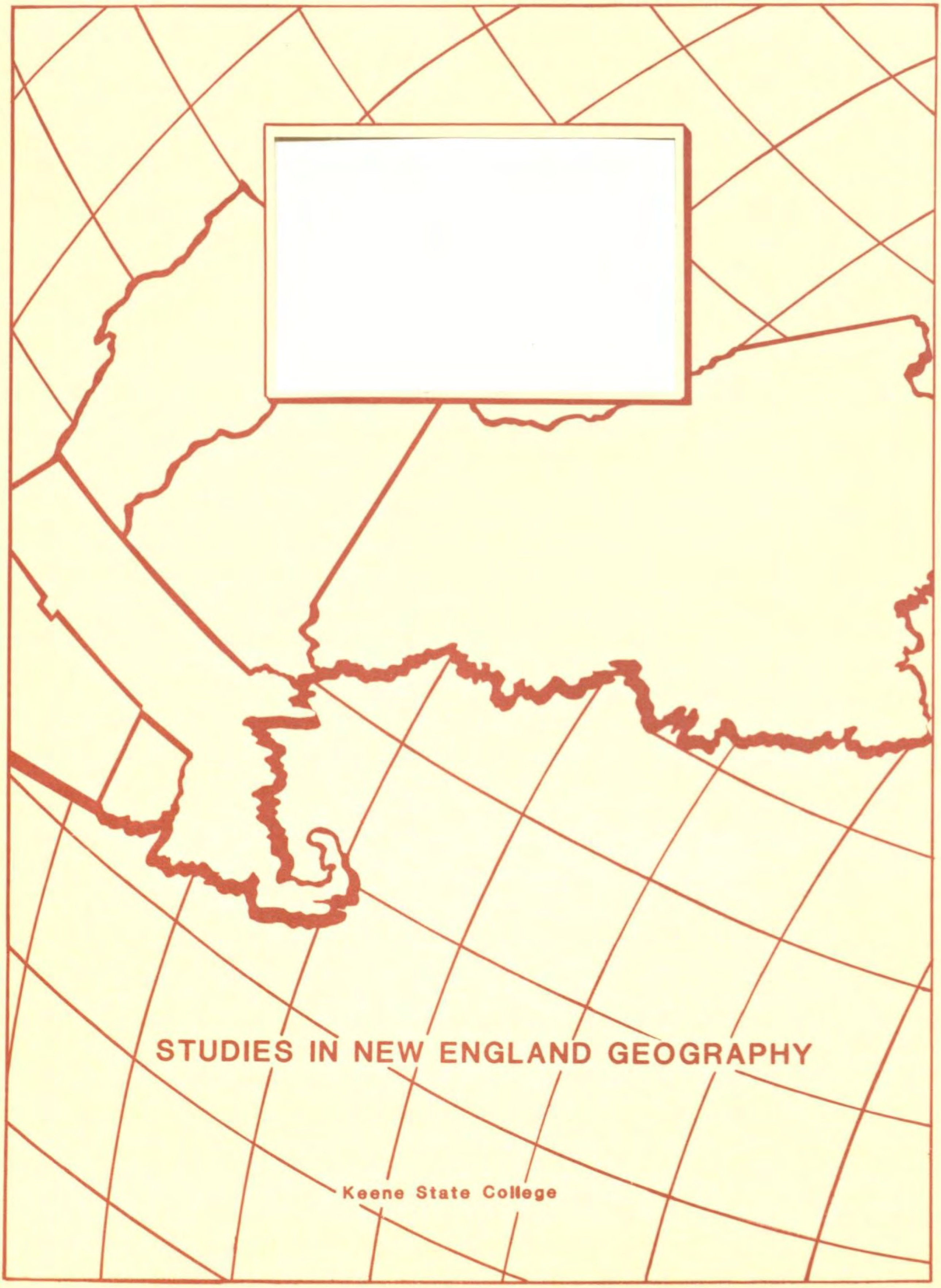

STUDIES IN NEW ENGLAND GEOGRAPHY

Keene State College

AN AGRICULTURAL RENAISSANCE IN NEW ENGLAND

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UNIVERSITY OF NEW HAMPSHIRE

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Introduction

The stimulus for this study came from a paper by one of my students who found evidence of recent growth in New England agriculture. If these indicators were not statistical aberrations and if growth were indeed taking place, it would be a dramatic reversal of trends reaching backward more than a century and strongly contrary to the well-established image of decline and abandonment[1]. With these thoughts I set out to determine whether growth had actually occurred, where it had taken place, and in what sectors of agriculture. My investigation is based very largely on reports of the United States Census of Agriculture, a source that has the virtues of uniformity and comprehensiveness although it sometimes lacks detail for specific areas and agricultural products[2]. I have chosen to study the period 1974 - 1987 because the definition of "farm" was changed with the 1974 census and therefore some of the data for earlier years are not comparable with that in the censuses of 1974, 1978, 1982, and 1987[3].

This paper is a preliminary statement that presents general findings for New England as a whole and some specifics at the sub-regional and county level. I have not attempted a comprehensive analysis of recent changes in New England agriculture and I have undoubtedly raised more questions

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[1] Michael Bell has recently written a revisionist analysis of agricultural change in New England agriculture after 1850. Bell challenges the traditional image of pervasive 19th century decline and also points out that the decline in farmland between 1945 and 1972 greatly exceeded that in the period 1880-1930. See Bell, Michael M., "Did New England Go Downhill?" Geographical Review, Vol. 79, 4, 1989, pp. 450-465.

[2] U.S. Department of Commerce Bureau of the Census. Census of Agriculture, Vol. I Geographic Area Series. State and County Data; 1974, 1978, 1982, 1987.

[3] The Census definition of farm has been changed nine times since 1850. The current definition, beginning with 1974 defines farms as all properties from which $1000 or more of products have been sold or normally would have been sold. In the censuses of 1959, 1964 and 1969 a farm was defined as any parcel of more than 10 acres from which $50 or more agricultural products were sold or any place of less than 10 acres from which $250 or more of products were sold. The general effect of this change was to reduce the number of farms.

than I have answered. My purpose is to provide a framework and suggestions for further investigation of agricultural change in the region.

Renaissance

The century-long decline of New England agriculture slowed and then reversed after 1969. Figure 1 indicates the area of land cleared for agriculture, which appears to be the best long-term measure of farming as an element in the landscape. This measure is more diagnostic than "land in farms" because New England farms have generally included substantial acreages of woodland and historically the proportion of woodland on farms has increased as agriculture declined toward abandonment. For the years 1850 - 1920, the census tabulated acres of improved land, that is, "all land regularly tilled or mowed, land in pasture that has been tilled or cleared, land lying fallow, land in gardens or orchards, vineyards, nurseries and land occupied by farm buildings."[4] This is a good measure of the land actually used for farming. Unfortunately, the census of 1920 was the last to compile statistics on improved land. For later years, we have used the surrogate of farmland minus woodland. This is the total area of land in farms less the acreage in farm woodland and woodland pasture. This is not identical with "improved land" but it appears to be the best available general measure of the land that is actually used for agriculture. Because they are based on different data, the trend lines for 1850 - 1920 and for 1930 - 1987 in Figure 1 are not continuous.

As revealed by numbers of farms, land in farms and cropland harvested, trends in New England agriculture in the 1970's and 1980's were so favorable as to suggest an agricultural renaissance (Fig. 2). While there is some evidence of renewed decline after 1982, the fact remains that more farming is going on in the region today than there was in 1974. This history contrasts strongly with widely publicized national trends of agricultural decline. And, as will be apparent in what follows, the volume and value of production in New England continue to increase.

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4 United States Department of Commerce. Bureau of the Census. Fourteenth Census of the United States, 1920, Vol. V1, Part 1, Agriculture, p. 14.

