

# Land for Growing Food in Connecticut

A REPORT TO THE GENERAL ASSEMBLY, 1977

Paul E. Waggoner, Donald A. Tuttle, and David E. Hill

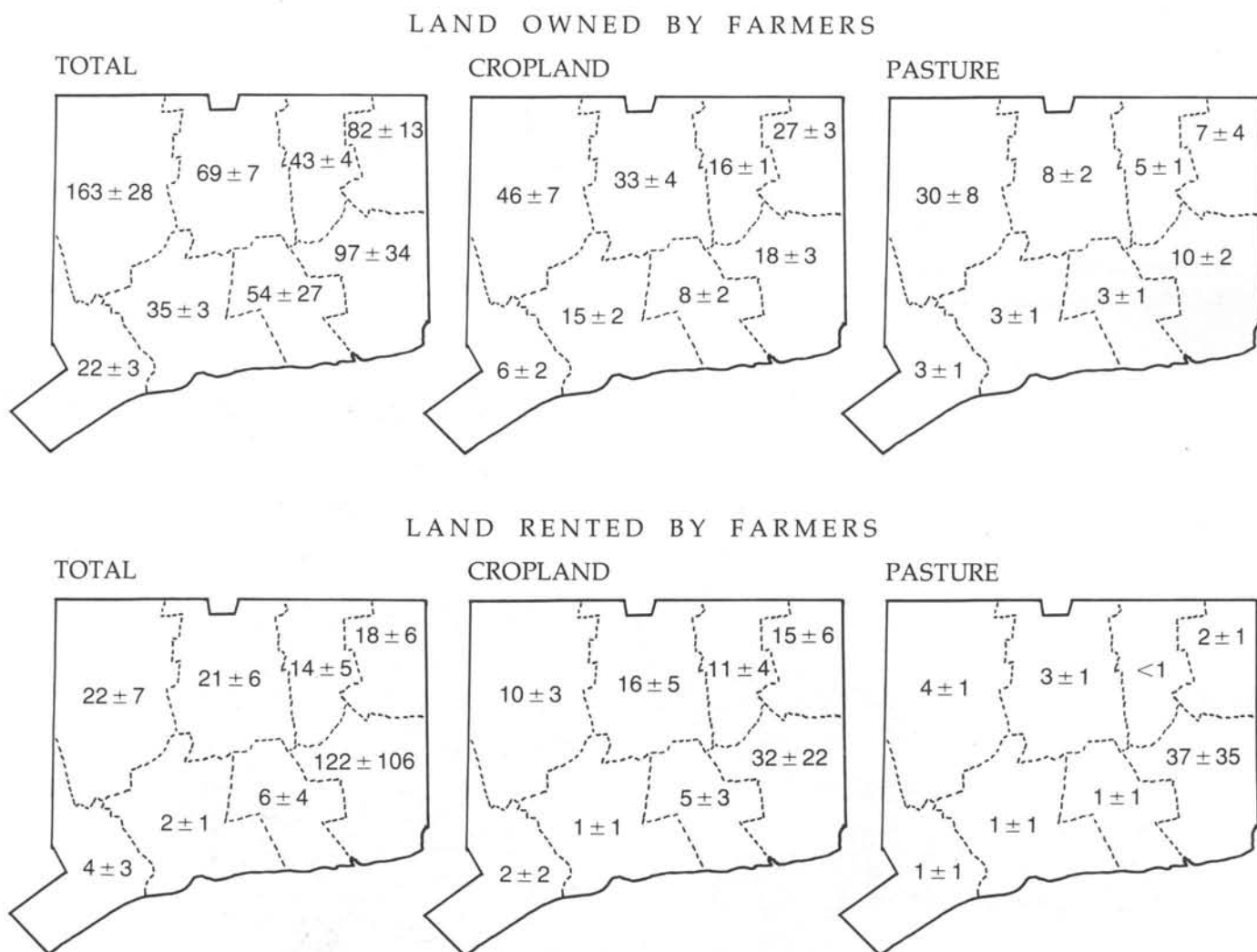
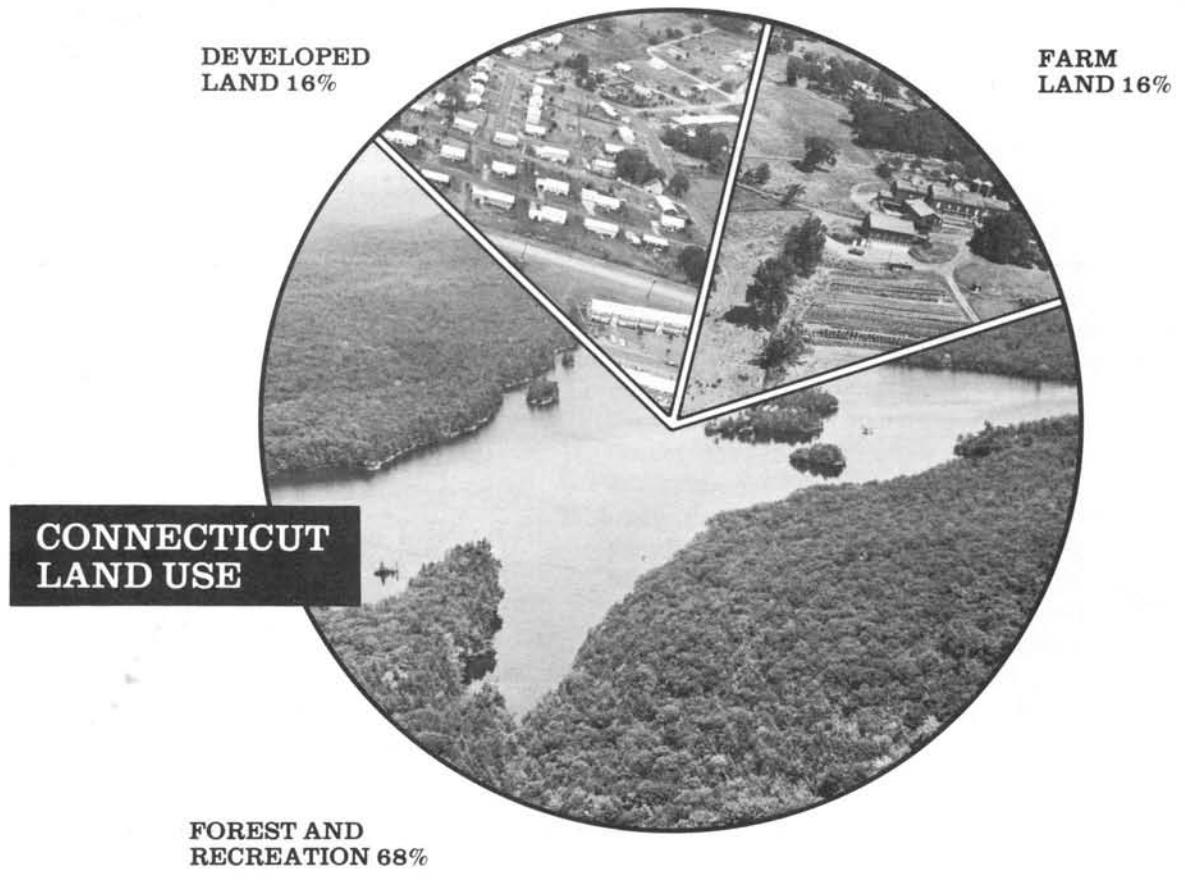


