to evaluate the effect of the district program, a pilot or case study approach was selected to examine and refine evaluation procedures. Such procedures are preliminary to developing techniques for conducting the eight-year review of district performance and/or evaluating an "agricultural district effect" on a larger scale within the State.

Study Objective and Design

The study was developed to examine two fundamental issues:

(1) What are landowners' motives for participating in the Agricultural District Program?

(2) Does participation produce an "agricultural district effect" on the pattern of rural land use? That is, does the existence of a district generate a differential effect on land-use patterns within and outside districted areas?

The question of motives was addressed through a survey of farmers. Their opinions on the advantages and disadvantages of the Agricultural District Law were also recorded.

The "district effect" question was approached with both direct and indirect measurements. The direct approach involved an additional line of questioning in the survey where respondents were asked to enumerate the effects of the district program on their farm business, including decisions to invest in farm-related land improvements and/or to buy and sell farmland. This was complemented by an indirect approach through which land-use changes within and outside agricultural districts were estimated and compared.

The following null hypotheses were used to examine "agricultural district effects" where short-term represents about five years:

(1) The district exerts no short-term effect on a farm owner's decision to invest in farm-related land improvements.

(2) The district exerts no short-term effect on a farm owner's decision to buy or sell farmland.

(3) The district exerts no short-term effect on conversion of inactive agricultural land, pasture, or woodland to cropland.

(4) The district exerts no short-term effect on the conversion of cropland to less intensive agricultural uses -- pasture, woodland, and inactive agricultural land.

(5) The district exerts no short-term effect on the volume of cropland converted to nonagricultural uses.

Hypotheses (1) and (2) are based on interpretations of the purpose of the Law. If district participation is associated with farmers rededicating themselves to farming and perceiving their neighbors doing likewise, they can be expected to indicate that being in a district is influencing them to invest in their farms thereby enhancing prospects for farming within districts. Idled farmland is often found near urban areas. A significant association between the presence of a district and the activation of inactive agricultural land for farming purposes plus the conversion of pasture and woodland to cropland would lend support to the proposition that a district enhances prospects for continued farming (Hypothesis 3). Since the Law does not preclude direct conversion of farmland within districts to nonagricultural uses, the existence of a district, per se, would exert negligible effects, if any, on such conversions (Hypotheses 4 and 5).

The Study Area

Erie County exhibits several features appropriate for the study. Situated in western New York with a total land area of 677,376 acres (about 1,058 square miles), Erie County includes the central city of Buffalo and a highly viable farm sector. In 1974, Erie ranked fourth among all New York counties in the value of farm products sold [U.S. Department of Commerce, 1977].

Buffalo is in the Erie-Niagara SMSA representing the largest industrial and commercial center in upstate New York [West]. Since the mid-1940s, most population growth in Erie County has occurred in the fringe area of Buffalo, but growth rates have also accelerated in outlaying rural towns [West]. Rural farm population in the county decreased from about 23,800 to 6,200 between 1950 and 1970 [Larson].

According to the 1974 Census of Agriculture, Erie County contains 1,014 commercial farms having gross receipts valued at $2,500 or more during the Census year [U.S. Department of Commerce, 1977]. Commercial farmers own and/or lease around 184,300 acres or 27 percent of the total land area in the county. In 1974, gross farm receipts in Erie County totaled $47.6 million. Crop production contributed nearly $13 million while dairying and livestock production accounted for $28.7 million or 60 percent of all receipts. Nursery, greenhouse, and forest products made up the remaining $6 million.

Sources of Data and Procedures

The universe for the mail survey was defined as all farm operators having farm headquarters within the towns (townships) of Brant, Eden, Evans, and North Collins (Figure 1). Since a portion of each town lies outside an agricultural district, survey responses were generated from a few farmers having land in these areas (Appendix 1). One mail-back to nonrespondents from the initial mailing was made. Of the 290 owners in the universe, 145 returned questionnaires of which 105 were sufficiently complete so as to be usable.

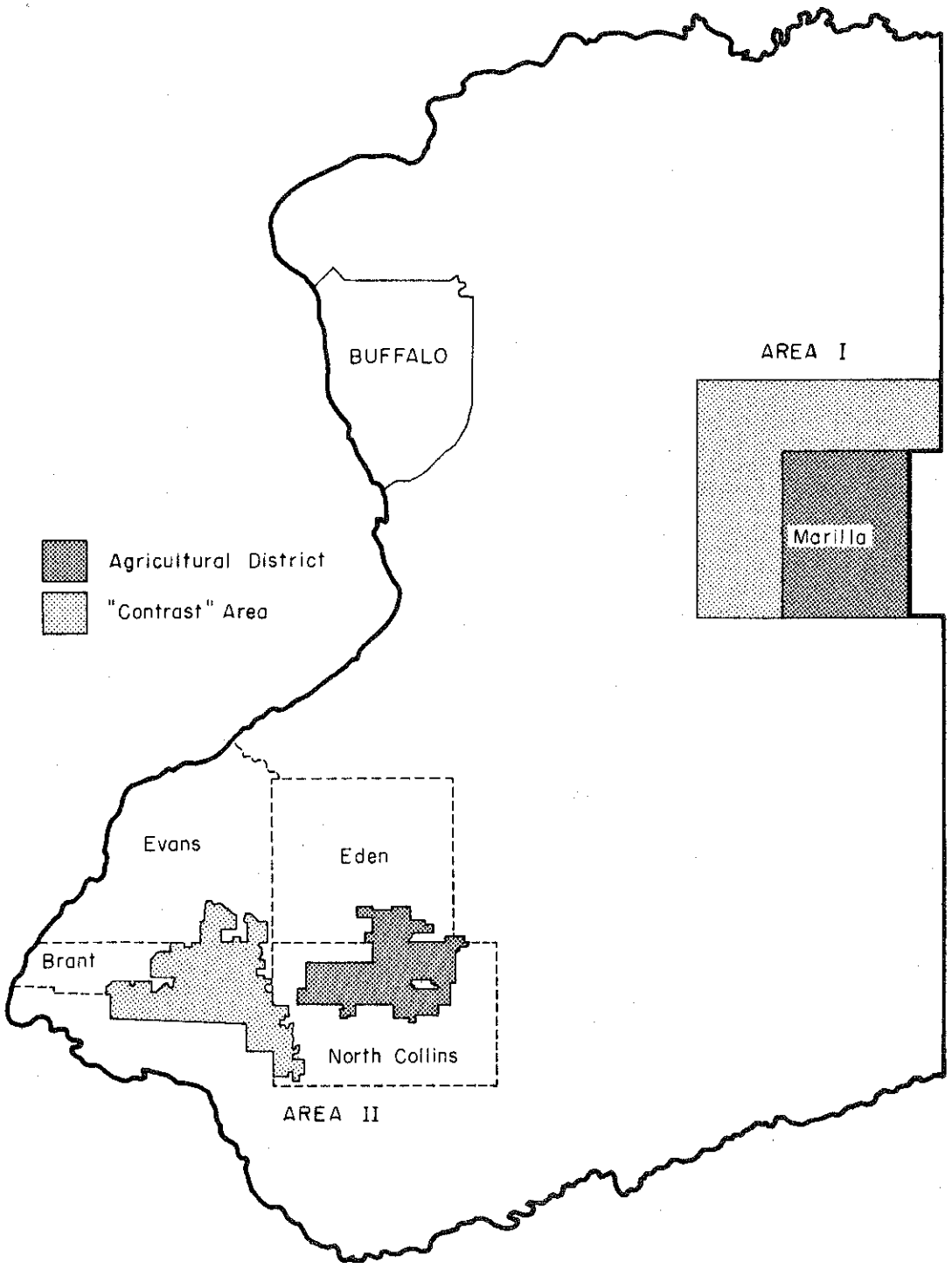
Data on land-use patterns were generated to permit comparisions of land-use changes within agricultural districts and "contrast" areas, the latter being nondistricted areas. Procedures for identifying and selecting district and "contrast" areas are described in Appendix 2.

Land uses in 1968, 1972 and 1977 were ascertained by interpreting air photos and field inspection at randomly selected sample points. The 1968-72 comparisons represent shifts in land uses before formation of agricultural districts. The 1972-77 data allow examination of land-use patterns after formation of districts and in comparison with patterns in the "contrast" areas.