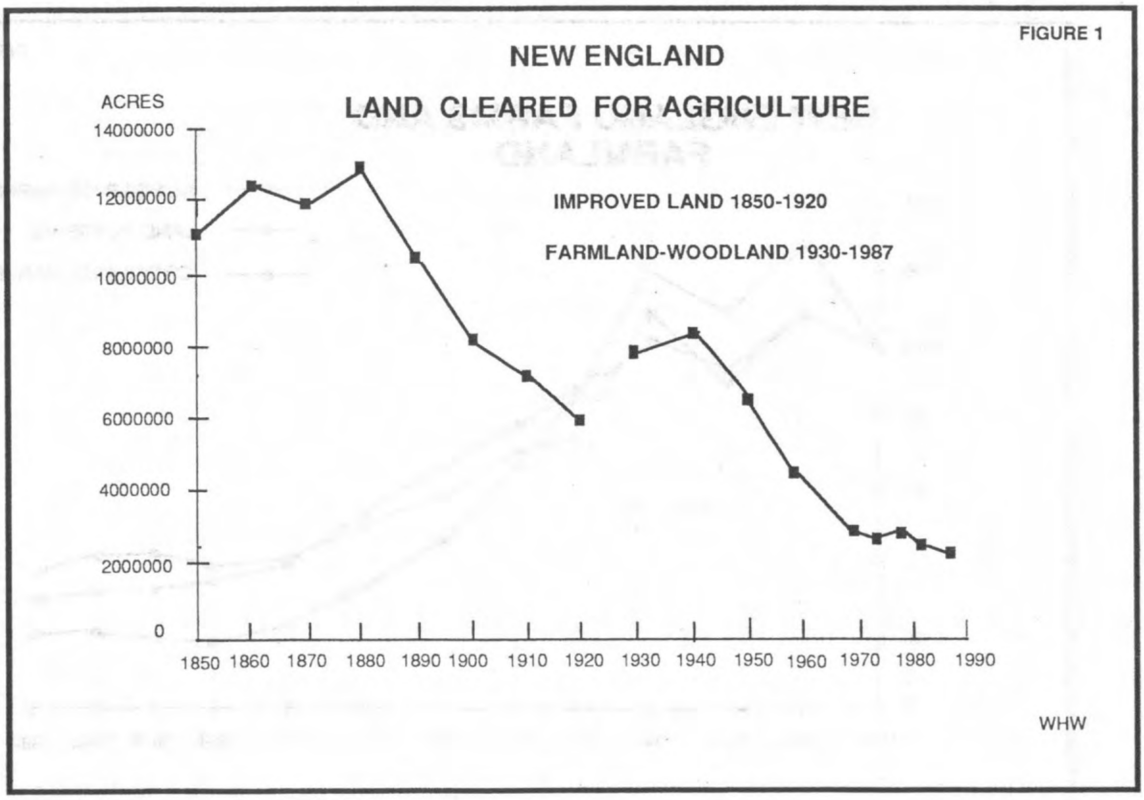
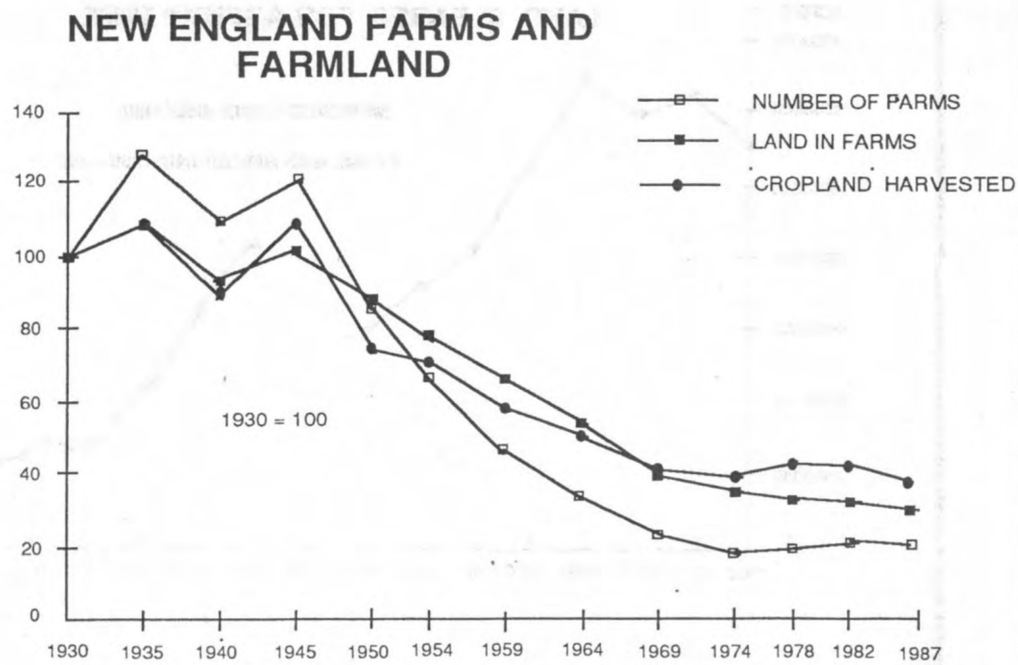


FIGURE 1
NEW ENGLAND
LAND CLEARED FOR AGRICULTURE
ACRES
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
IMPROVED LAND 1850-1920
FARMLAND-WOODLAND 1930-1987
1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990
WHW

FIGURE 2


NEW ENGLAND FARMS AND FARMLAND
NUMBER OF PARMS
LAND IN FARMS
CROPLAND HARVESTED
1930 = 100
140
120
100
80
60
40
20
0
1930
1935
1940
1945
1950
1954
1959
1964
1969
1974
1978
1982
1987

WHW

Measures of Change

Attempts to measure agriculture in a comprehensive way have always been fraught with problems. It is literally necessary to add apples and oranges, and in New England there is the more difficult summing of potatoes and horses, cranberries and chickens.

The number of farms provides one of the strongest evidences of growth in New England agriculture. But it is also true that this is among the most volatile measures of agricultural activity, due to the large number of small and part-time farms in the region and also because price inflation may quickly qualify many small holdings as farms. But even though increasing numbers of small farms may not compensate for the area or even the production lost by the declining number of larger farms, it can be said that more farms do mean more people engaged in agriculture and an increased amount of agricultural activity.

Be that as it may, we would argue that the best indicator of the use of land for agriculture in New England is the acreage of cropland harvested. This measures the use of the most productive land and also the land which is the basic element in the most important kinds of agriculture, including dairy farming which depends much more heavily on feed crops than on pasture. Cropland harvested is also revealing of the "new" agriculture in New England.

Finally, the value of agricultural products sold provides the most comprehensive means of assessing the importance and recent trends of the many different kinds of agriculture that are practiced in New England. Although it is affected by price changes, the value of sales can be adjusted for inflation and provides the best single measure of growth or decline among the agricultural systems and sections of this varied region. Figure 3 and Table 1 show the value of all agricultural commodities sold, adjusted for price changes, in the years 1974, 1978, 1982 and 1987. Commodities are grouped into crops and livestock, with the principal categories of each shown individually. The growth and outstanding importance of horticultural production in New England is manifest as are the continuing importance of dairy and poultry products.

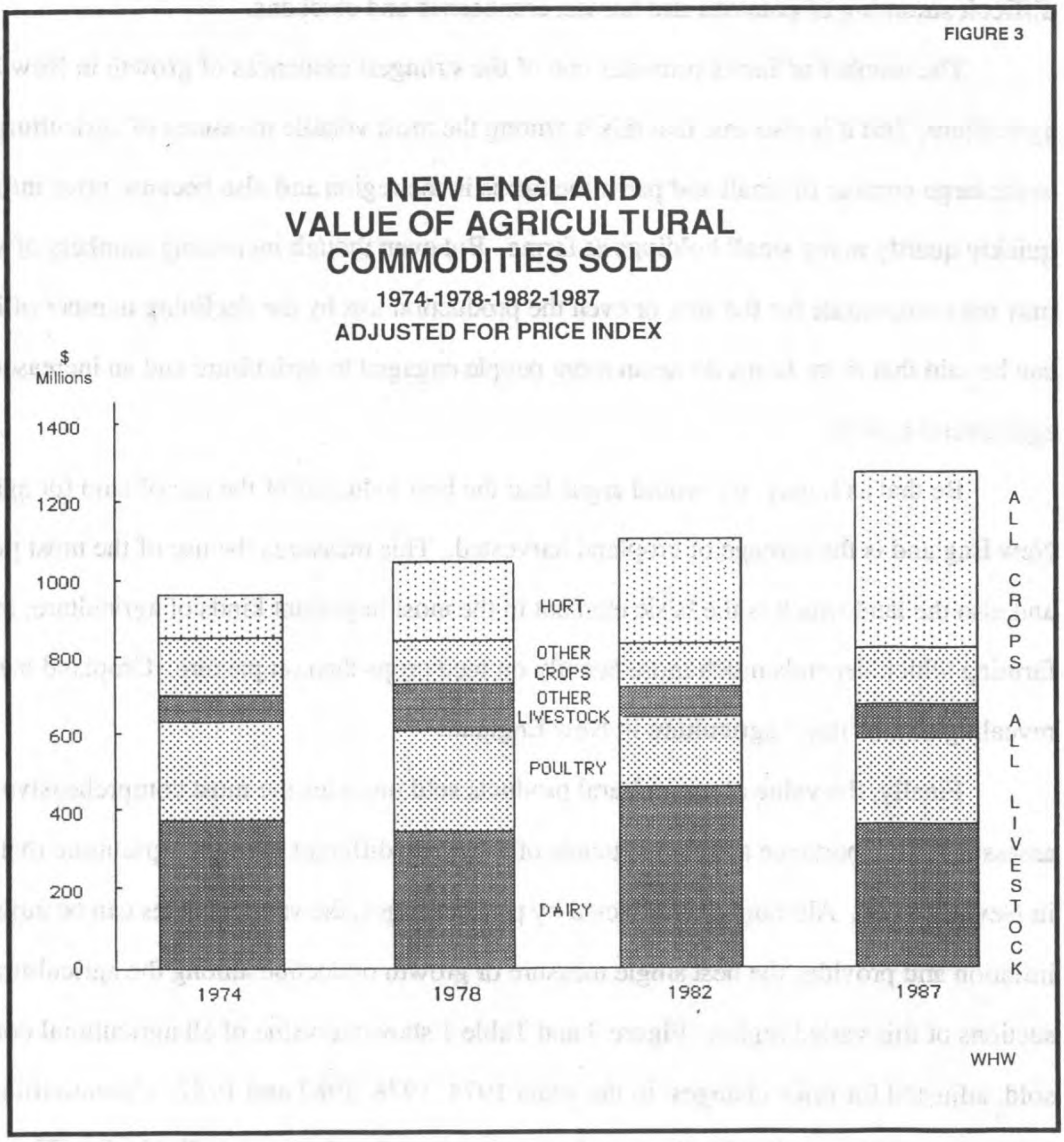


FIGURE 3
NEW ENGLAND
VALUE OF AGRICULTURAL
COMMODITIES SOLD
1974-1978-1982-1987
ADJUSTED FOR PRICE INDEX
$
Millions
1400
1200
1000
800
600
400
200
0
HORT.
OTHER
CROPS
OTHER
LIVESTOCK
POULTRY
DAIRY
ALL CROPS
ALL LIVESTOCK
1974
1978
1982
1987
WHW

Table 1
New England
Value Agricultural Commodities Sold 1974 - 1987
($ millions)

	1974	1978	1982	1987
All commodities	979	1058	1104	1279
All crops	276	335	381	593
Horticultural products	129	218	267	461
Other crops	147	117	114	132
All livestock products	703	723	723	686
Dairy	377	360	419	383
Poultry	257	253	219	215
Other livestock	69	110	85	88

Adjusted for changes in price index: 1977=100, Data from: U.S. Department of Commerce. Bureau of the Census. Census of Agriculture, Vol. I. Geographic Area Series. State and County Data; 1974, 1978, 1982, 1987.