Fig. 1 The estimated acreage in farms and the standard error in thousand acres. These numbers do not include four tobacco corporations.

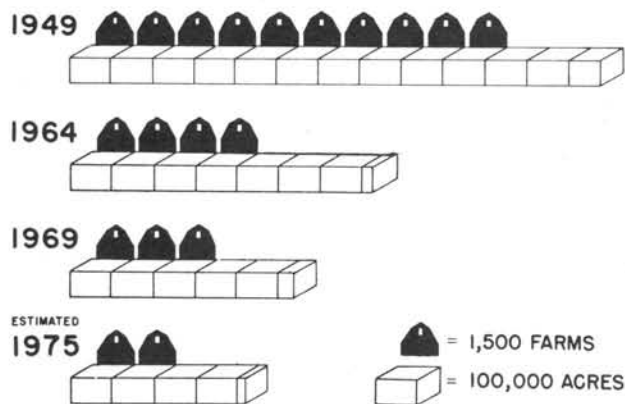
**INTERVIEWERS** The 193 farmers were interviewed by the following people:

Vern Anderson, SCS  
John Angevine, Task Force  
John Breakell, Task Force  
Barry Cavanna, SCS  
Sherman Chase, SCS  
Arthur Cross, SCS  
Keith Goff, Extension Service  
Arnold Harris, ASCS  
John Hibbard, Task Force  
Frank Indorf, SCS  
Richard Jaworski, ASCS  
Robert Josephy, Task Force  
Louis Longo, Task Force  
Francis Lutwinas, ASCS  
Arthur Mandirola, Task Force  
Emil Mulnite, Task Force  
Frederick Nelson, Extension Service  
Jeff Nye, Extension Service

Edward Peterson, Dept. of Agriculture  
Douglas Porter, Farmer  
Frank Prelli, Task Force  
Preston Roberts, Extension Service  
Mark Ruwet, ASCS  
George Simpson, Farm Bureau  
Luther Stearns, Task Force  
Lester Stillson, SCS  
David Stiles, Task Force  
David Syme, Farmer  
Warren Thrall, Task Force  
Al Todd, ASCS  
Donald Tuttle, Task Force  
Jeremiah Wadsworth, ASCS  
Albion Weeks, SCS  
George Wilber, Task Force  
Huntington Williams, Task Force



## The Decline of Agriculture



## Land for Growing Food in Connecticut

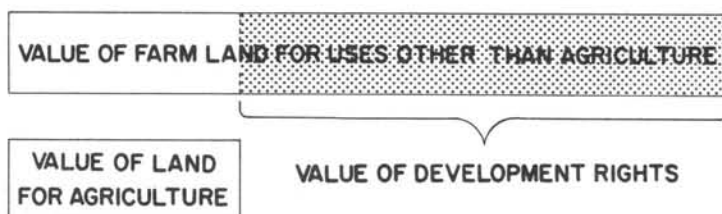
Beginning in 1970 corn blight was followed by drought in Asia, the Russian wheat deal, and drought and frost in the American bread basket. These events depleted the stocks of food in the world, exposing the close fit of world population to its food supply. The price of groceries shot up, and the people of Connecticut suddenly realized that their dining tables were far from the American farm belt, that they were now in competition for food with the newly wealthy nations, and that farmland in Connecticut had shrunk by half in twenty-five years. In April 1974, the Governor of Connecticut, therefore, directed twenty-five people to study and then recommend a policy to maintain land for growing food in the state.

In December 1974, the Governor's Task Force for the Preservation of Agricultural Land set forth its primary recommendation: preserving fertile land by purchasing development rights. The value of these rights is the difference between the value of land for agriculture and its value for other uses. In mid-1975 the General Assembly responded by directing the Connecticut Board of Agriculture to inventory the cropland suitable for preservation.

During 1975-1976 the Board, with the help of volunteers, sampled the farmers and farmland in Connecticut, estimating the amount of land that the farmers own and its use and quality, the acreage and use of rented land, the scattering of the land of individual farms, the acreage used in different types of farming, and the interest in sale of development rights. Appraisers of the Department of Environmental Protection examined prices paid for farmland during 1972-1975. The results are presented here.

**METHODS** Because the sale of development rights would depend upon the decision of farmers, we began with the names of farmers rather than a map. The names of farmers were obtained from lists of dairy, poultry, swine, and sheep farmers in the Department of Agriculture; from lists of vegetable, fruit, potato, tobacco, and nursery farmers compiled by trade organizations or furnished by the staff of The Connecticut Agricultural Experiment Station; from lists furnished by the Farm Bureau, Extension Service, Soil Conservation Service, Agricultural Stabilization and Conservation Service; and some town assessors' lists.