The possibility of a "district effect" on land-use changes was examined by conducting a statistical test of association between use changes within the districted and "contrast" areas. Values of Chi-square were derived for each time period -- prior to district formation, 1968-72, and after district formation, 1972-77. If the estimated Chi-square value is statistically significant at some predetermined value, for example, the 95 percent level, the following conclusion is made: The amounts and sources of land converted to a specified use are not independent of the existence or absence of an agricultural district, and there is basis for the occurrence of a "district effect" on land-use changes. If "contrast" areas relatively homogenous to districted areas can be selected, land-use changes in the 1968-72 predistrict period should be unrelated to whether or not such lands were subsequently in a district or "contrast" area. The corresponding Chi-square value should be less than the predetermined value beyond which a "district effect" is estimated to have occurred.

STUDY RESULTS

During the study period, revaluation of real property was underway in Erie County. No use-value assessments on agricultural land had yet been made in the district or "contrast" areas. Concerning other provisions of the Law, there were no reported instances where local ordinances or special tax assessments were proposed that would have had an adverse effect on farming operations. Similarly, there were no reported instances where eminent domain proceedings falling under the purview of the Law were initiated in the study areas.


BUFFALO
AREA I
Marilla
Agricultural District
"Contrast" Area
Evans
Eden
Brant
North Collins
AREA II

Farmer Attitudes and Expectations

At any point in time, farmers' attitudes toward and expectations of the Agricultural District Program are conditioned by several factors. Awareness and understanding of the program are important. Some are in districts by choice; others were simply included as district boundaries were drawn. For those within recently formed districts, the information provided by petitioners and in public hearings may still be familiar. Individuals in districts formed several years previously -- those situations where impacts on land-use decisions are expected to be most evident -- may have forgotten specific provisions of the program and only recall the general thrust of the district concept. Also farmers with differing goals and planning horizons will likely have different outlooks.

Individuals responding to the survey were associated with a wide range of farm sizes. About 60 percent reported being "full-time" farmers with the rest either "part-time" or retired.

Respondents' Views on Factors Affecting the Future of Farming

To obtain insights into views of problems affecting future investment and operating decisions and to place their attitudes toward the district program in perspective, farmers were asked to rank a number of specific problem situations. This ranking was done in the context of assuming "satisfactory" cost/price relationships for producing agricultural commodities (Table 1). Rank 1 reflects the most important problem.

Availability of farm labor was the problem mentioned most often. The frequency of responses concerning the relative importance of difficulties in renting and buying land was skewed toward rankings 1-3. While the district program is designed to encourage the retention of land in agricultural uses, difficulties in obtaining additional land can still occur. There was no consistent pattern of views of whether or not (1) conflicts with nonfarm neighbors, (2) difficulty in obtaining sufficient credit and capital, and (3) understanding of farming operations by local governmental officials were problems. Respondents did consider difficulties in obtaining services and supplies as relatively unimportant.

The majority of respondents, about 93 percent, indicated that property tax relief was necessary to encourage landowners to keep farmland in agricultural production. As noted earlier, no farmland in Erie County was assessed at use-value when this study was undertaken. Current practices used by local assessing officers result in property tax bills at levels below those associated with use-value assessments.

One potentially disturbing influence on the continuation of farming is the increasing number of individual rural residences and housing developments in proximity to active farms. Farmers shared their perceptions of the specific effects of residential development on active farming (Table 2). Complaints about odors from agricultural operations, mud and manure on roads, and noises from farming operations were mentioned most frequently. Recall that one provision of the Law prohibits local governments from enacting laws or ordinances detrimental to farming interests within districts unless public health or safety is impaired. Since land suitable for agriculture is also

Table 1. Rankings Among Specified Problems Possibly Affecting Future Investment and Operating Decisions, Assuming "Satisfactory" Cost/Price Relationships[a]

Rank =	1	2	3	4	5	6	7	No Response	Total
Conflicts with nonfarm neighbors	12	8	3	5	10	5	9	53	105
Difficulty in renting land	11	10	11	6	5	3	4	55	105
Difficulty in buying land	4	12	13	9	4	6	--	57	105
Difficulty in obtaining farm labor	25	7	6	7	5	1	2	52	105
Difficulty in obtaining sufficient credit and capital	4	6	8	8	7	6	8	58	105
Difficulty in obtaining supplies and services	1	2	5	5	7	16	12	57	105
Insufficient understanding of the nature of farming by local government officials	7	8	2	5	7	8	12	56	105

[a]Ranking code: 1 = most important, 2 = next most important, and 7 = least important.

desirable for rural residences, such land is taken out of production as residential development expands. Sixteen percent of the respondents cited this outcome.

Table 2. Reported Effect of Residential Development Along Rural Roads on Active Farming[a]

	Percent
Complaints from nonfarm neighbors on odors and noise	30.5
Takes productive agricultural land out of production	16.2
Price increases make land expensive for farming	4.8
Property revaluations raise taxes to farmers	10.5
Encourages enactment of ordinances detrimental to farming	3.8
Spoils the rural landscape	2.9
No effect	13.3
No answer reported	18.1
Total	100.0

[a]Based on 105 responses.

Services to new rural residents require increased outlay of public funds. These higher expenditures are generally underwritten through higher tax levies on all property owners, including farmers. About 10 percent of the respondents designated property revaluation as the principal effect of residential development along rural roads. The provision for assessments at agricultural use-value coupled with the prohibition on imposing special tax levies for sewer and water extensions on lands within an agricultural district provide some tax protection to farmers operating in areas of rural nonfarm development.

Residential development can affect the marketability of farmland. When asked if they had been approached by a prospective buyer to sell land for nonagricultural uses, about 45 percent of the respondents indicated "Yes" while nearly half reported "No." A few had been contacted but didn't know the buyer's intent.

Another phenomenon often associated with rural nonfarm development is the premature idling of land either through disinvestment in the farming

operation or in anticipation of speculative gains. About two out of five respondents indicated that farmland was available in the respondent's area which could provide a "satisfactory" economic return but which is not currently being used for farming. Slightly over 35 percent reported that no such land was available, and about 20 percent didn't know. Several volunteered comments as to why such land was currently being idled (Table 3). Mentioned most frequently was that, under current conditions, production on these lands is unprofitable. Some indicated that land is being idled by new owners not engaged in agriculture. In other cases, individuals have idled land while employed off the farm. Consequently, some land held by nonfarmers is not being farmed by the farmers who remain.

Table 3. Reasons Why Idled Land Suitable for Farming is Not Being Farmed[a]

	Percent
Currently unprofitable to bring into production	42.2
Land is owned by a nonfarmer	15.6
Better job opportunities off the farm	11.1
Farmers can't afford to buy	6.7
Owned by the State	2.2
Don't know	4.4
No response	17.8
Total	100.0

[a]Based on 45 responses.

Land-Use Policies and Programs

In addition to respondents' views of current conditions, they cited measures which, in their opinion, would improve and promote the economic viability of farming in their locality. Levels of property taxes and profit margins were of principal concern (Table 4). Property tax relief was mentioned by just over 30 percent. In a related question, one-third of the respondents indicated that they either had applied for use-value assessments or intended to apply. Another 45 percent reported they had not applied principally because (1) their current assessments are below assessments at market value, and there is no need to apply, and/or (2) they were unaware of the availability of use-value assessments.

Respondents did not specifically identify other means for improving the profitability of farming. Agricultural districts and exclusive zoning for agricultural uses were cited. About one-fourth didn't respond.

Table 4. Identification of Programs or Policies that Would Help Keep Farmland in Farming[a]

	Percent
Reduce real property taxes	30.5
Increase the profitability of farming	18.1
Formation of agricultural districts	11.4
Zoning for agricultural use only	9.5
Reduce government regulations	1.9
Eliminate special assessments for sewer and water systems	1.0
Other	1.9
No response	25.7
Total	100.0

[a]Based on 105 responses.

Agricultural District Program

If the district program is to be successful, individuals must not only be aware of the program but also have a working knowledge of its provisions. The majority of the respondents -- nearly three-fourths -- indicated being "somewhat familiar" or "familiar" with the program. However, about one-fifth reported being "not familiar." Among those with some familiarity, most learned of the program through the Cooperative Extension Service. Other farmers, magazines, newspapers, and town government meetings were also identified as sources of information.

In a further attempt to determine respondents' knowledge of the program, they were asked to specify the "strongest" and the "weakest" features of the district program. Many did not respond; others were uncertain and/or not familiar with the program (Table 5). Provisions for use-value assessments and, more generally, the thrust of helping existing farms stay in business were cited most often as the "strongest" features. About 10 percent viewed districts as discouraging nonfarm development in rural areas. Few commented on the "weakest" features of the program. The majority either indicated "don't know" or didn't answer the question.