Types of Farming and Products

Examination of types of farming and products reveals that New England agriculture has experienced strongly contrasting trends in recent years. Crop production and the value of crops sold have experienced strong growth. Adjusted for inflation, crop sales increased by 103% between 1974 and 1987. During the same period, the value of livestock and livestock products sold declined by 7%. Potato and tobacco farming are significant exceptions to the growth of crop farming. Poultry production suffered substantial decline while dairy farming experienced only modest growth. Small in amount but impressive in growth rate, horses and sheep were minor exceptions to stagnation or decline in livestock agriculture.

Crops

The positive trend of New England agriculture is essentially the result of increases in horticultural farming: nursery and greenhouse products, fruit and vegetables. Collectively, sales of horticultural products nearly tripled during the years 1974 - 1987. Vegetable farming made the smallest overall contribution to the growth of horticulture and production actually declined in southern Connecticut, parts of eastern Massachusetts and southeastern New Hampshire (Fig. 4). Growth was greatest on the periphery of areas experiencing most rapid urban expansion. The slow growth and changing pattern of vegetable farming in New England seems to parallel the recent history of vegetable farming that Hart described as the "perimetropolitan bow wave" phenomenon in the New York City region, and for similar reasons, changes in marketing and improvements in transportation.[5] Orchard and other types of fruit farming grew more rapidly than vegetable products (Fig. 5). Surprisingly, the largest increases occurred in berry production -- cranberries in southeastern Massachusetts and blueberries in coastal Maine. On the other hand, the continuing abandonment of old apple orchards in most other parts of New England retarded the overall growth of fruit farming. Paradoxically, it is nursery and greenhouse farming, occupying the smallest acreage, that has enjoyed the largest increase in production, both absolutely and relatively, during the past two decades. For New England as a whole, nursery production increased more than threefold between 1974 and 1987 and in the latter year

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[5] Hart, John Fraser, "The Perimetropolitan Bow Wave" Geographical Review, Vol. 81, 1, 1991, pp. 35-51.

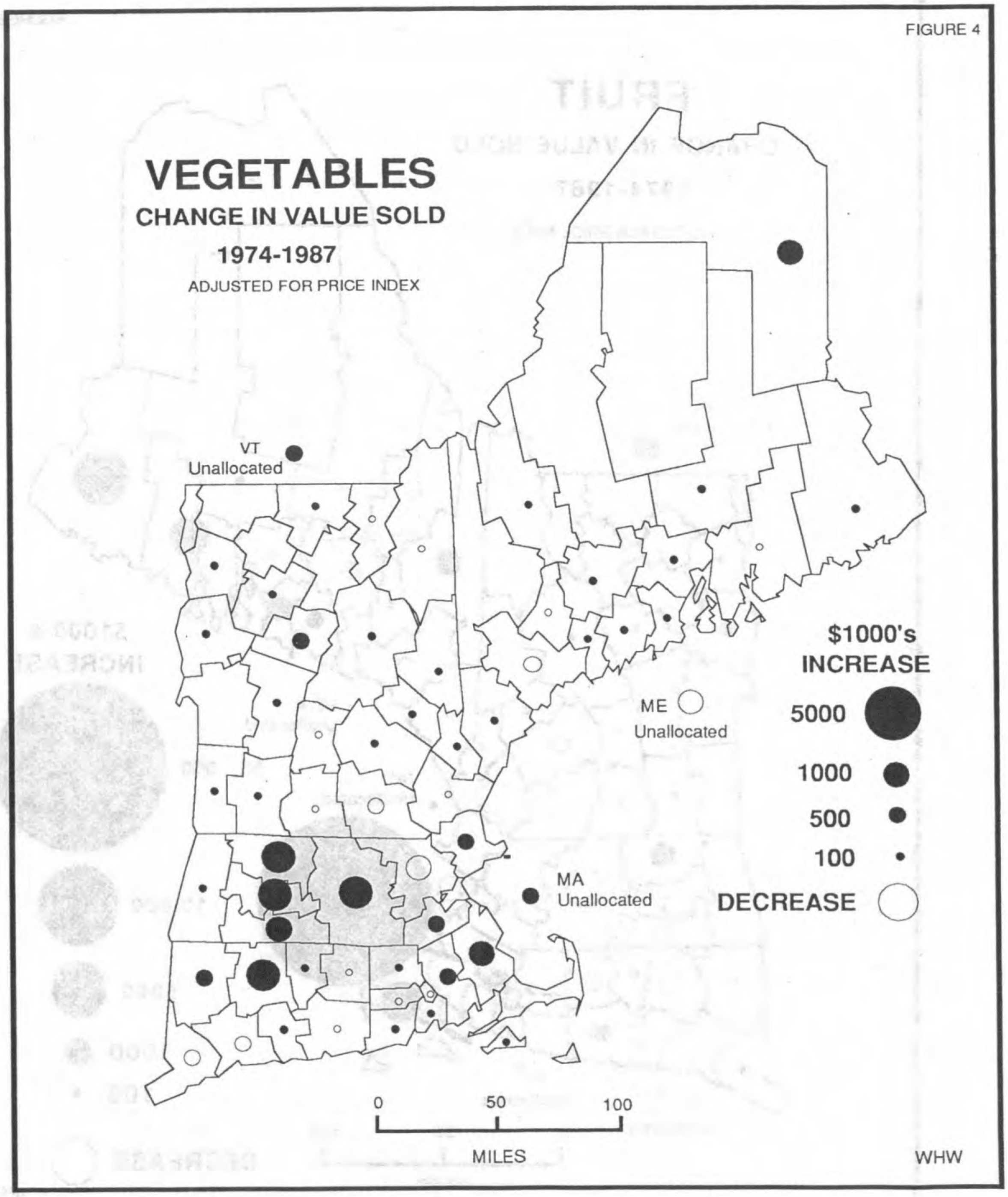


FIGURE 4
VEGETABLES
CHANGE IN VALUE SOLD
1974-1987
ADJUSTED FOR PRICE INDEX
VT
Unallocated
ME
Unallocated
MA
Unallocated
$1000's
INCREASE
5000
1000
500
100
DECREASE
0
50
100
MILES
WHW

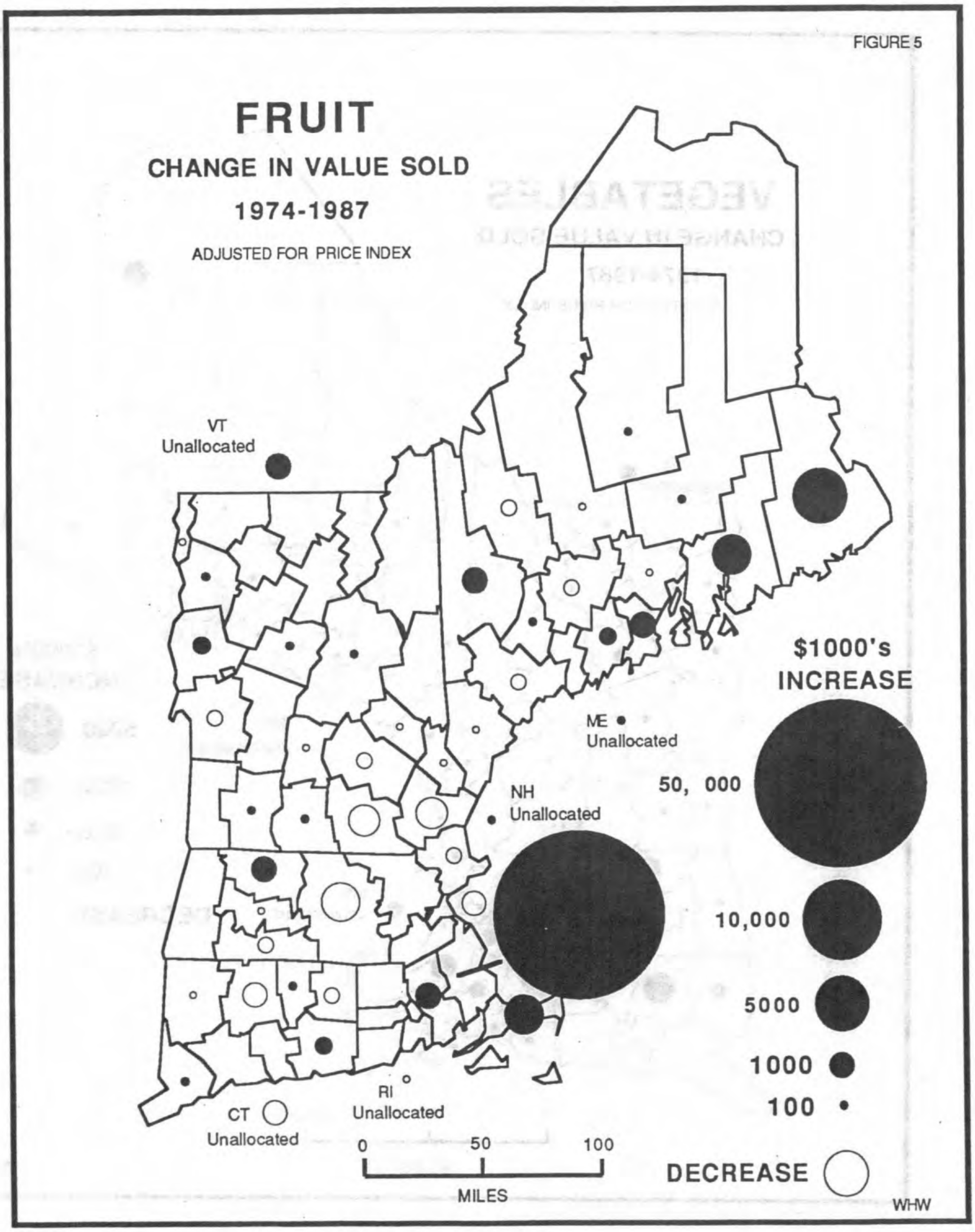


FIGURE 5
FRUIT
CHANGE IN VALUE SOLD
1974-1987
ADJUSTED FOR PRICE INDEX
VT
Unallocated
ME
Unallocated
NH
Unallocated
CT
Unallocated
RI
Unallocated
0
50
100
MILES
$1000's
INCREASE
50, 000
10,000
5000
1000
100
DECREASE
WHW

contributed more to the value of regional agricultural production than vegetable and fruit farming combined and more than twice the value of traditionally dominant potato growing. Growth has been widespread but it is true that Massachusetts and Connecticut account for more than three quarters of all growth in nursery farming in New England (Fig. 6). Generally, this type of farming has grown most rapidly in the rural-urban fringe, a zone of expanding suburban markets. At the opposite end of the spectrum, remote areas lacking large and wealthy populations have not participated in the rapid growth of nursery and greenhouse farming.

