

PATTERNS OF AGRICULTURAL DISTRICT
FORMATION IN COLUMBIA COUNTY, NEW YORK

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An increasing number of states and localities are concerned with patterns of rural land use. Although the Nation has an immense land area, the competition for rural land has increased. The competition is most apparent in proximity to larger central cities because population growth has been concentrated on the urban fringe since World War II.^{1/} However, improvements in transportation and more interest in rural living have increased the possibility of urban encroachment on farmland located some distance from larger cities.

Legislative efforts to influence patterns of farmland use near cities have largely been confined to preferential property tax treatment for farmland. More than thirty states have amended real property tax codes to allow for use-value farmland assessments (Gloude-mans). A lower assessment gives a farm owner a lower property tax bill. A lower property tax bill might possibly enhance the possibilities for keeping land in a farm use.

The New York legislature in 1965 and 1966 passed legislation to provide for use-value assessments on farmland (Conklin and Bryant). In each case, however, the legislation was vetoed by the Governor.

A relatively new approach to the problem of rural land use in New York became law in 1971 (Bryant and Conklin). The law's intent is to encourage commercial farming. The legislation combines the concept of use-value farmland assessment with some elements of zoning and allows landowners to petition county legislatures to form agricultural districts.

Efforts to create an agricultural district are initiated at the local level by farmers, approved by the county government, and certified by state

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^{1/}In New York State, for example, 78 percent of the 1950-1970 population increase occurred in the urban fringe (Bills).

agencies. Major provisions which apply to all districts created by county legislatures are:

1. Use-value assessments on farmland. Included is a rollback feature in the event of transfer of property for non-agricultural use.^{2/}
2. Limitation on local regulation. Local jurisdictions of government are constrained from enacting ordinances that unreasonably interfere with farm construction or practices.
3. State agencies are required to modify regulations and procedures to support active farming in agricultural districts.
4. Modification of the right to eminent domain. State agencies and public benefit corporations must look to alternatives outside of agricultural districts.
5. Limitation of special district's powers to impose benefit assessments or ad valorem levies for such services as sewer, water or non-farm drainage.

By August 1976, 316 districts had been proposed state-wide and 277 districts had been formed (Agricultural Resources Commission). Only five district proposals have been rejected and the remainder were under active consideration by county legislatures.

Although landowners and county legislatures have shown intense interest in the law, there is a limited basis for describing patterns of district formation. The Agricultural Resources Commission (ARC), attached to the New York State Department of Agriculture and Markets, periodically prepares district status reports (Agricultural Resources Commission). The reports include information on district acreage and a count of farms in each district. Bills has described demographic trends in towns where districts have been formed.

The purpose of this study is to expand this limited information base by assembling a variety of data which can be used to describe and assess the characteristics of farm resources afforded protection under the Agricultural District Law. These descriptions and assessments are required to set the stage for detailed studies of the law's impact or influence on land use decisions.

Procedures and Sources of Data

Limited time and funds confined this study to a single New York county.

^{2/} Owners outside a district may also receive tax relief by annually signing an eight-year commitment to keep their land in a farm use. A monetary penalty is levied if the commitment is breached.

The county was selected as the unit of observation because county legislatures ultimately decide to accept or reject an agricultural district proposal. Counties are also a useful unit because several sources of comparative data are obtainable at the county level. Data for town jurisdictions have limited value, on the other hand, because agricultural districts often cross town lines but rarely include entire towns (Bills).

Columbia County was selected for study. Columbia County exhibits important similarities with other rural counties in New York and landowners have made extensive efforts to create agricultural districts. By August 1976, ten districts involving 212,774 acres (about 52 percent of the total land area in Columbia County) had been ratified by the county legislature -- Table 1. Six districts encompassing 134,574 acres had been created when this study was undertaken. These six districts are the focus of this report.^{3/}

Table 1.--Agricultural Districts in Columbia County, August 1976

District Number	Date of Formation	District Acreage
1	November, 1973	52,000
2	November, 1973	16,000
3	May, 1974	18,777
4	June, 1974	43,197
5	July, 1975	700
6	July, 1975	3,900
7	April, 1976	5,800
8	April, 1976	9,000
9	August, 1976	4,400
10	August, 1976	59,000
Total		212,774

Source: New York State Agricultural Resources Commission.