Among reasons for participating in the district program, tax relief was mentioned by about 18 percent of the respondents (Table 6). Others felt the economic viability of farming was promoted. Eleven percent indicated they made no active decision to participate; they were simply included in a district. Among those having 50 percent or less of their owned land within a district, about a half indicated they would be interested in joining a

district or placing additional land within a district. Twenty percent said they were undecided, and about one-fourth indicated no interest in the program.

Table 5. Respondents' Views on the Strongest Features of the Agricultural District Program[a]

	Percent
Provisions for lower taxes through farmland use-value assessments	20.0
Discourages nonfarm development	9.5
Promotes the economic viability of existing farms	11.4
Provides more security for investments	2.9
Uncertain -- not that familiar with program	10.5
No response	45.7
Total	100.0

[a]Based on 105 responses.

Table 6. Farmers' Indications of Reasons to Participate in the Agricultural District Program[a]

	Percent
Help keep assessments on farmland at use-value levels	17.5
Promote the continuation of economically viable farms	16.2
Prohibits special assessments for sewer and water facilities	8.8
Limits the expansion of urban activities in agricultural areas	7.5
No decision was made relative to participation	11.2
No response	38.8
Total	100.0

[a]Based on responses from 80 farmers having at least 50 percent of their owned land being within an agricultural district.

Expected Effects of the District Program

The existence of an agricultural district is expected to provide encouragement and security for farm operators thereby generating positive impact on investment decisions. Respondents were asked if investments in capital improvements had been made since 1971, the year the Law was enacted, and to comment on investment plans for improvements in the next ten years. Around 40 percent reported investments since 1971; 40 percent had plans to make capital improvement investments within the next 10 years. About an equal percentage reported no investments and no planned investments.

Most respondents -- 80 percent -- both in and outside districts reported that the existence and operation of the program had not, to date, affected their investment and operating decisions (Hypothesis 1). The relatively few who answered "Yes" indicated that the program provided more security, was a factor in deciding to buy more land, and/or affected a decision to stay in farming.

Has the district program affected respondents' decisions to buy or sell farmland? Only about 7 percent responded "Yes" while close to one-half designated "No" (Hypothesis 2). About one-third neither bought nor sold farmland during the 1971-1977 period.

Land Use

Patterns of land use for 1968, 1972, and 1977 on 24,230 hectares or about 59,850 acres representing approximately nine percent of the land area in Erie County were studied (Table 7).6/ Crops and pasture comprised 48 percent of the area in 1968, declining to 46 percent in 1977.7/

Like many other parts of New York State, the study area contained inactive farmland.8/ This land use declined from 13 to 10 percent during the 1968-77 period. Forest, brushland and marshland represented a major land use increasing from 29 to 33 percent of the area studied over the 1968-77 period. For the most part, this increase represents natural growth over several years on former farmland. There can be a continuum involving transformations from

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6/ Erie County encompasses 677,376 acres [U.S. Department of Commerce, 1977].

7/ Land-use data developed for this study do not necessarily coicide with those from other sources. For example, the definition of a farm in the Census of Agriculture is based on acreage and value of farm products sold. Acreage reported in the Census includes all land owned or controlled through lease by the farm operator. Owned and/or leased land often includes land in forest, brush, and farmsteads.

8/ Inactive farmland is broadly defined as inactive agricultural land having no brush cover.

cropland to inactive agricultural land to brushland with movements back and forth through time. The appearance of brush and woody plants on former farmland, however, requires expenditures for land clearing before cropping can be resumed.

Table 7. Estimated Land Use of Study Areas, 1968-77[a]

Land Use[b]	Total			Change	
	1968	1972	1977	1968-72	1972-77
			Hectares[c]		
Cropland	9,970	9,726	8,858	-244	-868
Vineyards and orchards	637	679	955	42	276
Permanent pasture	1,059	1,058	1,153	- 1	95
Inactive agriculture	3,237	3,096	2,434	-141	-662
Forest, brushland and marshes	7,082	7,100	7,880	18	780
Farmsteads	231	231	246	--	15
Rural residences	357	372	473	15	101
Urban and residential strip development	927	1,030	1,342	103	312
All other uses	729	937	888	208	- 49
Total	24,229	24,229	24,229		
			Percent[d]		
Cropland	41	40	37	-2	- 9
Vineyards and orchards	3	3	4	7	41
Permanent pasture	4	4	5	--	9
Inactive agriculture	13	13	10	-4	-21
Forest, brushland and marshes	29	29	33	--	11
Farmsteads	1	1	1	--	6
Rural residences	2	2	2	4	27
Urban and residential strip development	4	4	6	11	30
All other uses	3	4	4	29	- 5
Total	100	100	100		

[a]Based on a sampling density of 20 points per square mile. See Appendix 2.

[b]See Appendix 2 for definitions of land-use categories.

[c]1 hectare = 2.47 acres.

[d]Totals may not add due to rounding.

Urban and rural residential uses represented a small but increasing fraction of the land area studied (Table 7). These uses amounted to six percent of the total land area in 1968. Substantial increases in these uses were recorded for the 1972-77 period, the years after which agricultural districts were created. Such increases are associated with sizeable population growth even though total population declined in Erie County between 1970 and 1977 [U.S. Department of Commerce, 1979].

Based on identified land-use patterns, uses within agricultural districts are not entirely comparable with those in "contrast" areas (Table 8). The latter are relatively more urban. In 1968, six percent of all land was devoted to urban and rural residential use in the areas selected as "contrasts". Similarly, a smaller fraction of all land was used for farming purposes -- 44 percent compared with 54 percent in districted areas. Also, land in vineyards and orchards was relatively more important in the "contrast" areas while proportionately more pasture was identified in districted areas.

Keeping these differences in mind, some comparabilities in rates of change in land use are evident, particularly in cropland and in vineyards and orchards. Both areas -- "contrasts" and districts -- were typified by decreases in cropland and increases in vineyards and orchards. Both areas had declines in inactive agricultural land over the 1968-77 period with considerably higher reductions during 1972-77 in "contrast" areas than in areas in agricultural districts.

Substantial increases -- 45 percent -- in rural residential uses occurred during the 1972-77 period in districted areas (Table 8). Yet, only three percent of total area was in this use in 1977. Urban and residential strip development uses increased by only five percent in the districted areas from 1972-77 as compared with a 42 percent increase in the "contrast" areas. Considerable population growth occurred in districted areas and in a pattern characterized by more scatteration than that which occurred in the "contrast" areas. Consequently, population growth in the districted areas was associated with a substantial increase in area used for rural residences, excluding residences in housing developments which are included in urban uses.

Hypotheses were developed on the premise that districts exert no particular influence on the short-term -- up to five years in this study -- pattern of rural land use. This view can be refined by examining land use in areas with markedly different levels of urbanization and by closer scrutiny of land-use changes examined thus far.

Area I (see Figure 1) is more influenced by population growth than Area II. In 1968, Area I contained an average of 32 nonfarm, single family dwelling units per square mile while Area II had only 3 units per square mile (Table 9). Moreover, housing desities increased through 1977, particularly in Area I where 45 units per square mile were identified as compared to 8 in Area II. Based on field inspections, Area I was far more heavily oriented towards dairy enterprises than Area II. In addition to dairying, production of specialty crops -- fruits, vegetables and nursery crops -- was relatively more important in Area II. Because of these differences, the sample land-use data were tabulated for Area I and Area II to permit examination of land-use changes within each area.

Table 8. Estimated Land Use for Agricultural Districts and for "Contrast" Areas, 1968-77[a]

Land Use[b]	"Contrast" areas					Agricultural districts				
	Total			Change		Total			Change	
	1968	1972	1977	1968-72	1972-77	1968	1972	1977	1968-72	1972-77
	Hectares[c]									
Cropland	5,034	4,861	4,311	-173	-550	4,936	4,865	4,547	-71	-318
Vineyards and orchards	529	571	807	42	236	108	108	148	--	40
Permanent pasture	400	395	490	- 5	95	659	663	663	4	--
Inactive agriculture	2,170	2,120	1,500	- 50	-620	1,067	976	934	-91	- 42
Forest, brushland, and marshes	3,912	3,898	4,457	- 14	559	3,170	3,202	3,423	32	221
Farmsteads	160	160	160	--	--	71	71	86	--	15
Rural residences	184	184	200	--	16	173	188	273	15	85
Urban and residential strip development	682	713	1,010	31	297	245	317	332	72	15
All other uses	541	710	677	169	- 33	188	227	211	39	- 16
Total	13,612	13,612	13,612			10,617	10,617	10,617		
	Percent[d]									
Cropland	37	36	32	-3	-11	47	46	43	-1	-7
Vineyards and orchards	4	4	6	8	41	1	1	1	--	37
Permanent pasture	3	3	4	-1	24	6	6	6	1	--
Inactive agriculture	16	16	11	-2	-29	10	9	9	-9	-4
Forest, brushland, and marshes	29	29	33	--	14	30	30	32	1	7
Farmsteads	1	1	1	--	--	--	1	1	--	21
Rural residences	1	1	1	--	9	2	2	3	9	45
Urban and residential strip development	5	5	7	5	42	2	3	3	29	5
All other uses	4	5	5	31	- 5	2	2	2	21	-7
Total	100	100	100			100	100	100		

[a]Based on a sampling density of 20 points per square mile. See Appendix 2.