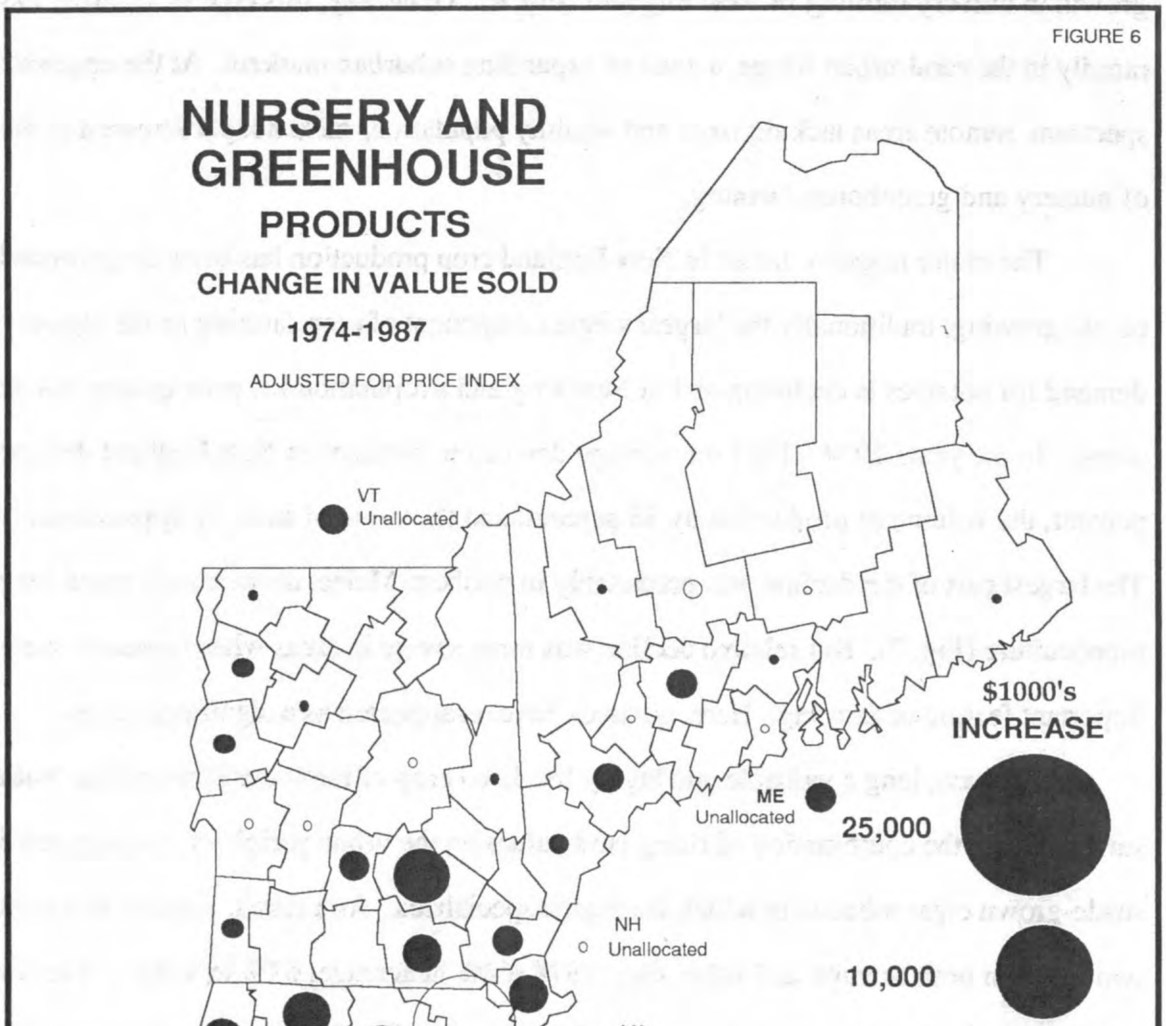
The major negative factor in New England crop production has been the profound decline in potato growing, traditionally the largest single component of crop farming in the region. The national demand for potatoes is declining and in New England a reputation for poor quality has made things worse. In the years 1974 - 1987 the acreage devoted to potatoes in New England declined by 40 percent, the volume of production by 35 percent, and the value of sales by approximately 25 percent. The largest part of the decline was predictably in northern Maine, an area long noted for potato monoculture (Fig. 7). But relative decline was more severe in areas where potatoes were a less important feature of farming. Here, potatoes have disappeared as a significant crop.

Tobacco, long a valuable and highly localized crop of the lower Connecticut Valley, has suffered from the combination of rising land values on the urban periphery and reduced demand for the shade-grown cigar tobacco in which the region specializes. As a result, tobacco has declined by nearly two thirds in both acreage and value since 1974 (64% in acreage, 67% in value). The resulting decline in value of sales has been sufficient to retard the growth of the entire agricultural enterprise in central Massachusetts and northern Connecticut.

Livestock

Although livestock farming is still the dominant user of land and contributor to value in New England agriculture, its role continues to diminish, having fallen from 67.9% of the value of product sales in 1974 to 61.5% in 1987.

FIGURE 6


NURSERY AND GREENHOUSE
PRODUCTS
CHANGE IN VALUE SOLD
1974-1987
ADJUSTED FOR PRICE INDEX
VT
Unallocated
ME
Unallocated
NH
Unallocated
MA
Unallocated
RI
Unallocated
$1000's
INCREASE
25,000
10,000
5000
1000
100
DECREASE
0
50
100
MILES
WHW

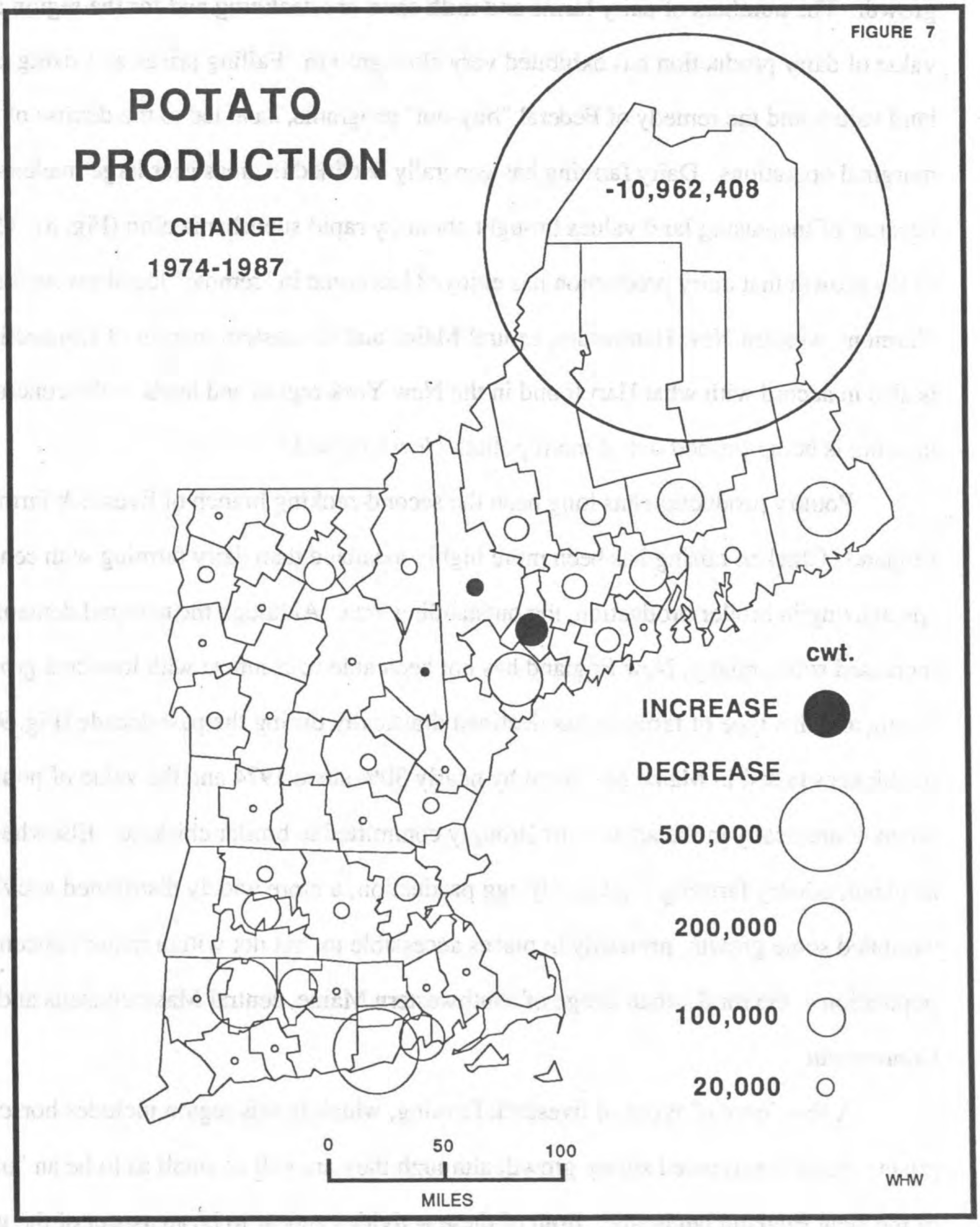


FIGURE 7
POTATO
PRODUCTION
CHANGE
1974-1987
-10,962,408
cwt.
INCREASE
DECREASE
500,000
200,000
100,000
20,000
0
50
100
MILES
WHW