Information Sources

This study relied entirely upon secondary sources of data. The New York State Agricultural Resource Commission (ARC) reviews of applications

^{3/}The procedures used to describe districts in this report could be extended to the remaining agricultural districts if sufficient time and funds were available.

for the creation of a district. The reviews were assembled for each district in Columbia County. The review includes a brief assessment of soil resources used for farming; a general determination of farm status based on number and types of farms; estimates of dollar outputs, and mix of farm commodities produced; outward signs of a competitive agriculture as indicated by recent capital investments; the dollars and employment generated by farm production in the area of the proposed district are also estimated.

Comparable maps of district boundaries in the study area were obtained by transferring copies of district maps (on file with ARC) to a work map at a scale of 1:125,000 or 1/2 inch to a mile. The transfers were required because available district maps are of varying scale. Maps at the 1:125,000 scale were of a manageable size and were thought to provide for reasonable accuracy.

Information on the location of farm livestock in 1975 was obtained from the Soil Conservation Service (SCS) of the U.S. Department of Agriculture. SCS field staff located concentrations of livestock -- dairy livestock are especially important in Columbia County -- on watershed maps at a scale of 1:125,000.

Other information assembled in this study relied on prior work on agricultural regions (Conklin and Hardy, Hardy) and of farm viability in New York State (Conklin, Conklin and Linton). Maps showing the boundaries of agricultural regions, viable farming areas and agricultural districts were overlaid to allow comparisons.

U.S. Census data were assembled for the study area to determine population trends. Information on farm production was drawn from the Census of Agriculture.

Data extracted from the New York State Land Use and Natural Resources Inventory (LUNR) was used to describe land use in Columbia County (Rao). LUNR land use data for 1968 were retrieved from computer storage and arranged into fifty-one use categories.

Information on soils for classification purposes was provided by the Columbia County Soil Survey (U.S. Department of Agriculture, 1929), an interpretive description of soils of New York State (Olson) and Soil Survey Interpretations USDA-SCS (U.S. Department of Agriculture, 1967). Preliminary work by Cline and Marshall on soil associations in New York was also assembled.

The Study Area

Columbia County is located in the Hudson River Basin. The county is situated on the east bank of the Hudson River and runs easterly to the Massachusetts and Connecticut state lines. Bordered on the north by Rensselaer County, Columbia County extends south to Dutchess County. The total land area amounts

to 412,160 acres.

The study area lies approximately 20 miles south of the Albany-Schenectady-Troy Standard Metropolitan Statistical Area (SMSA), and roughly 100 miles north of the New York City SMSA.^{4/} The study area is within 30 minutes driving time from Albany and less than two hours from New York City. Additionally, adjacent Dutchess County was classified as a SMSA in 1971. With a 639 square mile area, Columbia County's 1970 population of 51,519 results in a density of 80 persons per square mile (Larson). About 17 percent of the population is urban. The entire urban population (8,950 persons) resides in the city of Hudson.

Bills classified the county as under "light urban" influence in comparison with other counties in New York State. In another report, Bryant classified the county as semi-suburban. These classifications reflect the fact that Columbia County is in the vicinity of heavy concentrations of population yet remains rural by conventional measures.

Although Columbia County can be thought of as relatively rural, major transportation routes provide good access to large population centers. Linkage of the Taconic Parkway, the Massachusetts Turnpike and I-87 (the route to Albany) puts suburban pressure on the northern portion of the county. The Taconic Parkway is a major route to New York City but use is restricted to passenger car transportation. Columbia County is also accessible from the New York State Thruway via the Rip Van Winkle Bridge across the Hudson River near the city of Hudson. Another bridge located south of Catskill allows access to southern Columbia County.