[b]See Appendix 2 for definitions of land-use categories.

[c]1 hectare = 2.47 acres.

[d]Totals may not add due to rounding.

Table 9. Nonfarm Single Family Housing Densities for Study Areas I and II, 1968-77

Year	Area I		Area II	
	Houses	Houses per square mile	Houses	Houses per square mile
1968	1,933	32	101	3
1972	2,407	39	236	7
1977	2,833	45	252	8

Net Changes in Acreage of Active Cropland

Acreage in active cropland varies through time as, for example, land previously idled or in pasture is converted to cropland and/or cropland is shifted to less intensive agricultural uses or to nonagricultural purposes. Are these shifts in cropland acreage significantly associated with the presence of an agricultural district?

Estimated changes in cropland acreage during 1968-72 and 1972-77 for the more densely populated Area I are in Tables 10-12. This area of Erie County realized net cropland losses in both the districted and "contrast" portions throughout the 1968-77 study period. Additions to cropland were principally from previously inactive agricultural land (Table 10). The volume of activated cropland increased over the 1972-77 span compared with the 1968-72 period. This observation reinforces results of an earlier study which showed that farm operators increased cropland acreage to take advantage of post-1972 increases in farm commodity prices [Orsini].

Considering conversions to cropland in Area I, the Chi-square value for changes in the 1968-72 period is statistically significant at the 95 percent level (Table 10). This result suggests that conversions were not independent of location of conversions during the predistrict period. During 1972-77 when the district has been formed, gross additions to cropland during the 1972-77 period were independent of the boundaries of an agricultural district at the 95 percent level of confidence, and there is no basis to conclude that conversions to cropland within and outside the district are significantly different (Hypothesis 3). No "district effect" was identified.

Conversions to cropland were more than offset by a shift from active cropland to less intensive agricultural uses, particularly inactive agriculture, during the study periods (Table 11). Based on estimated Chi-square values, there were no significant differences in these conversions between the districted and "contrast" areas at conventional levels of significance -- 90 percent or higher (Hypothesis 4).

Table 10. Gross Conversions to Cropland in Area I, 1968-72 and 1972-77, by Prior Land Use[a]

Prior land use	Total	Districted	"Contrast"
	Sample points converted to cropland, 1968-72		
1968 land use			
Permanent pasture	12	9	3
Inactive agriculture	26	8	18
Forest, brushland and marshes	0	0	0
Total	38	17	21
	$X^2 = 6.49$*		
	Sample points converted to cropland, 1972-77		
1972 land use			
Permanent pasture	12	8	4
Inactive agriculture	39	23	16
Forest, brushland, and marshes	15	6	9
Total	66	37	29
	$X^2 = 2.25$		

[a]One sample point equals 14.5 hectares.

*Significant at the 95 percent level where $X^2_{.95(2)} = 5.99$.

Identical tests of significance were applied to conversions of cropland to nonagricultural uses (Table 12). For both time periods, the hypothesis that the district exerts no short-term effect on the volume of cropland converted to nonagricultural uses in Area I was rejected (Hypothesis 5). That is, significantly different conversions occurred in the districted area as compared with the "contrast" area. Considerably more cropland was converted to urban-industrial uses in the "contrast" area during the 1972-77 period than in the district.

Table 11. Gross Conversions from Cropland to Less Intensive Agricultural Uses in Area I, 1968-72 and 1972-77[a]

New land use	Total	Districted	"Contrast"
	Sample points converted from cropland 1968-72		
1972 land use			
Permanent pasture	5	3	2
Inactive agriculture	33	15	18
Forest, brushland and marshes	1	0	1
Total	39	18	21
	$X^2 = 1.25$		
	Sample points converted from cropland, 1972-77		
1977 land use			
Permanent pasture	23	14	9
Inactive agriculture	48	22	26
Forest, brushland and marshes	14	7	7
Total	85	43	42
	$X^2 = 1.41$		

[a]One sample point equals 14.5 hectares.

Gross changes in cropland in the less densely populated Area II are in Tables 13 and 14. As in Area I, a net decrease in cropland area occurred during the 1968-77 study period. Marked increases in conversions to cropland after 1972 were offset by even larger reductions due to idling and conversions to pasture and to forest and brushland. Conversions of cropland to nonagricultural uses were nearly nonexistent.

Considering conversions to cropland in Area II, a statistically significant association was found between the absence or presence of an agricultural district and the prior use of land converted to cropland during the 1972-77 period (Table 13). That is, a "district effect" on these land-use changes was observed (Hypothesis 3). The association stemmed from relatively greater conversion of pasture land to cropland in the districted area while inactive agricultural land was the largest source of new cropland in the "contrast" area during the 1972-77 period. Conversions of cropland to less intensive agricultural uses during the 1968-72 and 1972-77 periods were independent of location relative to an agricultural district (Table 14).

Table 12. Gross Conversions from Cropland to Nonagricultural Uses in Area I, 1968-72 and 1972-77[a]

New land use	Total	Districted	"Contrast"
	Sample points converted from cropland 1968-72		
1972 land use			
Urban and residential strip development	1	1	0
Rural residences	2	2	0
Other	4	0	4
Total	7	3	4
	$X^2 = 7.0$*		
	Sample points converted from cropland, 1972-77		
1977 land use			
Urban and residential strip development	11	1	10
Rural residences	1	1	0
Other	1	1	0
Total	13	3	10
	$X^2 = 7.87$*		

[a]One sample point equals 14.5 hectares.

*Significant at the 95 percent level where $X^2_{.95(2)} = 5.99$.

Net Changes in the Volume of Inactive Agricultural Land

Land recently used for agriculture but now inactive is a common phenomenon in New York. As noted earlier, some observers suggest that idling near urbanizing areas occurs due to speculative holding of land for potential urban development. Idling could stem from disinvestment by farmers expecting that the demand for nonagricultural use of such land will generate the most remunerative use of this land.

Inactive land is of particular interest in and near the urban fringe. Idling suggests that immediate economic opportunities are being forgone. Idling is often one stage of use that leads to an eventual nonfarm use. The formation of an agricultural district could exert a significant influence on decisions to use idle agricultural land.

Table 13. Gross Conversions to Cropland in Area II, 1968-72 and 1972-77, by Prior Land Use[a]

Prior Land Use	Total	Districted	"Contrast"
	Sample points converted to cropland 1968-72		
1968 land use			
Permanent pasture	1	1	0
Inactive agriculture	16	7	9
Forest, brushland and marshes	0	0	0
Total	17	8	9
	$X^2 = 1.20$		
	Sample points converted to cropland 1972-77		
1972 land use			
Permanent pasture	15	10	5
Inactive agriculture	19	5	14
Forest, brushland and marshes	6	3	3
Total	40	18	14
	$X^2 = 11.59$*		

[a]One sample point equals 13.6 hectares.

*Significant at the 95 percent level where $X^2_{.95(2)} = 5.99$.

This premise was tested by examining gross reductions in the volume of idle agricultural land within districts and respective "contrast" areas (Tables 15 and 16). Sharp contrasts emerge between Areas I and II. Recall that Area I is densely populated relative to Area II.

In Area I, substantial conversions from idle land to cropland and, to a lesser extent, pasture occurred during the 1968-72 and 1972-77 periods. Relatively more activation for cropping purposes was evident in the "contrast" area during 1968-72 as compared to the district but the converse was observed during 1972-77 and subsequent to formation of the agricultural district. Further, considerably more conversion of inactive agricultural land to forest and brushland and to urban uses was observed during 1972-77 in the "contrast" area. The Chi-square statistic is statistically significant at the 95 percent level for the 1972-77 period. This provides support for the contention that formation of a district impacts the use of idle

Table 14. Gross Conversions from Cropland to Less Intensive Agricultural Uses in Area II, 1968-72 and 1972-77[a]

New land use	Total	Districted	"Contrast"
	Sample points converted from cropland 1968-72		
1972 land use			
Permanent pasture	9	6	3
Inactive agriculture	15	4	11
Forest, brushland and marshes	0	0	0
Total	24	10	14
	$X^2 = 3.70$		
	Sample points converted from cropland 1972-77		
1977 land use			
Permanent pasture	17	11	6
Inactive agriculture	29	15	14
Forest, brushland and marshes	3	2	1
Total	49	28	21
	$X^2 = 1.44$		

[a]One sample point equals 13.6 hectares. $X^2_{.95(2)} = 5.99$.

farmland. Reductions in inactive agricultural land within the district -- 1972 to 1977 -- were principally associated with conversions to farming uses, that is, cropland and pasture. Similar reductions in the "contrast" area during this period were dominated by conversions to woodland.