Dairy farming has been the most important facet of New England agriculture for more than a century and will likely continue to be so for many years to come, but it is not experiencing vigorous growth. The numbers of dairy farms and milk cows are declining and for the region as a whole the value of dairy production has exhibited very slow growth. Falling prices and rising costs, including land values and the remedy of Federal "buy-out" programs, have led to the demise of many small or marginal operations. Dairy farming has generally declined in areas near large markets, primarily because of increasing land values brought about by rapid suburbanization (Fig. 8). Conversely, most of the growth that dairy production has enjoyed has come in "remote" locations such as northern Vermont, western New Hampshire, central Maine and the eastern margin of Connecticut. This pattern is also in accord with what Hart found in the New York region and leads to the conclusion that dairy farming is being pushed out of metropolitan New England.[6]

Poultry production has long been the second-ranking branch of livestock farming in New England. Chicken raising has been more highly localized than dairy farming with central Maine, specializing in broiler production, the outstanding area. Although the national demand for poultry has increased substantially, New England has not been able to compete with low-cost growers in the South, and this type of farming has declined drastically during the past decade (Fig. 9). The number of chickens raised in Maine has fallen by nearly 30% since 1974 and the value of poultry products has fallen dramatically in the areas most strongly committed to broiler chickens. Elsewhere in New England, poultry farming is primarily egg production, a more widely distributed activity that has exhibited some growth, primarily in places accessible to, but not within major concentrations of, population -- the rural-urban fringe of southwestern Maine, central Massachusetts and eastern Connecticut.

A few "exotic" types of livestock farming, which in this region includes horse and sheep raising, have experienced strong growth although they are still so small as to be an "unusual" feature of the New England landscape. Both of these activities appear to be an aspect of the gentrification of the countryside. Horse farms exhibit a strong correlation with affluent urban areas affected by

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[6] Hart, idem, p. 45.

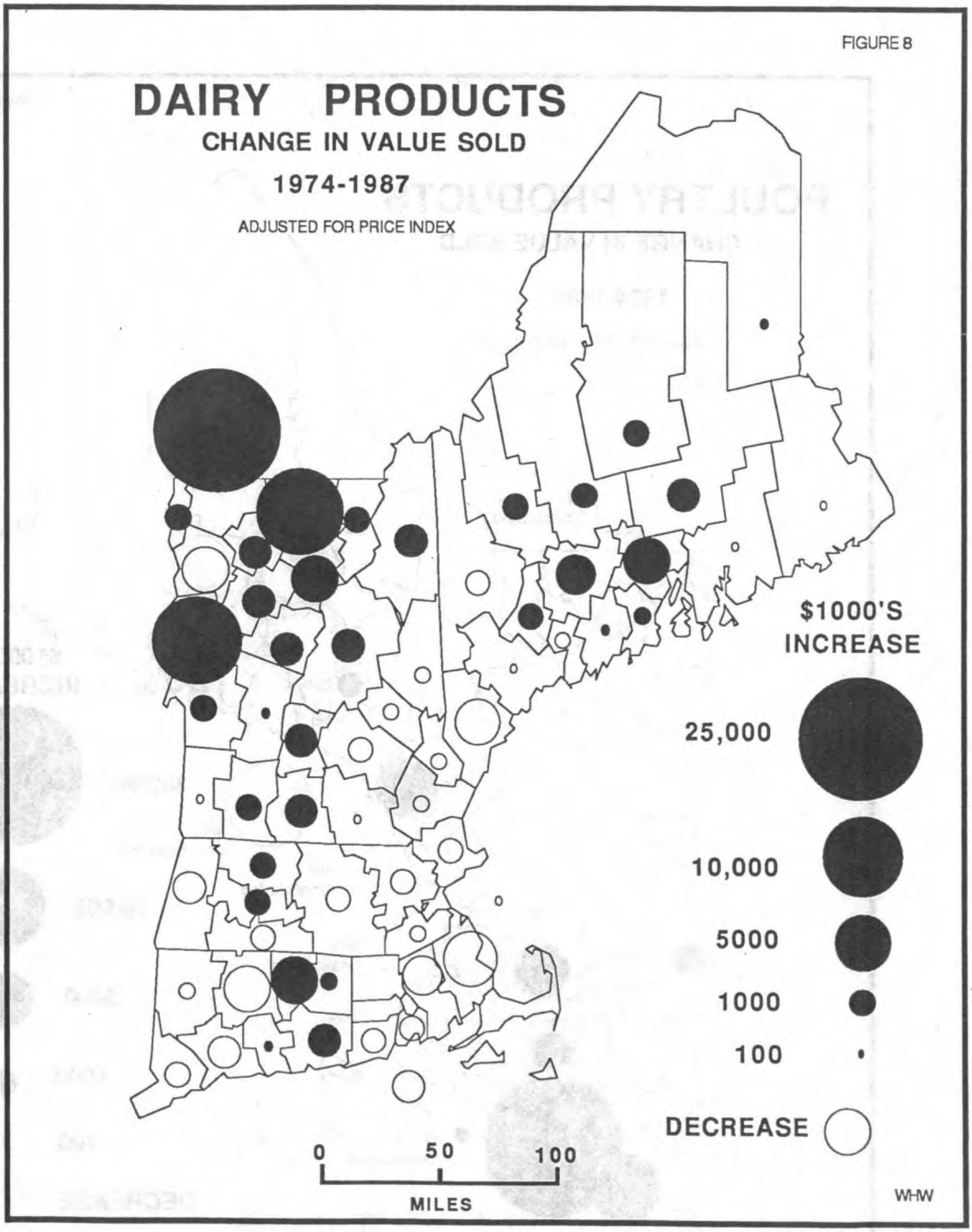
FIGURE 8
DAIRY PRODUCTS
CHANGE IN VALUE SOLD
1974-1987
ADJUSTED FOR PRICE INDEX
$1000'S
INCREASE
25,000
10,000
5000
1000
100
DECREASE
0
50
100
MILES
WHW

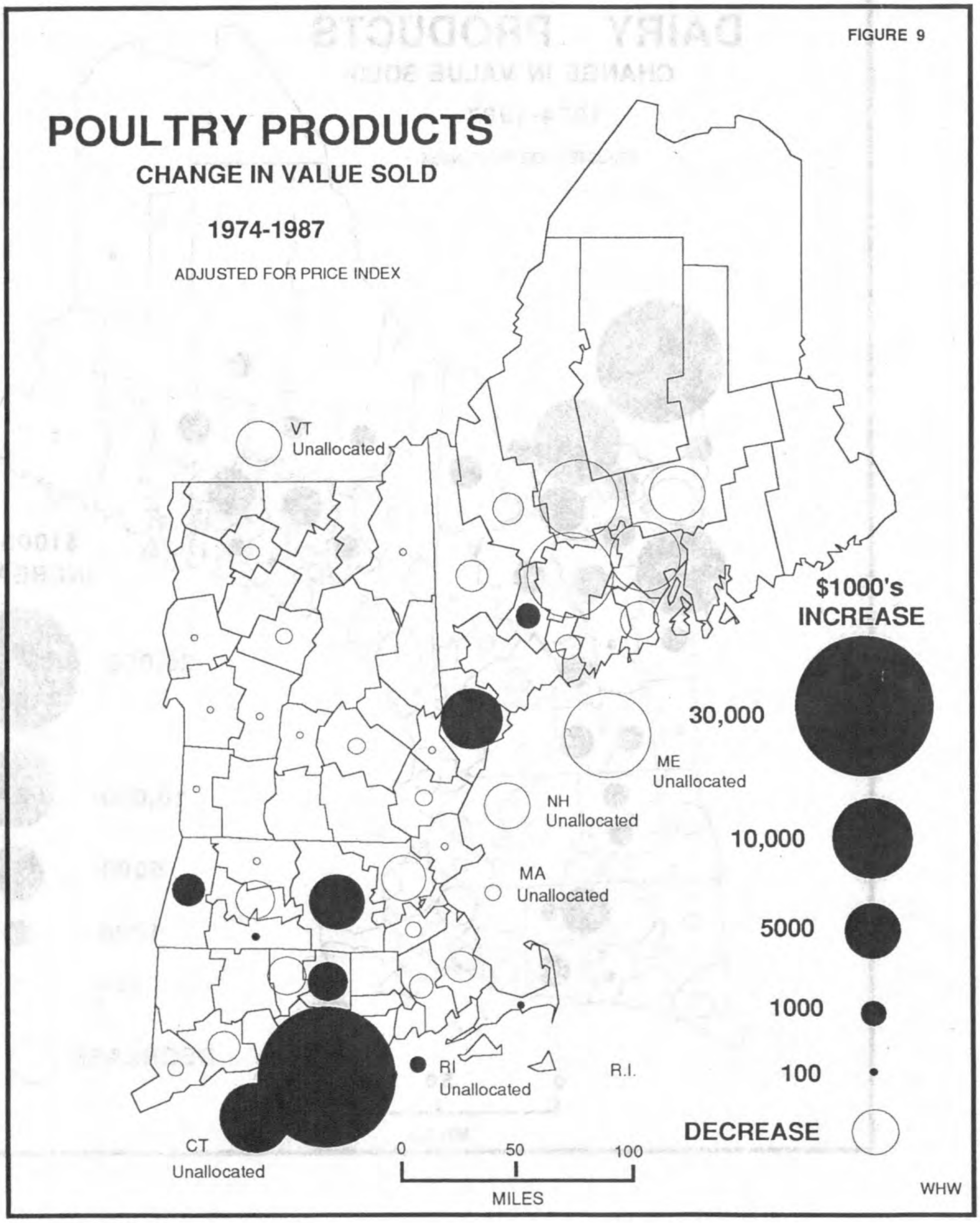
FIGURE 9
POULTRY PRODUCTS
CHANGE IN VALUE SOLD
1974-1987
ADJUSTED FOR PRICE INDEX
VT
Unallocated
NH
Unallocated
ME
Unallocated
MA
Unallocated
RI
Unallocated
R.I.
CT
Unallocated
$1000's
INCREASE
30,000
10,000
5000
1000
100
DECREASE
0
50
100
MILES
WHW