Next, the town Assessors of the 169 towns were asked to estimate the acreage owned by the farmers listed, and their acreage of cropland. They also provided some estimates of rented land. We shall call rented plus owned the expected acreages. When the list was completed, it held 3,821 names with expected



**DEVELOPMENT RIGHTS** are the difference between the value of land for growing food and its value for development.

acres. If the Board had interviewed all 3,821 farmers, the answer would not have been obtained while it was current or interesting. A sample of the farmers was interviewed. We began by designating fairly uniform groups of towns within the counties, e.g. Salisbury and Sharon in Litchfield County, and Cheshire, Meriden and Wallingford in New Haven County. In Fairfield and Hartford Counties we drew samples from each region, drawing at random one name for each two thousand acres of expected

Fig. 2 Questions asked by surveyors in interviews with farmers.

Would you tell me the total acres that you own, including any acres used or rented by others?

Crop acres that you own?

Improved pasture acres that you own?

Would you tell me the total acres that are owned by others but used or rented by you?

Crop acres that you use that are owned by others?

Improved pasture acres that you use that are owned by others?

Would you show me on this photo, the boundaries of the total acres that you own? (outlining in red, land on photo)

Many farmers have to go to several parcels of land to obtain their total operating acreage. How many separate parcels are there in your total farm operation, both owned and operated?

Which category do you consider your farm is in? (if more than one, put "1" for most important, "2" for second, and so forth)

- |   |                 |
|---|-----------------|
| Dairy, Livestock,<br>& Feed for Animals | Vegetables      |
| Nursery                                 | Potatoes        |
| Poultry                                 | Tobacco         |
| Fruit                                   | Other (explain) |

You may have heard of the possibility of the purchase of development rights on agricultural land at fair market prices. If such a program began, would you be interested in selling development rights to your land within five years? after five years? ever?



owned and rented land. In the other counties, we drew one name for each thousand acres of expected owned and rented cropland. All regions within the counties were large enough to warrant at least two samples. In Fairfield and Hartford County the probability of drawing a person was proportional to his expected total of owned and rented land. In the other counties, the probability of drawing a person was proportional to his expected owned and rented cropland. Drawing was performed with a table of random numbers.

In the Connecticut Valley one encounters the unique tobacco farms owned by corporations. These are scattered through several regions and include excellent cropland that should be included in the inventory. Therefore, the land of four tobacco corporations was examined completely rather than sampled.

**THE QUESTIONS** The Board of Agriculture devised a questionnaire to use in interviewing the 193 farmers whose names had been selected earlier. On the one hand, they

needed to provide the General Assembly with the information to decide upon a program of development rights, and on the other hand, they could not burden the people responding to the questions. The questionnaire shown in Fig. 2 provides information on the ownership and use of land, on the rental of land, on the subdivision of the owned land, on the type of farm, and finally, upon interest in selling development rights.

The Board of Agriculture also asked the Soil Conservation Service to determine the acreage of soil capability classes I, II and III that was owned by each of the people interviewed. The acreage of these classes is the area that can be cultivated without great expense. Classes I, II and III have progressively greater limitations that restrict their use. They may reduce the choice of plants or require special conservation practices. In Connecticut Classes I, II and III include soils ranging from nearly level to sloping, non-droughty to droughty, well drained to poorly drained. All are deep soils and non-stony. Classes IV through VIII are steep, shallow, stony or very poorly drained.

The acreages and prices paid for 331 farms sold in Connecticut in 1972-1975 were assembled from information supplied by the Farm Credit Service and town assessors by Donald Percival, Lori August, William Burnham, and Jerry Knight.

Fig. 3 Nature of acreage owned and rented by farmers. (Includes four tobacco corporations.)

	Thousands of acres	Relative percent
<b>OWNED</b>		
Total	575 ± 54	100
Crop	174 ± 10	30
Pasture	69 ± 10	12
Class I, II and III	165 ± 9	29
<b>RENTED</b>		
Total	209 ± 107	100
Crop	93 ± 24	45
Pasture	48 ± 35	23

Fig. 4 Acreage of different types of farms and their subdivision. The total acreage owned is shown in thousands of acres and relative to the 575 thousand in the State. The relative acreage of cropland and Class I, II and III is also shown.