Decreases in the volume of previously inactive agricultural land in Area II were similar for the 1968-72 and 1972-77 periods (Table 16). These decreases -- both within and outside the district -- were principally due to conversions to cropland. No significant difference in the conversion pattern within the district and "contrast" areas was noted at the 95 percent level of statistical significance.

Table 15. Gross Conversions from Inactive Agriculture to Specified Land Use in Area I, 1968-72 and 1972-77[a]

New land use	Total	Districted	"Contrast"
	Sample points converted from inactive agriculture 1968-72		
1972 land use			
Cropland	26	8	18
Permanent pasture	2	2	0
Forest, brushland and marshes	8	6	2
Rural residences	0	0	0
Urban and residential strip development	1	0	1
Other	2	0	2
Total	39	16	23
	$X^2 = 9.91$		
	Sample points converted from inactive agriculture 1972-77		
1977 land use			
Cropland	39	23	16
Permanent pasture	8	5	3
Forest, brushland and marshes	53	13	40
Rural residences	1	0	1
Urban and residential strip development	5	0	5
Other	1	0	1
Total	107	41	66
	$X^2 = 17.63$*		

[a]One sample point equals 14.5 hectares.

*Significant at the 95 percent level where $X^2_{.95(5)} = 11.1$.

Table 16. Gross Conversions from Inactive Agriculture to Specified Land Use in Area II, 1968-72 and 1972-77[a]

New land use	Total	Districted	"Contrast"
	Sample points converted from inactive agriculture 1968-72		
1972 land use			
Cropland	16	7	9
Permanent pasture	4	4	0
Forest, brushland and marshes	2	2	0
Rural residences	0	0	0
Urban and residential strip development	0	0	0
Other	1	1	0
Total	23	14	9
	$X^2 = 6.46$		
	Sample points converted from inactive agriculture 1972-77		
1977 land use			
Cropland	19	5	14
Permanent pasture	3	2	1
Forest, brushland and marshes	3	0	3
Rural residences	0	0	0
Urban and residential strip development	0	0	0
Other	2	1	1
Total	27	8	19
	$X^2 = 3.73$		

[a]One sample point equals 13.6 hectares. $X^2_{.95(5)} = 11.1$.

New Residential Development

Conversions of cropland to residential and urban uses were small, particularly in Area II. Significant differences in conversions between districted and "contrast" areas were noted in Area I (Table 12). Residential and urban use represent a small fraction of the total landscape. Consequently, the possibilities for sampling error are relatively large when estimating the incidence of these land-use categories (Appendix 2). Since the pattern of single-family residential development was a particular concern in this study, all new residential construction during the 1968-72 and 1972-77 time periods was enumerated by examining air photos and conducting field inspections. The prior use of land on which residential units were constructed was recorded (Tables 17 and 18).

Table 17. Prior Land Uses for Newly Constructed Residential Units, Area I, 1968-72 and 1972-77

Prior land use	Districted		"Contrast"	
	1968-72	1972-77	1968-72	1972-77
	Number			
Farm[a]	85	128	53	65
Inactive agriculture	31	28	42	72
Forest, brushland and marshes	74	56	53	24
All other[b]	77	20	59	33
Total	267	232	207	194
	Percent			
Farm	32	55	26	34
Inactive agriculture	12	12	20	37
Forest, brushland and marshes	28	24	26	12
All other	29	9	29	17
Total	100	100	100	100

[a]Includes cropland and pasture.

[b]Includes land in urban use.

Table 18. Prior Land Uses for Newly Constructed Residential Units, Area II, 1968-72 and 1972-77

Prior land use	Districted		"Contrast"	
	1968-72	1972-77	1968-72	1972-77
	Number			
Farm[a]	53	5	27	3
Inactive agriculture	9	2	8	1
Forest, brushland and marshes	21	1	17	2
All other[b]	--	--	--	2
Total	83	8	52	8
	Percent			
Farm	64	62	52	37
Inactive agriculture	11	25	15	13
Forest, brushland and marshes	25	13	33	25
All other	--	--	--	25
Total	100	100	100	100

[a]Includes cropland and pasture.

[b]Includes land in urban use.

Creation of an agricultural district in Area I did not appear to influence the level of new residential construction; 232 new dwellings were constructed subsequent to formation of the district (Table 17). In comparison, 267 units were constructed during 1968-72. This downturn in construction activity, however, was comparable to the percentage decrease in the number of new residential units in the "contrast" area. Similar comparisons can be made in Area II, the less densely populated area. Formation of an agricultural district was not associated with a differential impact on the rate of new residential construction (Table 18).

Residential development cut across the entire land-use spectrum but drew heavily on land recently used for farming, particularly in Area II. In Area I, 55 percent of all new residential construction on districted land during the 1972-77 period was situated on land that was actively farmed in 1972. In comparison, 34 percent of all new construction in the "contrast" area occurred on actively farmed land. Another 12 percent of all new construction (28 dwellings) within the district occurred on inactive agricultural land. In Area II, only eight dwellings were constructed in the districted area between 1972 and 1977. Five of these were situated on sites that were actively farmed in 1972.

Summary and Implications

The New York Legislature seeks to alter expectations about the future of the State's agriculture with principally voluntary efforts to create agricultural districts -- geographic areas of 500 or more acres where farming is recognized as the principal land use. The Agricultural District Law couples property tax relief via use-value farmland assessments with prohibitions on ordinances which would unreasonably regulate farm practices or structures, modifications in administrative procedures used by state agencies, revisions in eminent domain procedures, and limitations on the imposition of certain assessments and levies for town improvements.

This study deals with an analysis of the Law's effects on land utilization. Incentives and disincentives which confront participating landowners were reviewed. The attitudes of farm operators and patterns of rural land use were studied in portions of Erie County, New York. The county is part of the Buffalo SMSA and contains the city of Buffalo.

Few discernable disincentives to participation are included in the Law. Participants do not incur any new obligations on the use of their land. Monetary incentives for participating owners in the short- to intermediate-term are largely through property tax relief. Tax relief under the Law's use-value assessment provision, however, occurs on a limited scale in New York because farm property is currently assessed at only a fraction of its full value. However, revaluation of real property according to market value is underway.

To sharpen an understanding of the Law's likely impacts on the use of rural land, a group of farmers were asked to comment on the status of farming in their locality and the effects that an agricultural district might have on their future investment and operating decisions. Patterns of land use for 1968, 1972, and 1977 were studied in detail for nearly 60,000 acres (9 percent) of land within the county.

Farm operators generally viewed problems associated with obtaining adequate farm labor as a primary factor influencing their future investment and operating decisions. Other concerns were difficulties in obtaining control of farmland either through purchase or rental. These considerations -- obtaining labor and land inputs -- generally fall outside the purview of the district program. There was no consistent view that conflicts with nonfarm neighbors and misunderstandings on the part of public officials on the nature of farming were considered to be a major factor influencing the future of the farm business. However, a majority of all farmers interviewed thought that residential development near their farm could have detrimental effects upon the farm business. About 30 percent mentioned complaints over and/or pressure for ordinances to control odors and noises from routine farm operations. Others were concerned about the direct loss of farmland (16 percent), future property tax increases (10 percent) and escalating land values (5 percent). About 13 percent thought that some residential development nearby would not have any deleterious effects on their business.

When asked about measures that should be taken to keep farmland in a farm use, about one-third cited property tax relief. Current revaluation may increase farmland assessments and impose additional tax burdens on

farmers. One-fifth of all farmers contacted simply said that higher profits would be most effective in retaining farmland in a farm use. About 20 percent thought agricultural districts or zoning would be helpful.

A majority of the farmers interviewed indicated that agricultural districts had not yet affected decisions related to the operation of their farm business. This result applied to decisions to invest in land improvements and to decisions to buy or sell land.