suburbanization. They are also increasingly numerous in high-amenity areas undergoing change from summer resort to year-round residences. Sheep have increased in number even more rapidly than horses, but they still contribute much less to the value of New England agriculture. Vermont has risen to resume its former role as the leading sheep producer of the region, although it has not yet achieved its nineteenth century dominance of the industry. Growth has also been substantial in most of Massachusetts and coastal Maine. Growth in "exurban" parts of Connecticut, Massachusetts and Vermont and decline in up-country New Hampshire and Maine suggest that sheep rearing is another form of gentleman farming.

Farm Size, Operators

The proposition that growth is primarily in non-traditional agriculture is supported by the fact that small farms, which are characteristic of the "new" agriculture, are increasingly numerous while the large farms of traditional agriculture are declining in number. In the years 1974 - 1987 farms of fewer than 50 acres increased in number by 56% to make up 34.7% of all New England farms. Meanwhile, farms of 180 acres or more declined by 17% and now constitute only 31.1% of the regional total. And most of the recent agricultural growth is in small farms. In the years 1974 - 1987 53.9% of all increases in cropland harvested were on farms of fewer than 50 acres while the largest part of the decline (96.9%) was on the medium sized farms (180 - 499 acres) which have traditionally been the heart of New England agriculture, constituting half of all farm acreage. The pattern of small farms revealed in Figure 10 is almost equivalent to a map of location rent in New England.

The balance between small and large farms is also reflected in changes in average farm size. Since 1974, New England has experienced trends that contrast strongly with developments elsewhere in the United States. In his study of farm enlargement in the Midwest, Hart found that the average size of farms in 31 states east of the Great Plains more than doubled between 1949 and 1987.[7] Over the same period, the average size of farms in New England increased only 40 percent (121 to 169 acres)

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7 Hart, John Fraser, "Part Ownership and Farm Enlargement in the Midwest" Annals, Association of American Geographers, Vol. 81, 1, 1991, pp. 66-79.

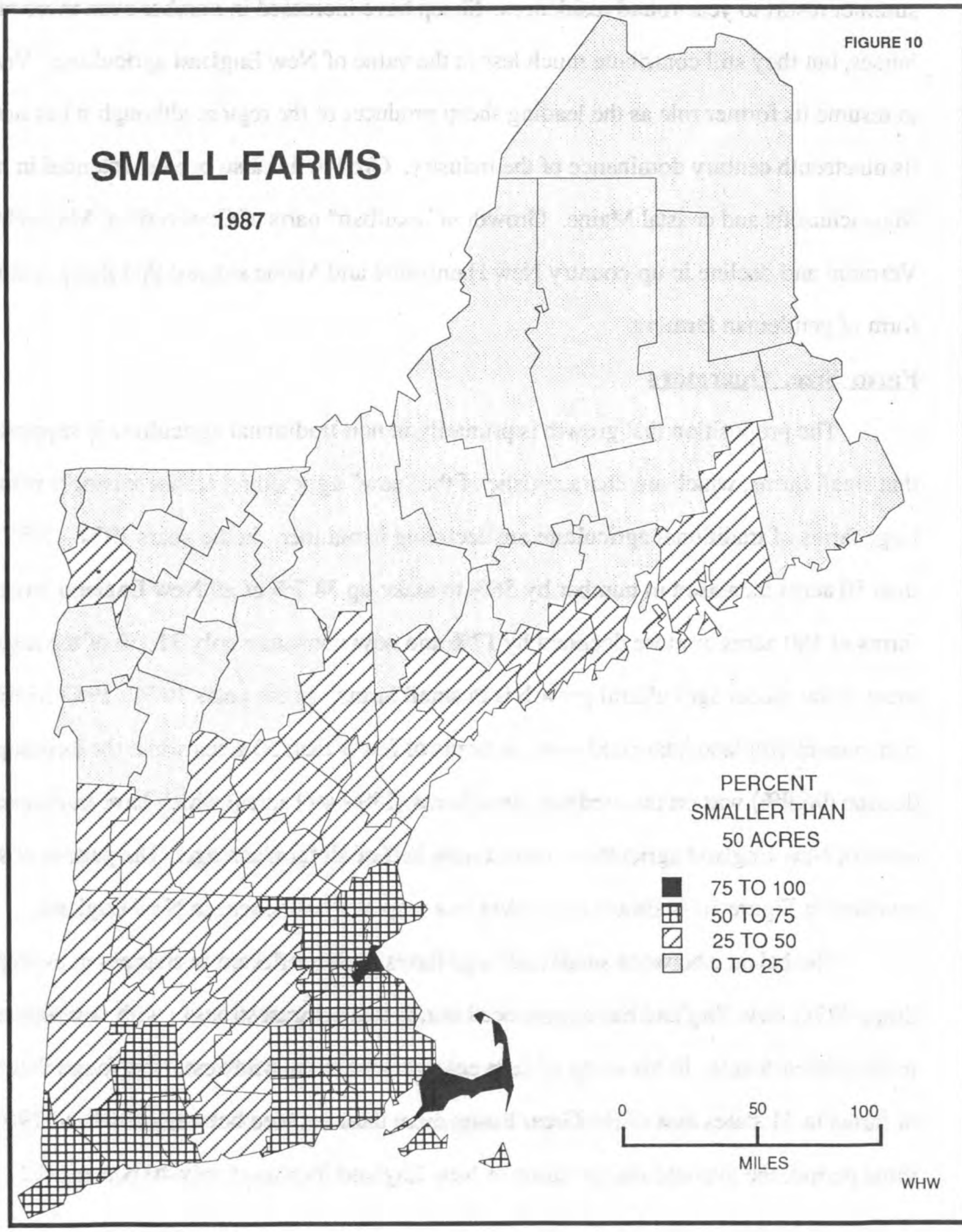
FIGURE 10
SMALL FARMS
1987
PERCENT
SMALLER THAN
50 ACRES
75 TO 100
50 TO 75
25 TO 50
0 TO 25
0
50
100
MILES
WHW

and after 1974 the dramatic increase in small farms caused average size to decline from 206 to 169 acres (18 percent).

Growth of a "new" agriculture composed of small specialty farms is also indicated by the share of New England farms in the hands of part-time operators, which increased from 37% in 1974 to 47% in 1987. Part-time operators have been dominant in New Hampshire and Rhode Island since 1982. Part-time farming is generally dominant in coastal Maine, central and southeastern New Hampshire, and in upland parts of Massachusetts and adjacent areas of Connecticut and Rhode Island (Figure 11). Conversely, part-time farming is of minor importance in the traditional dairy, poultry and potato farming areas of northern Vermont, New Hampshire and Maine.

Patterns of Growth and Decline

It remains to integrate the various indicators of growth and decline into a coherent picture. Cropland harvested has already been cited as the best measure of agriculture as it is seen in the landscape (Fig. 12). In this context agricultural growth has been most conspicuous in areas proximate to places experiencing rapid economic growth and suburbanization, but not so close as to be devoured by new development. Growth is also conspicuous in a number of more remote but high amenity areas that have received large influxes of newcomers who have brought with them capital, new ideas and enlarged markets. It also appears that growth is more evident in areas that are far advanced in the century-long process of agricultural decline. Here, even small amounts of growth are conspicuous because so little of traditional agriculture remains that its continuing decline does not dominate trends. Growth takes place on a very low base.

But the usefulness of cropland harvested as a measure of agricultural change in New England is greatly diminished by the fact that most of the recent increases in cropland harvested have been in the acreage of hay crops. These increases almost certainly reflect renewed or more intensive use of old fields, not the development of new land. We have not been able to clearly identify the market for this hay, but horse farms and increased reliance upon hay for silage in dairy production seem likely possibilities. Nevertheless, increases in cropland harvested have not been much affected by the dominant growth element in New England agriculture, that is, horticulture.