It seems important to briefly reflect on land use and development as it relates to Columbia County agriculture in a historical perspective. Columbia County has experienced historical development patterns that are similar to other counties in the Hudson Basin. Patterns of land ownership developed during the pre-Revolutionary War era and gave rise to a system of leasehold tenure. The system of ownership of huge tracts of land by few and the parcelling out of lands to tenants led to periodic outbursts of what are known as the anti-rent wars. Ellis aptly summarizes the incidence of revolt in Columbia County:

For over a century fierce agrarian revolts marred the history of Columbia County. Probably no other section of the United States has witnessed a struggle of such duration between landlords and tenants. Insecurity of tenure and burdensome obligations led to bitter hatred and periodic revolts. In 1755 and again in 1766 the tenants rose only to be forcibly put down. In the 1790's hostility to the landlords resulted in riots and the killing of Sheriff Hogeboom. In the 1940's the anti-rent lecturers fanned the smoldering resentment into flames once more. It was only

^{4/}A Standard Metropolitan Statistical Area always includes a city with a population of 50,000 or more which constitutes the central city. A SMSA also includes contiguous counties when the economic and social relationships between the central and contiguous counties meet specified criteria of metropolitan character.

after 1850 that the tenants of the Van Rensselaers and the Livingstons succeeded in throwing off the claims of the landlords to the soil (p. 32).

The development of agriculture was affected by the leasehold system. On one hand, the system allowed settlers to farm land with little or no investment. On the other hand, much farming was extractive and because of the tenure system many farmers were reluctant to invest in fertilization and other emerging conservation measures when the rich humus soil ran out or eroded.

Agriculture development in Columbia County has also been substantially influenced by locational factors. The county has enjoyed ready access to outside markets as a result of the Hudson River, development of an extensive rail system, and the present highway system.

Wheat and rye were early cash crops for settlers in Columbia County. Potatoes were also an important cash crop through the middle of the 19th Century. Extensive fruit and vegetable production also developed in the western portion of the county. Dairy farming developed during the middle of the 19th Century as demand rose for milk and its products from the growing Metropolitan Areas of New York and New England.

Currently, agriculture in Columbia County is diversified. Patterns of production are typical of the entire state. Vegetable crops, grains, and fruit are important sources of farm income but livestock is the principal source of farm income (Table 2). Sales of livestock and livestock products account for 68 percent of all farm products sold in Columbia County. Livestock sales, in turn, largely stem from the sale of dairy products. Poultry and poultry products make up 6 percent of all receipts and a few farms with beef, sheep and hog enterprises are scattered throughout the county. One quarter of all farm receipts in Columbia County result from sales of cash crops (Table 2).

Table 2.--Value of Farm Products Sold for New York State and Columbia County, 1974

Product	New York		Columbia County	
	Dol. (1,000)	Pct.	Dol. (1,000)	Pct.
Crops	443,881	31	7,671	25
Forest Products	3,830	*	19	*
Poultry and Poultry Products	107,504	7	1,856	6
Livestock and Livestock Products	881,598	61	20,841	68
Total	1,436,812	100	30,388	100

*Less than one percent.

Source: U.S. Bureau of the Census.

Patterns of farmland use also bear some similarity to those found in other parts of New York State. A substantial amount of land has been withdrawn from farming during the past two decades (Table 3). Percentage decreases have ranged up to 14 percent between Census years over the 1954-1974 period. The reduction in farm units has been more rapid, however, and average farm size has consequently increased. The average Columbia County farm is 236 acres in size.

Table 3.--Farms, Land in Farms and Acres per Farm for New York State and Columbia County, 1954-74

Census Year	New York			Columbia County			
	Farms	Land in Farms	Acres per Farm	Farms	Land in Farms	Acres per Farm	
	No.	Acres	Acres	No.	Acres	Acres	
1954	105,714	15,070,832	142	1,440	242,711	168	
1959	82,354	13,526,411	164	1,235	231,315	187	
1964	66,510	12,275,500	184	524	203,041	220	
1969	51,909	10,148,359	195	768	174,390	227	
1974 ^{1/}	46,288	9,456,331	204	653	154,083	236	
			<u>Percent Change</u>				
1954-59	-22	-10	15	-14	- 5	11	
1959-64	-19	- 9	12	-25	-12	18	
1964-69	-22	-17	6	-17	-14	3	
1969-74	-11	- 7	5	-15	-12	4	

^{1/} Preliminary.

Source: U.S. Bureau of the Census.