The opinion that a district has yet had no effect on investment or operating decisions was not contradicted by a detailed analysis of land use over the 1972-77 period. Two districts were paired with "contrast" areas. Patterns of cropland conversion were similar in districted and "contrast" areas. Net decreases in crop acreage and net increases in the amount of idle land were noted within the boundaries of agricultural districts as well as considerable new residential development. Most land on which new construction occurred had recently been used for farming.

The study results have a direct but limited bearing on the emerging regional and national debate over public measures to retain land in a farm use. Limitations of the study are threefold: (1) a single county was studied, (2) a principal analytical thrust was "with district" and "without district" comparisons of land use within the vicinity of a large city, and (3) area studied had been districted for only four years. The first factor means that results of the case study cannot necessarily be extrapolated to other parts of the state. Collaborating evidence gathered in other geographic situations would be useful. The second factor was imposed on the case study so that changes in land use within districts could be compared with those occurring in relatively similar but undistricted areas. However, all factors which impinge on or influence land-use decisions cannot be controlled with this approach. Furthermore, comparisons of this kind are increasingly difficult to arrange because the districting effort in New York has been so intense in recent years that virtually no viable farming area of the State remains untouched by the Law.

Finally, there is no firm basis for judging how quickly agricultural districts will affect the pattern of land utilization in New York. A study after four years may be too soon. Perhaps the entire eight-year life of a district needs to expire before the issue can be adequately studied. Timing is critical because the New York Law is oriented toward creating situations which tend to increase the viability of farm businesses. Increases (and decreases) in farm viability probably occur slowly because investments in long-lived farm improvements are involved.

These limitations, considered together, make it clear that this study is at best an interim assessment of the impact of the New York Law. A definitive assessment will require further study. Cases in other parts of the State will need to be examined. As the agricultural district program matures, additional studies can be done in situations where districts have been in place for several years.

The primary implication of this interim assessment is that the creation of an agricultural district generates few, if any, measurable short-term impacts on the use of rural land. The land-use incentives and disincentives

afforded landowners under the agricultural district approach are not necessarily different from those who control land outside an agricultural district. The Law does not include any specific goals for the conservation or protection of farmland and owners who participate do not incur any new obligations on the use of their land. Financial incentives to modify decisions owners make on land use can be negligible in many cases. Results obtained in this study support the argument that the Law's influence on the pattern of land use in rural New York will be modest in the near term.

It has been apparent for some time, however, that citizens and public officials in New York have a long-term commitment to arrangements which will foster wise management of the farmland resource. The merit of the New York approach as an instrument of public policy will ultimately turn upon an assessment of any longer term land-use impacts generated by the Law. This study does not rule out the possibility of the Law exerting long-term effects on land use but provides some guidance on how they might be ascertained.

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APPENDIX 1

Mail Survey Design, Procedures, and Questionnaire

To date, most information regarding operation of the Agricultural District Program centers on the location and size of the districts. No systematic attempt has been made to obtain information on individuals' attitudes toward and experiences with agricultural districts. This study is a pilot effort to examine the feasibility of obtaining such information through mail surveys.

Mail Survey Design

The universe for the pilot survey was defined as all farmers having farm headquarters within four towns (townships) in Erie County, New York. These towns -- Brant, Eden, Evans, and North Collins -- are all located within a 25-mile radius of Buffalo (see Figure 1). A portion of each town lies within an agricultural district. Farming is an important activity in each town. Because of nearness to Buffalo, active competition for agricultural land for nonagricultural purposes occurs in these areas.

Names of respondents were obtained from lists of farmers compiled and maintained by the Agricultural Stabilization and Conservation Service (ASCS) and the Cooperative Extension Service in Erie County. The survey design was a complete enumeration by mail of respondents identified in the universe. After pretesting the survey instrument through personal interviews and mailings, the decision was made that adequate information could be obtained through inquiries by mail while avoiding the substantially higher costs of completing the survey through personal interview. One mail-back to respondents from the initial mailing was made. Of the 290 owners in the universe, 145 returned questionnaires of which 105 were sufficiently complete so as to be usable. A copy of the questionnaire is included in this Appendix.

A comparison of the profiles of respondents with nonrespondents is in Table 1-1. Since the mail survey was conducted on a pilot basis, the results do not support inferences or generalizations to Erie County or to a larger area. By confining the study to these four towns, proportionately more respondents were within agricultural districts. The first district was formed in April 1973, the most recent one in 1977. Since attitudes and experiences would likely be affected through time, the differential length of being within an agricultural district will likely be a factor confounding examination of the survey results.

Those responding in the survey would be expected to feel relatively more strongly towards or against agricultural districts. Location within a district, however, does not necessarily imply a positive attitude or experience toward the program. Some farmers are in districts by choice; others are in because a district was formed and they were included without any overt action on their part.

Critique of Questionnaire and Survey Procedure Questionnaire Format

1. A survey of respondents' attitudes toward the Agricultural District Program and indications of the effects of the program on operating and investment decisions is predicated on the assumption that respondents have knowledge or familiarity with the Law's provisions and operation of the program. A substantial number of respondents in this survey

Table 1-1. Comparison of Selected Characteristics of Respondents and Nonrespondents by Frequency of Response[a]

	Respondents	Nonrespondents
Location (town)		
Brant, Evans	45	37
North Collins	19	43
Eden	26	29
Time spent farming		
Full-time	12	12
Part-time	57	54
Acres in cropland		
Under 50	18	22
59-99	20	39
100-199	28	31
200-499	16	12
Over 500	4	4
Type of farm		
Dairy	30	51
Beef	4	1
Vineyards	5	5
Vegetables - vineyards	13	14
Vegetables	7	11
Hay - grain	8	10
Nursery stock	4	1
Other	16	16

[a]Based on information available from Erie County, ASCS office.

were either not familiar or only somewhat familiar with the program. This lack of familiarity likely affected their answers to questions and the survey response rate.

2. In ex post examinations of investment and operating decisions, the influence of features of the Agricultural District Program may have been relatively unimportant compared to all other factors entering into the decision-making matrix. Difficulties arise in attempting to segregate sources of influence. For some, longer-term investment plans would be tentative. In this context, the influence of the Agricultural District Program on investment and resource-use decisions at various points in time is difficult to assess.

3. Several questions were open-ended in that respondents could not choose among specific answers. An example of this question is "What, if anything do you think should be done to keep farmland in farming?" This type of question minimizes "leading" the respondent's thinking and response to the question. The format also provides opportunities or, in effect, encourages respondents to reveal their thoughts. Several, however, did not complete questions of this type. Questions with specified answers -- Yes, No, check or rank the following -- would seem to improve the response rates for those questions and for the survey, in general.

4. Difficulties arise in identifying universes for use in formulating survey designs. Surveys other than pilot efforts should incorporate sampling based on probability distributions so that data reliable at predetermined levels of statistical significance will be generated. If appropriate within the context of the survey design, nonrespondent bias evaluations should also be conducted.

Identification Code _____

ALL INFORMATION WILL BE KEPT STRICTLY CONFIDENTIAL AND WILL BE USED FOR OUR RESEARCH PURPOSES ONLY

This report is authorized by the Secretary of Agriculture. While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive and accurate.
OMB# 40-S77028.

A. FARM BUSINESS INDICATORS

1. ABOUT HOW MANY ACRES DO YOU OWN?

Total: ___none ___1-49 ac. ___50-99 ac. ___100-199 ac. ___200 ac. and up

Cropland: ___none ___1-49 ac. ___50-99 ac. ___100-199 ac. ___200 ac. and up

2. ABOUT HOW MANY ACRES DO YOU RENT FROM OTHERS?

Total: ___none ___1-49 ac. ___50-99 ac. ___100-199 ac. ___200 ac. and up

Cropland: ___none ___1-49 ac. ___50-99 ac. ___100-199 ac. ___200 ac. and up

3. ABOUT HOW MANY ACRES DO YOU RENT TO OTHERS?

Total: ___none ___1-49 ac. ___50-99 ac. ___100-199 ac. ___200 ac. and up

Cropland: ___none ___1-49 ac. ___50-99 ac. ___100-199 ac. ___200 ac. and up

4. WHAT PERCENTAGE OF THE LAND YOU OPERATE IS LOCATED WITHIN AN AGRICULTURAL DISTRICT?

owned land ___% rented land ___%

5. HOW MUCH TIME DO YOU SPEND FARMING?

___ full time

___ part time (up to 50% off-farm employment). Other occupation_____

_____

___ spare time (full time occupation off farm). Other occupation_____

_____

___ retired

6. PLEASE FILL IN THE BLANKS FOR YOUR MAJOR ENTERPRISES

dairy: _____ (number) milk cows

poultry: _____ (number) birds

field crops: _____ (acres) of _____ (list most important crop)

fruit or vegetables: _____ (acres) of _____ (list most important crop)

vineyards: _____ (grape-acres)

7. HOW MANY YEARS HAVE YOU FARMED? _____

B. WE'D LIKE TO KNOW HOW YOU FEEL ABOUT SOME LAND-USE PROBLEMS AND POLICIES.

1. WHAT, IF ANYTHING DO YOU THINK SHOULD BE DONE TO KEEP FARMLAND IN FARMING?

_____

_____

_____

_____

2. UNDER CURRENT COST/PRICE CONDITIONS, PROPERTY TAX RELIEF IS NECESSARY IF FARMLAND IS TO BE KEPT IN FARMING.

___agree ___disagree ___undecided

Comments: _____

_____

_____

3. WHAT EFFECT DOES RESIDIENTIAL DEVELOPMENT ALONG RURAL ROADS HAVE ON ACTIVE FARMING?

_____

_____

_____

_____

4. IS THERE FARMLAND IN YOUR AREA WHICH COULD PROVIDE A SATISFACTORY ECONOMIC RETURN, BUT IS NOT NOW BEING USED FOR FARMING?