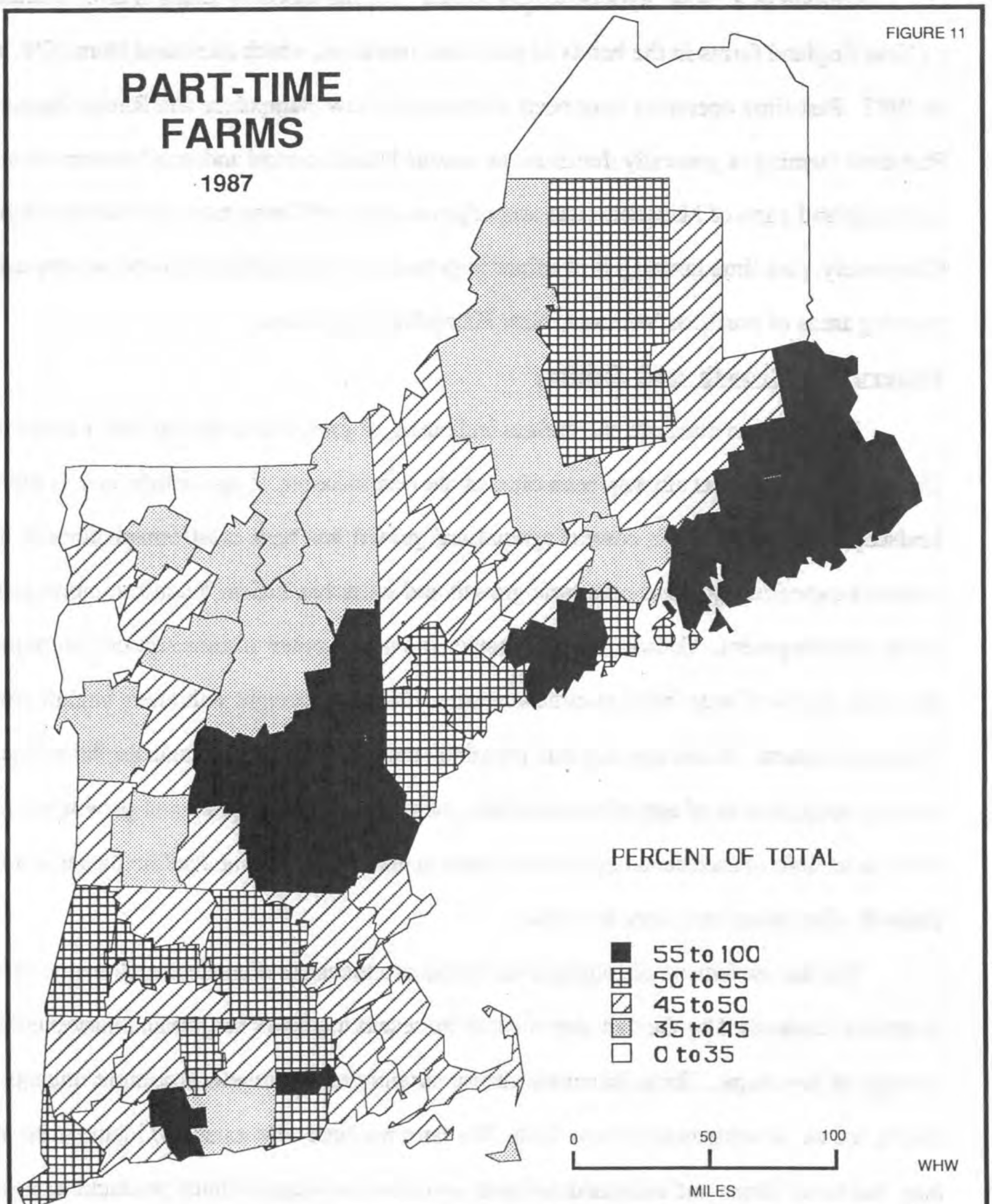
FIGURE 11
PART-TIME
FARMS
1987
PERCENT OF TOTAL
55 to 100
50 to 55
45 to 50
35 to 45
0 to 35
0
50
100
MILES
WHW

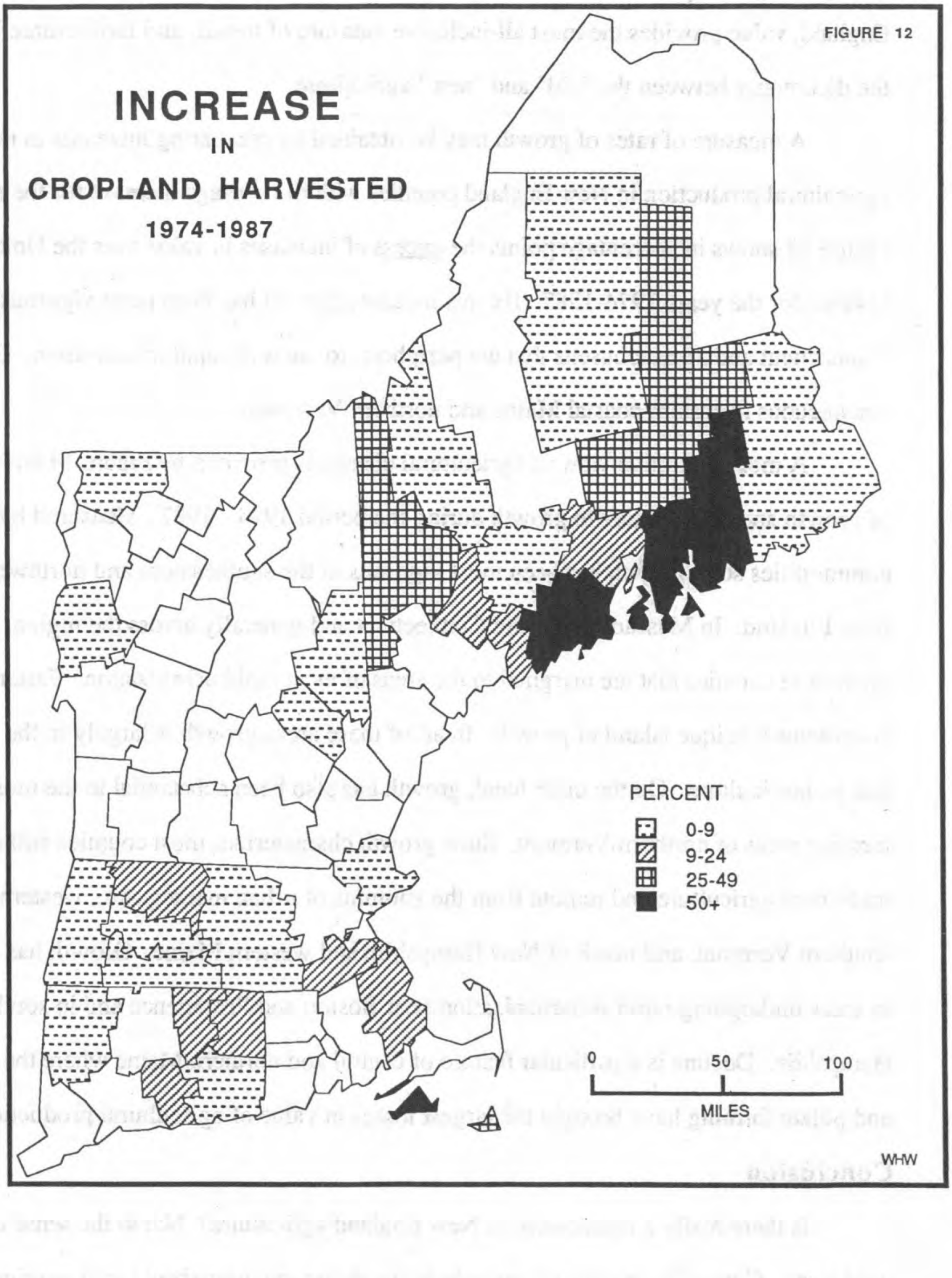
FIGURE 12
INCREASE
IN
CROPLAND HARVESTED
1974-1987
PERCENT
0-9
9-24
25-49
50+
0
50
100
MILES
WHW

The shortcomings of areal measures of agricultural change redirect attention to the value of products sold. As stated at the beginning of this paper, given the variety of agriculture in New England, value provides the most all-inclusive measure of trends, and furthermore it effectively depicts the dichotomy between the "old" and "new" agriculture.

A measure of rates of growth may be obtained by comparing increases in the value of agricultural production in New England counties with the average increase for the entire country. Figure 13 shows in percentage points the <u>excess</u> of increases in value over the United States average (149%) for the years 1974-1987. By this measure growth has been most vigorous in parts of Connecticut and Massachusetts that are peripheral to areas of rapid urbanization. Growth is also conspicuous in eastern coastal Maine and northern Vermont.

A more definitive view of agricultural change is provided by Figure 14 which depicts amounts of growth and contributors to growth during the period 1974 - 1987. Measured by value of commodities sold, growth has been most vigorous in the southeastern and northwestern corners of New England. In Massachusetts and Connecticut and generally across the region, growth has been greatest in counties that are marginal to the areas of most rapid urbanization. Eastern coastal Maine constitutes a unique island of growth. In all of these areas,growth is largely in the "new" agriculture, that is, horticulture. On the other hand, growth has also been substantial in the most productive dairy farming areas of northern Vermont. Slow growth characterizes most counties still dominated by traditional agriculture and remote from the stimulus of urban markets, i.e., western Massachusetts, southern Vermont, and much of New Hampshire and western Maine. Growth has also been minimal in areas undergoing rapid suburbanization near Boston and Providence and in southeastern New Hampshire. Decline is a particular feature of central and northern Maine where the demise of poultry and potato farming have brought the largest losses in value of agricultural production in New England.