Farm Viability

Agricultural district legislation in New York is closely tied to the concept of viable agricultural land. The term viability is defined in the New York law as "farmland, highly suitable for production" which "will continue to be economically feasible" for agricultural use (Bryant and Conklin). The legislation is oriented toward land which is highly suited to commercial farm use.

Conklin and Linton have studied the viability of farmland in New York State. Their work was published in 1969. Using farm businesses as units of observation, four classifications were defined: high viability, moderate

viability, low viability and nonfarm. Map units for each class were identified by field inspection for each county in New York State. Their work shows the distribution of acreage where, in their judgement, the future prospects for farm businesses seem to be good, fair, poor, or nonexistent.

Their mapping efforts in Columbia County are summarized in Table 4. They provide a useful point of departure for a description of the resources located in Columbia County's Agricultural Districts.

Table 4.--Farm Viability Classifications in Columbia County

Viability Classifications	Acres	Percent
High	159,490	39
Moderate	80,050	19
Low	60,270	15
Nonfarm	113,182	27
Total	412,992	100

Source: Compiled from Conklin and Linton (1969).

Based on grid counts of mapping units developed previously by Conklin and Linton, approximately 299,800 acres (73 percent of Columbia County's total land area) had prospects for continued farm use in 1968.^{5/} Just under 40 percent of all land is judged to be highly viable. The prospects for continued commercial farm use are thought to be excellent on highly viable land. Another fifth of the total land mass is judged to be of moderate viability. Finally, slightly more than 60,000 acres currently used for farming have low viability and may well be removed from a farm use in the future.

Map units for these acreages were superimposed upon a map of agricultural districts to affect a comparison of the viability classifications with the boundaries of agricultural districts. Results are presented in Table 5.

^{5/}Because of differences in procedures used, the acreage assigned to farm viability classes by Conklin and Linton does not correspond to the farm acreage reported in the five-year Census of Agriculture. The viability maps present a generalized picture of complex patterns of land use and tend to exceed the acreage reported in the Census of Agriculture (Conklin and Linton, p. 2).

Table 5.—Farm Viability Classifications Within the Boundaries of Formed Agricultural Districts, December 31, 1975

Viability Classifications	Columbia County		Agricultural Districts	
	Acres	Pct.	Acres	Pct.
High	159,490	39	73,104	54
Moderate	80,050	19	34,088	25
Low	60,270	15	13,054	10
Nonfarm	113,182	27	14,328	11
Total	412,992	100	134,574	100

Efforts to form agricultural districts in Columbia County through December, 1975 have encompassed acreage that covers the entire spectrum of farm viability. Slightly more than 73,000 acres, 54 percent of all districted acreage, is highly viable for farm purposes. Farms falling in this category appear to be capable of supporting viable farm businesses throughout the foreseeable future (Conklin and Linton, p. 1).

Twenty-five percent of the acreage in formed districts falls in the classification of moderate viability. This classification has been defined to include areas that have land resources that respond to skilled management and capital resources but it was estimated that only two-thirds of the farms found there will pass into the next generation as full-time farm units (Conklin and Linton).

Low viability areas were described to include farms judged to be obsolete for full-time commercial farming under modern farming conditions. Efforts to form districts through December 1975 include about 13,000 acres that fall in the low viability category.

Finally, the Columbia County legislature has approved districts with contiguous boundaries. Since farm uses of land are often co-mingled with non-farm uses, a substantial amount of land not used by farmers also falls within the boundaries of a district. Based on Conklin's classification, about 14,300 acres in districts is not used for farm purposes (Table 5). Land not used for farming takes up 11 percent of the acreage studied.

Land Uses

Comparisons of districted acreage with map units of viable farmland underscore the fact that land within the boundaries of agricultural districts in

Columbia County is used for a variety of purposes. A clearer picture emerges from photo-interpretive data on land use for 1968. Acreage devoted to various agricultural land use categories in Columbia County is listed in Table 6. County-wide, roughly 112,000 acres were actively used for crops and pasture in 1968.^{6/} Another 22,600 acres were classified as inactive agricultural land.^{7/} Upwards of 60 percent of all land in Columbia County is in a forest use. Residential, commercial and industrial uses take up a very small fraction of all land in the study area.