___yes ___no ___don't know

If yes, why do you think this is not being used for farming? _____

_____

_____

_____

_____

5. BEGINNING IN 1969, FARMERS WERE ALLOWED TO APPLY FOR A 5-YEAR PROPERTY TAX EXEMPTION ON NEW FARM CAPITAL IMPROVEMENTS. HAVE YOU APPLIED FOR THE 5-YEAR EXEMPTION?

___yes ___no ___no capital improvements since 1969

If no, please discuss your reasons for not applying _____

_____

_____

_____

_____

6. BEGINNING IN 1971, FARMERS WERE ALLOWED TO APPLY FOR ASSESSMENTS ON LAND AT "FARM USE-VALUE" RATHER THAN BE ASSESSED AT MARKET VALUE. HAVE YOU OR DO YOU INTEND TO APPLY FOR ASSESSMENTS AT "USE-VALUE"?

____yes ____no

Comments: _____

_____

_____

_____

C. THE AGRICULTURAL DISTRICTS PROGRAM

1. ARE YOU FAMILIAR WITH THE AGRICULTURAL DISTRICTS PROGRAM IN NEW YORK STATE?

   no___ somewhat___ familiar___ very familiar___

2. DID YOU HEAR ABOUT AGRICULTURAL DISTRICTS THROUGH ANY OF THE FOLLOWING SOURCES? (check as many as applicable)

   ___haven't heard about agricultural districts

   ___magazines

   ___newspapers

   ___other farmers

   ___Cooperative Extension Service

   ___Soil Conservation Service

   ___others not covered above? Please specify _____

3. DID YOU ATTEND ANY INFORMATIONAL MEETINGS OR PUBLIC HEARINGS ON AGRICULTURAL DISTRICTS IN YOUR TOWN OR COUNTY?

   ___yes ___no

4. DID YOU PARTICIPATE IN ANY OTHER ACTIVITIES RELATED TO THE FORMATION OF AGRICULTURAL DISTRICTS? IF SO, WHAT? (CIRCULATING PETITIONS, ORGANIZING INFORMATIONAL MEETINGS, ETC.)

   _____

   _____

   _____

5. CAN YOU RECALL WHAT FACTORS WERE MOST SIGNIFICANT IN YOUR DECISION TO PARTICIPATE OR NOT TO PARTICIPATE IN THE AGRICULTURAL DISTRICTS PROGRAM? (ENTER THE MOST IMPORTANT REASON FIRST)

   _____

   _____

   _____

   _____

   _____

   _____

6. IF YOUR LAND IS NOT NOW IN AN AGRICULTURAL DISTRICT, WOULD YOU JOIN IF A DISTRICT IS PROPOSED AT A LATER DATE?

___yes ___no ___undecided

Comments: _____

_____

_____

7. HAVE YOU MADE ANY OF THE FOLLOWING CAPITAL IMPROVEMENTS TO YOUR LAND SINCE 1971?

			APPROXIMATE COSTS
yes___	no___	farm buildings, silos, etc. (exclude residences)	_____
yes___	no___	orchards and vines	_____
yes___	no___	tiles and ditches	_____
yes___	no___	fences	_____

8. DO YOU PLAN TO MAKE ANY INVESTMENTS IN THE FOLLOWING WITHIN THE NEXT TEN YEARS?

			APPROXIMATE COSTS
yes___	no___	farm buildings, silos, etc. (exclude residences)	_____
yes___	no___	orchards and vines	_____
yes___	no___	tiles and ditches	_____
yes___	no___	fences	_____

9. HAS THE AGRICULTURAL DISTRICT PROGRAM AFFECTED YOUR INVESTMENT AND OPERATING DECISIONS IN ANY WAY?

___yes ___no

How? _____

_____

_____

How might it in the future? _____

_____

10. WHAT DO YOU THINK ARE THE STRONGEST FEATURES OF THE AGRICULTURAL DISTRICT PROGRAM?

_____

_____

11. WHAT DO YOU THINK ARE THE WEAKEST FEATURES OF THE AGRICULTURAL DISTRICT PROGRAM?

_____

_____

_____

12. ASSUMING SATISFACTORY COST/PRICE RELATIONSHIPS, HOW WOULD YOU RANK THE FOLLOWING AS POSSIBLE PROBLEMS AFFECTING YOUR FUTURE INVESTMENT AND OPERATING DECISIONS? (1=most important, 2=next most important,... 7= least important)

___conflicts with nonfarm neighbors

___difficulty in renting land to enlarge farm operations

___difficulty in buying land to enlarge farm operations

___difficulty in obtaining farm labor

___difficulty in obtaining sufficient credit and capital

___difficulty in obtaining supplies and services

___a lack of understanding among local government officials of the importance and special problems of commercial farming in your community

Anything else not covered above? _____

_____

13. SINCE 1971, HAVE YOU EVER BEEN APPROACHED BY SOMEONE WANTING TO PURCHASE SOME OF YOUR LAND FOR NONFARM PURPOSES?

___yes ___no ___approached but don't know buyer's intent

14. SINCE 1971, HAVE YOU SOLD ANY OF YOUR FARMLAND?

___yes, for farm use___ for nonfarm use___

___no

15. SINCE 1971, HAVE YOU PURCHASED ANY FARMLAND WHICH YOU STILL OWN?

year: _____ acres: _____ current use: _____

16. DID THE AGRICULTURAL DISTRICT PROGRAM IN ANY WAY AFFECT YOUR DECISION(S) TO BUY OR SELL FARMLAND?

___yes ___no ___didn't buy or sell

If yes, please describe_____

_____

APPENDIX 2

Selection of Study Areas and Procedures for Generating Land-Use Data

A major aspect of this study was comparisons of land use within agricultural districts and in "contrast" areas, that is, nondistricted areas. The comparisons were directed toward the hypothesis that the provisions of the Agricultural District Law, as implemented through the operation of agricultural districts, have resulted in a differential impact on land uses within a district as compared with those in a "contrast" area. The district and "contrast" areas are basically subjected to the same exogenous factors, such as weather, costs and returns for agriucltural commodities and "urbanizing" influences as reflected in the demand for land for nonagricultural uses.

The effects of the district program on land-use decisions are expected to be most evident within districts that were formed several years ago, are within the vicinity of urbanizing areas, and where farming is a major activity. Consequently, districts in the State were screened to locate those which (1) were ratified by county legislatures prior to 1974, (2) are situated within a 25-mile radius of an urban area with a 1970 population of 50,000 or more, and (3) have exhibited a high level of past and current agricultural activity. Forty-five districts located in 16 counties met these criteria (Table 2-1). These districts comprise more than 223,000 acres but only five percent of all acreage in districts at the time of this study. After reviewing previous studies, consulting with other researchers, field inspection and inventorying available data, Erie County with five districts within a 25-mile radius of Buffalo was selected for analysis.

Table 2-1. Agricultural Districts Formed by December 1974 and Located Within 25 Miles of an Urban Place with a 1970 Population of 50,000 or more

County	Agricultural Districts	
	Number	Acreage
Broome	1	893
Columbia	1	16,000
Cortland	1	8,593
Dutchess	3	10,806
Erie	5	48,262
Greene	1	2,223
Herkimer	1	3,311
Livingston	3	12,641
Madison	1	2,700
Monroe	1	10,000
Onieda	8	27,215
Onondaga	3	9,906
Ontario	2	8,758
Orange	8	33,971
Tioga	1	4,815
Ulster	6	23,527
Total	45	223,621

Source: Agricultural Resources Commission and the 1970 Census of Population.