Conclusion

Is there really a renaissance in New England agriculture? Not in the sense of a rebirth of what used to be. Generally, traditional agriculture involving medium-sized farms continues to decline: dairy, poultry, potato and tobacco farming. Here, decline has generally taken the form of the

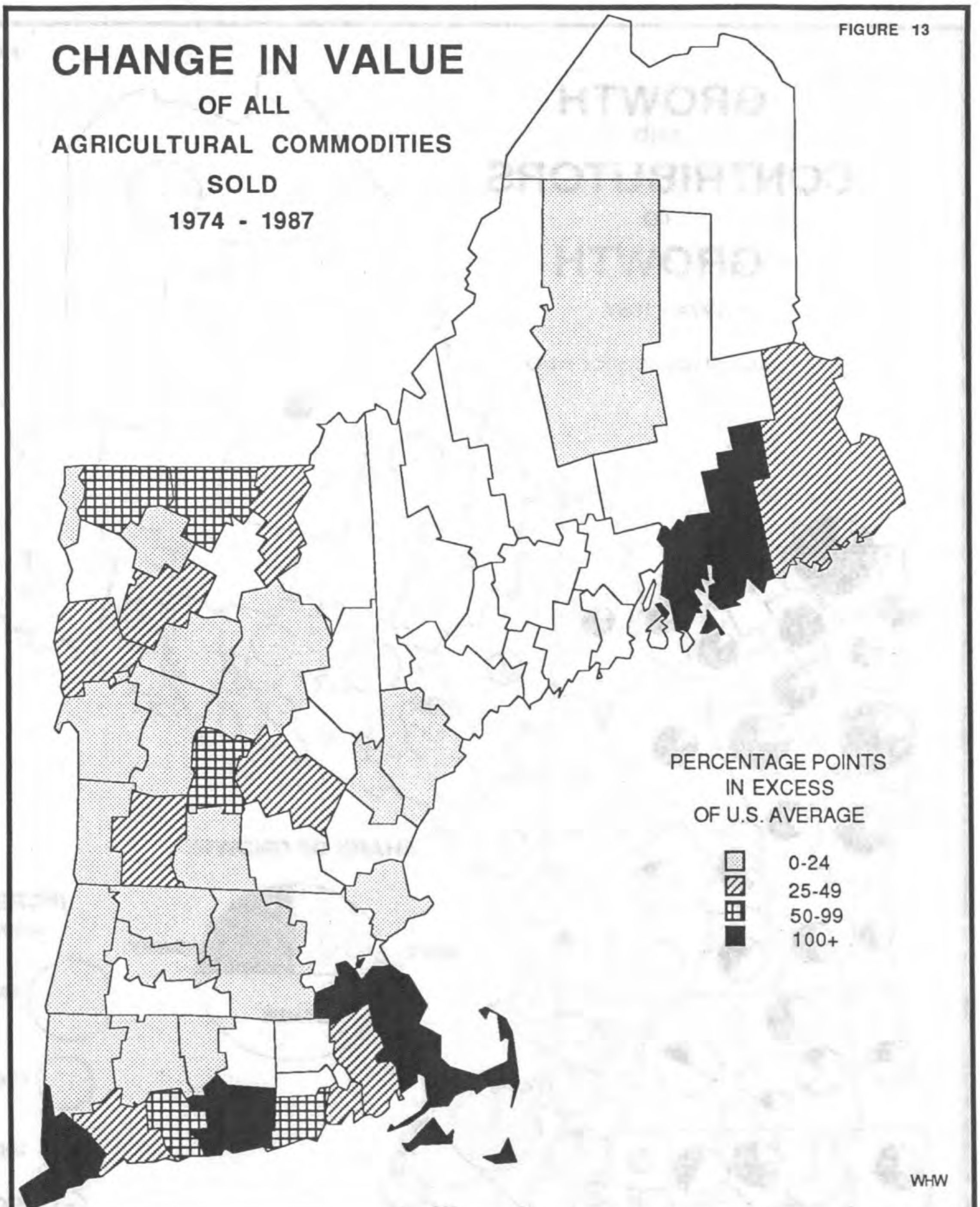
FIGURE 13
CHANGE IN VALUE
OF ALL
AGRICULTURAL COMMODITIES
SOLD
1974 - 1987
PERCENTAGE POINTS
IN EXCESS
OF U.S. AVERAGE
0-24
25-49
50-99
100+
WHW

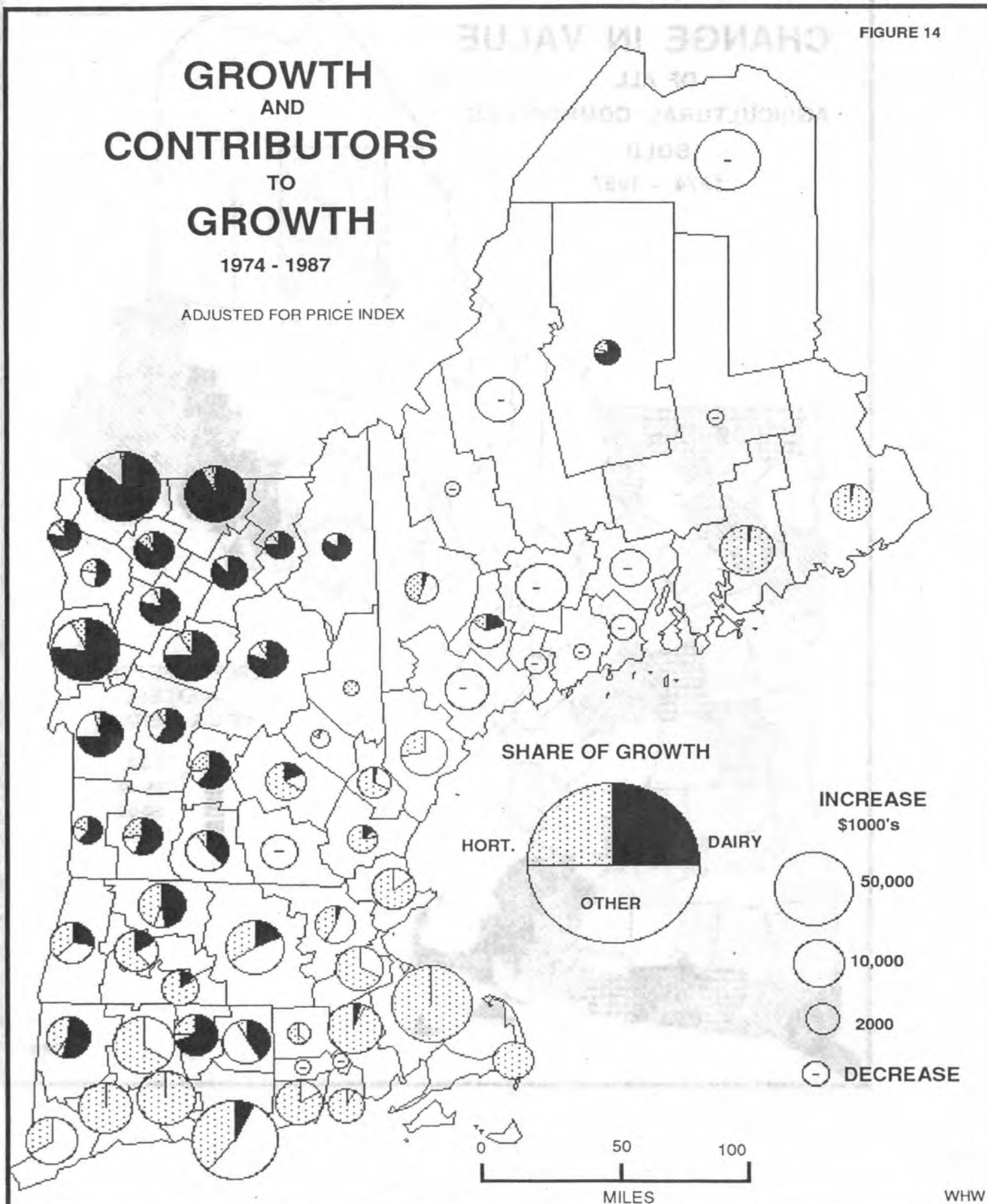
FIGURE 14
GROWTH
AND
CONTRIBUTORS
TO
GROWTH
1974 - 1987
ADJUSTED FOR PRICE INDEX
SHARE OF GROWTH
HORT.
DAIRY
OTHER
INCREASE
$1000's
50,000
10,000
2000
DECREASE
0
50
100
MILES
WHW

replacement of many smaller, marginal producers by fewer and larger farms. Growth has come primarily in "new" intensive types of agriculture: nursery, greenhouse, fruit and even horse farms. Across the region the pattern of growth or decline generally represents the balance between the new and traditional agriculture. Much of the new agriculture has developed in the urban periphery on high value land and some aspects of this growth may be regarded as the "gentrification" of the countryside. This growth has been mirrored by an increase in small and part-time farms. Viewed in the context of the long-term evolution of New England agriculture, these changes are the latest phase in a continuing process of adjustment to changing markets that was well underway by the middle of the 19th century, if not earlier.[8]

Underlying the changes that have been described are two general forces: the increasing cost of land, especially on the urban periphery, and intensified competition in American agriculture. The latter reflects economies of scale in both production and marketing and also increasingly efficient transportation. These forces have worked to push agriculture farther from markets as they have eroded many of the advantages that formerly accrued to farms close to urban centers. The chief exception to this is nursery and greenhouse farming which produces perishable and hard-to-ship commodities that find their principal markets in suburbia.

In addition to its local market-oriented component, New England agriculture has traditionally included a few specialized types of farming enjoying production advantages and serving wider northeastern or national markets. Generally, this agriculture has fared badly under the combined assaults of intensified national competition and declining demand. Survivors, primarily berry growers, have emerged because they have natural advantages not easily replicated in other parts of the country.

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[8] see Bell, op cit, p. 460, and earlier, John D. Black. The Rural Economy of New England. (Cambridge, Massachusetts, Harvard University Press, 1950), and Harold Fisher Wilson, The Hill Country of Northern New England. (New York, Columbia University Press, 1936).