Table 6.--Major Land Uses for Columbia County and Agricultural Districts, 1968

Land Use Category	Columbia County		Agricultural Districts	
	Acres	Pct. ^{1/}	Acres	Pct.
Active Agricultural Land	111,942	27	58,680	43
Inactive	22,983	5	8,715	6
Agricultural	22,627	5	8,710	6
Urban Intensive	356	*	5	*
Forest	237,866	57	51,386	38
Residential	6,056	1	1,347	1
Commercial	766	*	158	*
Manufacturing	410	*	99	*
Water and Wetland Areas	24,074	6	10,014	7
All other Uses	8,895	2	4,995	4
Total Land Area	412,992	100	135,574	100

^{1/}Totals may not add due to rounding.

* Less than one percent.

Source: New York State Land Use and Natural Resources Inventory.

^{6/}These data do not necessarily conflict with Table 5 which reports that just under 300,000 acres in Columbia County are in a farm use. Differences stem from the fact that the unit of observation in Table 5 is a farm business. Virtually all farms in Columbia County include forestland, wetland and the like along with acreage devoted to active crop and pasture use.

^{7/}Favorable commodity prices in the 1970's have encouraged cropland activation in many parts of New York State (see Orsini). Data for 1968 on inactive cropland may overestimate the amount of inactive agricultural land in Columbia County.

Land uses found within the boundaries of agricultural districts, on the other hand, reflect a stronger orientation toward farming. Well over 40 percent of all districted land was actively used for crops or pasture in 1968. Another 8,700 acres of land previously used for agricultural purposes was inactive at that time (Table 6). Land with forest cover amounts to well over 51,000 acres in the districts studied. This acreage amounts to 38 percent of all acreage in the districts.

Residential, commercial and industrial land uses are also included within the boundaries of agricultural districts. Although some of the residential land is used by commercial farmers, these uses are proportionate to the total county acreage devoted to these more intensive residential, commercial and industrial land areas.

Concentrations of Livestock

Farming in the study area is importantly oriented toward livestock. Production of dairy products is by far the most important agricultural endeavor carried out in Columbia County. Concentrations of dairy livestock within the county have been identified by maps provided by the Soil Conservation Service. County-wide totals were obtained for several herd sizes. The data allow one to gauge the extent to which livestock enterprises are afforded protection under the Agricultural District Law.

There are 173 dairy herds within the boundaries of the districts included in the study (Table 7). Little variation was found among herds of differing sizes. Large dairy farmers and smaller dairy farmers appear to have an equal amount of interest in the law.

Table 7.--Number of Dairy Herds Located Within the Boundaries of A Formed Agricultural District, Dec. 31, 1975

Herd Size	Columbia County		Agricultural Districts 1-6	
	No.	Pct. ^{1/}	No.	Pct.
Under 30	25	9	16	9
31 - 60	71	27	43	25
61 - 90	88	33	62	36
91 - 120	33	12	21	12
121 - 160	30	11	22	13
161 or more	20	7	9	5
Total	267	100	173	100

^{1/}Totals may not add due to rounding.

Source: U.S. Department of Agriculture, Soil Conservation Service.

A limited number of beef herds are located within the county. Only four operations have 90 or more livestock (Table 8). The largest is located within the boundaries of an agricultural district.

Table 8.--Number of Beef Herds Located Within the Boundaries of Formed Agricultural Districts, December 31, 1975

Herd Size	Columbia County	Agricultural Districts 1-6
	No.	No.
Under 30	13	9
31 - 60	8	4
61 - 90	0	0
91 - 120	1	0
121 - 160	2	0
161 or more	1	1
Total	25	14

Source: U.S. Department of Agriculture, Soil Conservation Service.

Major Soil Associations

The study area does not have a modern soils map. The last complete soil survey of Columbia County was published in 1929 (U.S. Department of Agriculture, 1929). Many soils have been reclassified since that time. A recent study by Cline and Marshall, as yet unpublished, allows updated information. Cline and Marshall have organized individual soil series by grouping them into associations. Soil series which predominate in each association have been identified. Each association was characterized on the basis of slope, drainage, stoniness, and shallowness.