The Study Area

Among the five candidate districts in Erie County, selections for in-depth analyses were made after extensive field inspection, reference to soil maps and farm viability maps, advice from county planners, Cooperative Extension agents, and local USDA-SCS and USDA-ASCS personnel, and the availability of "contrast" areas. A number of problems exist in attempting to identify a "contrast" area. Ideally, the district and "contrast" areas would be identical with respect, for example, to soils, size and type of farms, and rural infrastructure but differing only in that one area is in an agricultural district while the other is not. That homogeneity is impossible. The problem then is to try to identify areas of as much comparability as possible. Districts were paired with "contrast" areas after taking into account homogeneity in climate, topography, mix of agricultural enterprises, pattern of land use, access and distance to downtown Buffalo, and so on. Based on these preliminary analyses, Districts 4 and 5 were selected for analyses. District 4 contains just over 8,000 acres located in portions of the Towns of Boston, Eden, and North Collins. District 5 comprises the entire Town of Marilla (about 17,200 acres). Areas selected as the "contrast" units were also specified in Figure 1. The boundaries of the "contrast" area for District 4 coincide with another agricultural district but one that was formed relatively recently. The "contrast" area for District 5 was defined as the area contiguous to the Town of Marilla on the north and west and approximately the size of District 5.

Time Frames

In attempting to estimate the impact of the Law on land-use changes, estimates of land uses "before" and "after" formation of districts are necessary. A statewide study of land use, the Land Use and Natural Resources Inventory (LUNR), based on air photo interpretation was conducted in 1968. Air photos were also available for 1972. Consequently, base data on land uses in the district and "contrast" areas were available for 1968 and 1972, the predistrict period. Land uses in 1977 were recorded by field inspection and through personal interview.1/

Land-use Categories

To ensure comparability among the estimated 1968, 1972, and 1977 land uses, the categories and definitions of lands used in the 1968 LUNR study were adopted (Table 2-2). Since the geographical scope of the study reported here is relatively modest, several of the closely related LUNR categories were grouped as follows:

1/ Differences in data collection procedures for the 1977 period (on-site inspection rather than interpretations of air photos) could lead to different interpretations of land use. Since 1977 air photos are not available, however, the magnitude of this error is not known.

Cropland	Residential strip development
Vineyards and orchards	Urban areas
Permanent pasture	Other
Forests, brushland, marshes	Rural residences
Inactive agriculture	Farmsteads

Using the land-use groupings identified above and the 1968 and 1972 air photos, land uses were inventoried for the district and "contrast" areas. The time and resources required for a 1977 inventory of land use through field inspection were prohibitive. Rather, land-use determinations were made for sample points. Different sampling densities were considered for two randomly chosen sample air photos, one each within the district and "contrast" areas. As an example of the results of this exploratory analysis, comparisons of estimated land uses associated with different sampling densities in Area I are summarized in Table 2-3. The base or frame of reference is the "inventory" coverage, the 100 percent sampling. Trade-offs exist between cost, as reflected in sampling density, and the reliability of estimates. More sample points per unit of analysis tend to increase reliability of the estimates; costs increase too. The converse also holds. The greater the incidence of any particular land use, the more feasible to estimate that land use through a sampling scheme. Consequently, principal focus was on major land uses, such as cropland and wooded areas in choosing the sampling rate.

Based on comparative analyses of percentage areas in various land-use categories associated with differing sampling densities as applied to sample photos, increasing the sampling rate from 10 to 20 points per square mile generally improved estimates of land use, as compared with the "inventory" levels. Doubling the rate from 20 to 40 points per square mile did not seem justifiable, particularly in terms of the cost of completing a 1977 update of land uses for sample points through field inspection. Consequently, a sampling density of 20 points per square mile was selected for this study.

Using air photos for 1968 and 1972 and a field inspection in 1977, land uses were observed and recorded for each sample point. In those situations where topography and/or vegetation precluded seeing the sample points, 1977 information on land use was obtained through interviews with landowners. The number of sample points associated with each land use were tabulated. Summaries of the sample point data were then expanded to the study area levels. These expansion factors were derived by dividing total land area for the "district" and "contrast" areas by the respective number of sample points for the area. Land-use estimates were thus obtained for about 24,230 hectares representing nine percent of total land area in Erie County.

Land uses at the sample points can be identified in, for example, 1982 for additional data on land-use changes within the study area.

Table 2-2. Designation of Land-use Categories Used in the 1968 Land Use and Natural Resources Inventory (LUNR), New York

	LUNR	INCLUDES:
CROPLAND	Ah	Commercial horticulture or floriculture, also seed and sod farms
	Ac	Cultural field and forage crops, grains and dry beans
	At	Produce and truck crops
	Ay	Specialty farms, including mink, pheasant and game farms, duck, aquatic agriculture and horse farms
ORCHARDS VINEYARDS	Ao	Orchards
	Av	Vineyards
PERMANENT PASTURE	Ap	Permanent pasture
FOREST BRUSHLAND MARSHES	Fc	Brushland, with trees less than 30 feet high or less than 50 percent density of ground cover
	Fn	Forest
	Fp	Forest plantations
	Wb	Marshes, shrub wetlands and bogs
	Ww	Wooded wetlands; bogs with trees over 30 feet high and more than 50 percent density of ground cover
INACTIVE AGRICULTURE	Ai	Inactive agricultural land with no brush cover
URBAN	Ui	Inactive urban areas (vacant lots)
	Rl	Low density residential with frontage between 100 and 200 feet
	Rm	Medium density residential with frontage between 50 and 100 feet
	Rh	High density residential with frontage less than 50 feet, also multiple family dwellings and most trailer parks
	Rr	Rural hamlet, population of less than 1000; with some form of commercial, industrial, public or outdoor recreation development

Table 2-2 continued

	LUNR	INCLUDES:
URBAN (cont.)	Cu	Urban center (downtown)
	Cc	Shopping center
	Cs	Commercial strip development, roadside commercial activities
	Il	Light manufacturing (those working with processed materials)
	Ih	Heavy manufacturing (those working with raw materials)
	P	Public or semipublic land
	Th	Roadway interchange and terminal services for limited access highways
	Ta	All airport facilities
	Tr	Rail-oriented facilities
	Tb	Barge canal facilities
	Tt	Areas of facilities involved in transport of water, gas, oil, electricity and airwave communication
RESIDENTIAL STRIP DEVELOPMENT	Rs	Residential strip development with housing on one side of the road only, with less than one-third of it in commercial units
OTHER	Uc	Areas under construction
	Rc	Residential estates with lots less than 3 acres
	Wn	Natural ponds or lakes greater than 1 acre in area
	Wc	Artificial ponds, lakes and reservoirs greater than 1 acre in area
	Ws	Streams and rivers more than 100 feet in width
	Rc	Labor camps
	Es	Stone quarries
	Eg	Sand and gravel pits
	Eu	Underground mining: oil, gas, salt, etc.
	Or	Outdoor recreation areas
	Nr	Exposed rock areas
	Ns	Exposed sand

Table 2-2 continued

	LUNR	INCLUDES:
OTHER (cont.)	Rk	Residential shoreline development with less than 4 units per 1000 feet
	Cr	Commercial resorts with associated outdoor recreational facilities
RURAL RESIDENCES	x	Home associated with inactive farm
	X	Housing with frontage of less than 250 feet
	*	Trailers not associated with trailer parks or residential densities
FARMSTEADS	d	Dairy farm headquarters
	e	Poultry farm headquarters

Table 2-3. Comparisons of Estimated Land Uses as Percentages of Total Area by Specified Sampling Densities and Land-use Categories for Sample Photo from District Region of Area I, 1972

Sample points (per square mile)	Cropland	Permanent pasture	Vineyards Orchards	Forest Brushland Marshes	Inactive Agriculture	Urban[a]	Other[a,b]	Total
				Percent				
10 points	20.8	11.9	1.5	46.0	11.9	1.6	6.4	100
20 points	29.2	8.2	0.8	42.6	11.2	1.6	6.4	100
40 points	34.0	7.6	0.4	40.4	9.8	1.6	6.4	100
Inventory	34.2	5.9	0.1	43.2	8.6	1.6	6.4	100

[a]Areas in these categories were measured. Consequently, no sample points were drawn and the estimated area is invariant among differing sampling densities.

[b]Includes area in rural residences, farmsteads, residential strip development, and other.