TYPE	Total, thousand acres	Relative, percent		
		Total	Crop	Class I, II, III
TOTAL	575 ± 54	100	100	100
<b>TYPE</b>				
Dairy	426 ± 57	74	71	61
Vegetable	28 ± 10	5	6	10
Fruit	30 ± 9	5	8	9
Potato	5 ± 3	1	2	2
Nursery	17 ± 9	3	4	5
Tobacco	23 ± 6	4	5	8
Poultry	6 ± 4	1	<1	<1
Misc.	40 ± 10	7	4	5
<b>PARCELS</b>				
1	276 ± 35	48	49	50
2	100 ± 39	18	14	12
3 or more	199 ± 33	34	37	38

The people listed in this report interviewed the 193 farmers between August 1975 and September 1976.

**THE RESULTS** Estimates for the counties are shown on the front cover. The estimates for the regions within the counties are, of course, variable and are, therefore, not published. Figure 3 and Fig. 4 are summaries of the results.

The farmers own an estimated 575 thousand acres. The standard error of this estimate is 54 thousand. Thus, there is a two-thirds probability that the true acreage owned by the farmers on the lists from which we sampled is about 500 to 600 thousand or 16 to 20% of the land of the State.

The active ingredient of the farms is the cropland. The farmers' land includes an estimated 174 thousand acres of cropland or about 30% of their total ownership. The 69



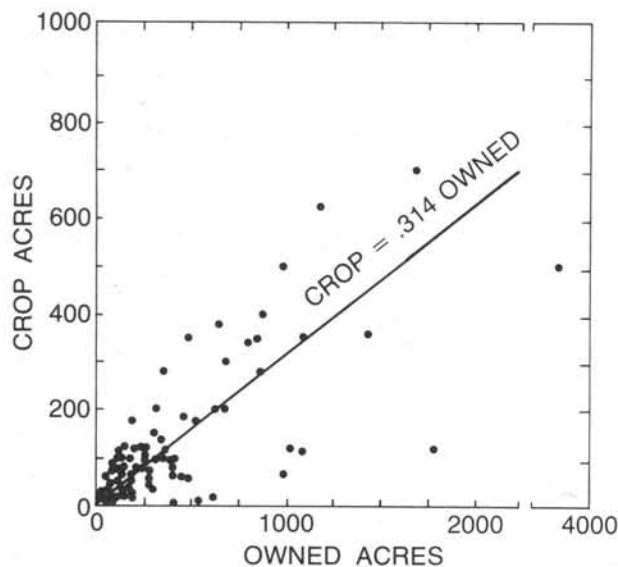


Fig. 5 The cropland owned by 126 dairy farmers related to their total ownership.

thousand acres of pasture is about 12% of their total.

In Fig. 5 one sees that the 126 dairy farmers in the sample own about 31 crop acres for each 100 acres owned, whereas in Fig. 6 one sees that the 41 crop farmers own about 44 crop acres for each 100 acres owned. Significantly, the farmers' land includes 165 thousand acres of capability Class I, II and III land or about the same as the acreage of cropland.

**RENTED LAND** The farmers rent about half as much land as they own according to the estimate. One should notice, however, that the estimate of rented land has great uncertainty. In the sample this is caused by finding one farmer who rents about 3,000 acres of land for the grazing of beef cattle. One might say that this extraordinary case should not be included in the sample because of the great variability that it gives to the outcome. The truth, however, is that even the sample of 193 farmers revealed one of these extraordinary cases, and we must be aware that other cases such as this may be found in the state and, thus, our estimate of the acreage rented is accordingly uncertain. Since some but not all land is rented from farmers on the list sampled, the total land used is less

than the sum of 575 plus 209 thousand acres.

As one would expect, a larger portion of the rented land sampled is cropland than is found in the owned land. Further, a larger portion of the rented land is pasture than in the case of the owned land. Thus, most farmers rent productive fields rather than whole farms with unproductive "backforties".

**WHAT CROPS** The nature of the farms in the state is shown in Fig. 4 as the estimated acreage owned by farmers of different categories. Leading all others is dairy and beef, occupying about three-quarters of the acreage. Surprisingly, dairy farmers have about the same proportion of cropland as of total land, which reflects their many acres of corn grown to make milk from feed grown under the Connecticut sun rather than imported from the West. Interestingly, the growing of corn has increased recently and thus the dairy farmers are cropping a relatively large proportion of land compared to the Class I, II and III land that they own.