Grid counts of acreages falling into each soil association found in the study area are shown in Table 9. Cline and Marshall placed soils found in Columbia County into eight major soil associations. Of these, the Nassau Bernardston association predominates. This association accounts for 35 percent of all soils found in the county. Over one-fifth of Columbia County's total land area falls in the Bernardston (Pittstown) Nassau association (Table 9).

Districts formed in Columbia County, on the other hand, encompass relatively large amounts of soils which fall in the Nellis Copake, Rhinebeck Hudson, and Hoosic Riverhead associations. These associations, relative to others found in the study area, appear to have fewer limitations for farm use.

Table 9.--Soil Association Acreages Located Within the Boundaries of Formed Agricultural Districts, December 31, 1975

Soil Association	County Total		Agricultural Districts	
	Acres	Pct.	Acres	Pct.
Nellis Copake	32,329	8	24,566	76
Nassau Bernardston	145,481	35	31,760	22
Rhinebeck Hudson	44,849	11	19,508	43
Nassau Rock Outcrop	28,533	7	1,913	7
Hoosic Riverhead	45,176	11	20,356	45
Bernardston Hoosic	23,556	6	8,139	35
Bernardston (Pittstown) Nassau	89,649	22	28,532	32
Empeyville-Worth very stony	3,419	*	0	0
Total	412,992	100	134,574	132

* Less than one percent.

Source: Cline and Marshall Soil Associations 1975-76 (unpublished).

Soil association mapping units allow a generalized description of soils found within the boundaries of agricultural districts -- see Table 10. Overall, well over 40,000 acres of all soils are on slopes that exceed 15 percent. Steep slopes can limit the use of modern farm machinery. Fourteen percent of all soils may have farming limitations that stem from relatively poor water drainage. Approximately 34,900 acres are on shallow soils which may also involve limitations for farm use.

Table 10.--Selected Characteristics of Soils Included in Agricultural Districts, Columbia County, December 1975

Agricultural District	Total		Over 15% Slope		Poor Drainage or Wetter Soils		Shallow Soils	
	Acres	Pct.	Acres	Pct.	Acres	Pct.	Acres	Pct.
No. 1	52,000	100	18,286	35	3,371	6	18,971	23
No. 2	16,000	100	2,761	17	5,517	34	310	2
No. 3	18,777	100	5,226	28	2,554	14	4,265	23
No. 4	43,197	100	13,070	30	6,336	15	10,394	24
No. 5	700	100	175	25	385	55	0	0
No. 6	3,900	100	1,124	29	510	13	958	24
Total	134,574	100	40,642	30	18,673	14	34,898	26

Source: Adapted from Cline and Marshall.

Summary and Conclusions

State and localities are increasingly concerned with patterns of rural land use. In 1971, the New York legislature authorized the creation of agricultural districts and gave farmland owners the option of applying for use-value farmland assessments. The intent of the law is to encourage commercial farming.

Landowners have shown intense interest in the law. Statewide, 277 districts have been created since 1971. Because the law has been in place for a relatively short time, little is known about the characteristics of resources afforded protection under the agricultural district law.

The purpose of this study was to expand the limited information base by describing resources within the boundaries of agricultural districts in Columbia County, New York. Six districts encompassing more than 135,000 acres were studied.

Data summarizing the results of previous studies on farm viability, patterns of land use, concentrations of livestock and characteristics of soils were assembled for purposes of comparison. The descriptions help set the stage for future evaluations of the law's effects on resource use.

Contiguous district boundaries have been drawn by the Columbia County legislature. Consequently, widely varying land uses have been afforded protection under the law. Based on previous studies of farm viability, only a fraction -- some 54 percent of all land in the districts studied -- appear to have good prospects for continuing support of commercial farm businesses. At the other extreme, one percent of all districted land studied is now used for intensive residential, commercial and industrial purposes. Between these extremes are substantial acreages -- about 45 percent of the districted acreage included in this study -- which are currently supporting farm businesses judged to be of low or moderate viability and land in such extensive uses as wetlands, forest and brush. The law's impact upon land use decisions related to these lands needs to be the subject of further inquiry. The descriptive data assembled in this study help sharpen the focus of future research on these impacts.

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