Poultry, which produces an income second only to dairying, uses land differently from dairying. Poultry farmers own only about 1% of the land, and it includes very little cropland. Connecticut chickens must eat feed

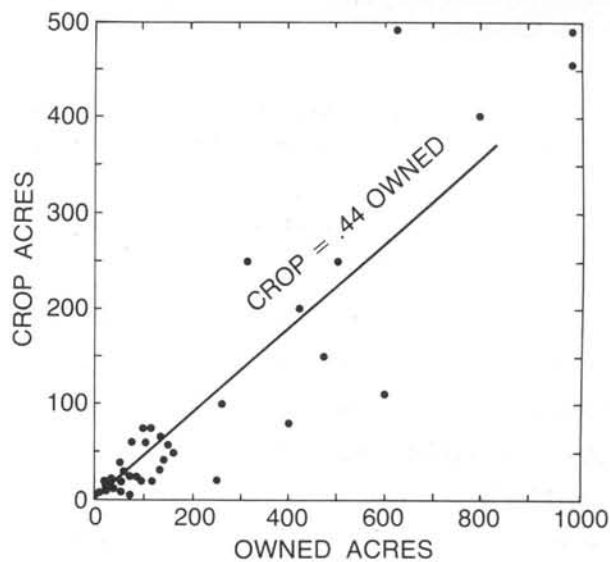


Fig. 6 The cropland owned by 41 crop farmers related to their total ownership.

**Fig. 7** Willingness to sell development rights. The owned acreage is estimated for farmers holding six categories of opinion. The owned acreage is expressed in thousands of acres and relative to the 575 thousand in the State. Cropland and Class I, II and III land are only shown relative to their statewide totals.

	Total Thousand Acres	Relative percent		
		Total	Crop	Class I, II, III
TOTAL	575 ± 54	100	100	100
Within 5 years	195 ± 42	34	34	34
After 5 years	44 ± 11	8	10	11
Maybe	59 ± 13	10	14	12
Never	121 ± 29	21	22	20
State or sold for development	18 ± 6	3	2	4
No reply	138 ± 38	24	17	18

grown on somebody else's farm, mostly outside our state.

Fruit, vegetable and potato farmers own about a tenth of the total acres but have about a fifth of the cropland and Class I, II and III land. Nurserymen and tobacco growers own about 7% of the total land and 13% of the Class I, II and III land. That is, people growing valuable crops have somewhat better soil than those growing less valuable ones, which is a commonsense outcome.

Finally, one reaches the miscellaneous category. This includes tree and horse farms. It also includes idle farms, some sold for development. The miscellaneous have a relatively small share of crop and even Class I, II and III land.

Subdivision of the farms is also shown in Fig. 4. The farmers who have a single, compact tract own about half the total acreage. They also own about half the cropland and land of capability Class I, II and III. On the other hand, farmers owning about a third of the farmland bear the cost of farming at more than two locations.

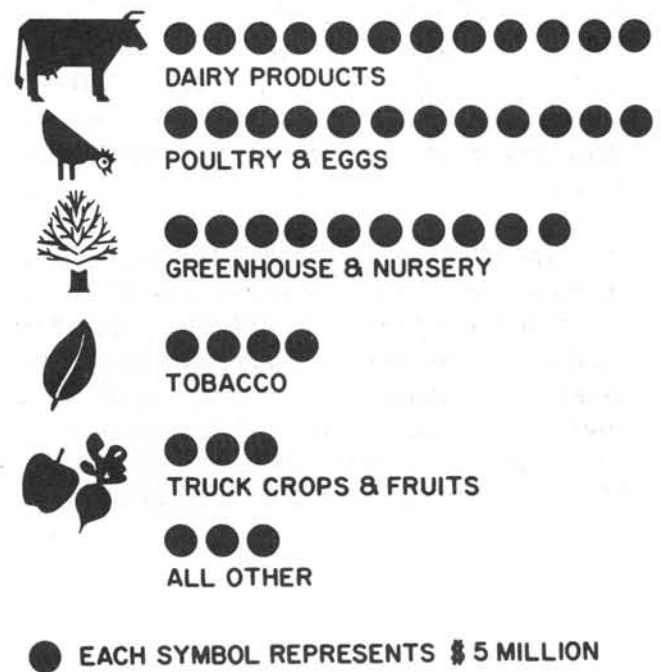
**DEVELOPMENT RIGHTS** The most important question about land preservation comes at the conclusion: *on how many acres*

*might development rights be sold?* Fig. 7 shows about 3% of the acres are owned by the State, e.g. state hospital farm, or have been sold for development. About a quarter are owned by people who are in the "no reply" category, and in the sample at least, these people own relatively less cropland and Class I, II and III land. About a fifth of the land is owned by people who would never sell development rights.

A favorable attitude toward sale of development rights is subdivided into three groups: sell within five years, sell after five years, and maybe. Development rights on about a third of the total ownership, cropland or Class I, II and III land would be offered for sale within five years and another tenth after five years. A tenth of the land is owned by people who say maybe in such words as "I might sell if I knew more about the program".

**LAND PRICES** The 331 farms sold during 1972-1975 were distributed among all eight counties, Fig. 8. The average cost per acre was \$1817 for the state. Examination of indi-

### Connecticut Farm Products 1972



vidual sales shows that the cost per acre was more for smaller and less for larger farms. No clear trend during the four years is evident, and hence \$1800 per acre is a reasonable estimate of the present average price of farmland in Connecticut.

Fig. 8 The number of farms sold, their acreage and cost during 1972-1975. (Mean cost per acre = \$1817)

COUNTY	Number of Farms	Acres	Cost, \$1,000
Litchfield	90	8220	12,110
Hartford	78	4780	11,976
Tolland	32	1863	3,779
Windham	33	3176	3,658
Fairfield	20	1541	4,170
New Haven	27	1324	3,709
Middlesex	15	905	3,092
New London	36	4048	4,497
Total	331	25,857	46,991

The cost of development rights is the difference between the value of the land for agriculture and its value for other uses. That is, the average cost of development rights would be \$1800 per acre minus the agricultural value. In 1974 the Task Force for the Preservation of Agricultural Land estimated the cost of the rights would average \$1500 per acre, which is not greatly different from the present estimate of \$1800 minus agricultural value.

**SUMMARY** Connecticut farmers own about a half million acres of land of all kinds, about 165 thousand acres of Class I, II and III land and grow crops on about 174 thousand acres. We estimate that farmers rent more than half as much cropland and pasture as they own although the amount is uncertain. Dairy farmers, including beef growers, own

three-quarters of the farmland and about 60% of the Class I, II and III land. Eighteen percent of the farmland is owned by farmers who grow crops, like fruit or nursery plants, for sale, and they own 34% of the Class I, II and III land. Half the farmland is in farms of one parcel, while a third is divided into more than two.

Owners of about half the land are interested in selling development rights to their land, with opinions varying from selling within five years to "maybe." The price of development rights is about \$1800 per acre minus the agricultural value.

**ACREAGES** were estimated in the fashion that will be illustrated for acres owned. Each of the N persons interviewed told us how many acres X he actually owned. This was divided by the probability P that he would be drawn from the list. Probability P was the expected acreage E that the assessor had estimated for him divided by the total acreage expected in the region. Each person interviewed provided us an estimate of the acreage owned in the entire region and by averaging these estimates amongst all those interviewed in the region we obtained the best estimate A of the acres owned in the region. Algebraically,

$$P = E/\sum E \text{ and } A = \sum (X/P)/N$$

In addition to wanting an estimate of the acreage owned, we also wanted to know how precise that estimate was. The measure of precision of the estimate is the standard error S. This was calculated by adding the sum of squares of the estimates from individual farms minus the estimate obtained from all the farms, and dividing that sum of squares by the product of the number of farms times one less than the number of farms. Algebraically,  $S^2 = \sum ((X/P)-A)^2/(N(N-1))$ . Normally the estimated value of A would be within a standard error of the true A two-thirds of the time.

The estimates for the counties and for the State were obtained by adding the squares of the standard errors in the regions. George Furnival advised on statistics.