A Geographic Examination of North Carolina Farms and Farmland: 1969 to the Present

Thomas A. Rumney
Center for Earth and Environmental Science
Plattsburgh State University

The farmland of the eastern United States, including that of North Carolina, has changed greatly in its configuration, distribution, usage, and ownership since the 1960s. Using 1969 as a baseline for comparison, the farmland and farms of North Carolina are examined here to ascertain the form, processes, locations, and changes in North Carolina's agricultural geography. These North Carolina characteristics of farmland change will also be briefly compared to those of other eastern states over the same period. Important variables for this study include cleared farmland (computed as total farmland minus farm woodland), number of farms, and average farm size. Distinctive regions of farmland change emerge as this study progresses.

Introduction

The patterns, distributions, and processes of agricultural land use changes in the United States offer a continuing focus for geographical study and understanding. The market forces for agricultural land and production, the varied and complex influences of demographic and other social forces within the farming populations, government activities and policies, transport systems, and other factors create a constantly dynamic picture of an area's agricultual land and land usage. This applies to the agricultural sector of North Carolina, as well. Despite a decline in traditional cash crops like tobacco and cotton, North Carolina's farmers receive over $7.2 billion in cash receipts according to North Carolina's Deprtment of Agriculture (1999). This study will examine several of these forces for change in North Carolina farmland, using census data, and will compare these changes to those in other areas of the eastern half of the country over a time period from 1969 to 1997. Following a brief mention of the agricultural regions of North Carolina, this article will examine these farmland changes during the past thirty years, using a work by Hart as a point of departure and will also in a preliminary way offer some comment on the forces for these changing dimensions in North Carolina's farming sector and landscapes.

Agricultural Regions of North Carolina

There are three very broad and general environmental regions in North Carolina that provide the basis for much of the state's agricultural regions. Moving from east to west, the first of these areas consists of the low-lying, generally flat and depositional landscape of the Coastal Plain. With a coastal fringe of lagoons, barrier reefs, and wetlands, this flood-prone landscape was the earliest focus for European settlers who established commercial (plantation) agriculture founded on involuntary servitude, large holdings, and export crops such as tobacco and cotton. The second region, the Piedmont, begins to emerge approximately 100-120 miles inland from North Carolina's Atlantic coast, and continues to rise steadily for yet another 100 to 150 miles further westward. Finally, west of Charlotte and Greensboro, the Appalachians create a mountainous terrain and landscape (Paterson, 1994).

In an article written in 1968, John Fraser Hart identified a number of significant changes in the distribution and structure of agricultural land use in the eastern half of the United States during the twentieth century up to 1968. Hart examined the altered character of a basic element of the American economy, agricultural land, for thirty-one states comprising what he envisioned as the "eastern" United States. He computed and then mapped the developing characteristics of cleared farmland acreage for these thirty-one states, including North Carolina, for the period from 1910 to 1959 by differentiating between total farmland per county and total farm woodland, thereby focusing on the more used and commercially lucrative portions of most farmers' properties.

In general, his results were mixed, both temporally and spatially. Farmland losses and abandonment occurred at different rates and times in different areas throughout his study area. Also, the causes for such land use change varied in complex ways. Urban and suburban expansion, strip mining and quarrying, the loss of a locally predominant crop, and the activities of Soil Bank retirement of marginally productive lands were all components of this process, though none of these factors by itself was pervasive or dominating. Usually, the single most important variable that Hart found for the loss of agriculturally-productive land was the quality of that land. This was found repeatedly, despite the difficulty in isolating the variable in a consistently measurable fashion. The long-term decline of use from intensive to extensive forms of agriculture to finally wood lot was also recognized by Hart (1968).

Within this broader picture of macro-regional decline and contraction of agriculturally-used lands, North Carolina stood out as a state that seemed to parallel the larger trends, with a net loss of 1,849,000 acres of farmland from 1910 to 1959, and with 77 of 100 counties actually losing land in farms (Hart, 1968). What has happened in the more than thirty years since Hart's study, however? What has happened to the farmlands of the original thirty-one state region compared to North Carolina? What are the current regional distributions of farmland use, gain, and losses? How different or similar are these North Carolina patterns when compared to the macro-region? And, what might be some of the causes for such patterns, if indeed they exist?

Post-1968 Changes at the Macro-Scale

Since 1968, the patterns of agricultural land use in the eastern thirty-one states of the United States has gone through a continuing series of alterations, including serious levels of abandonment and loss of acreage, and a decline in the number of farms and average farm size. Not surprisingly, too, there has been an unevenly distributed change in cleared acreage.

In order to create a benchmark for comparison of North Carolina's agricultural land changes to the broader macro-region of the eastern United States, a number of general macro-regional dimensions are described here. In 1969, states in the macro-study region had a total of 356,981,000 acres in all categories of farmland. By 1997, the amount of farmland recorded for the same areas amounted to 301,040,849 acres, a loss of 55,940,159 acres (or 15.7%). The corresponding amounts of total farmland of all types for North Carolina were 12,733,751 acres in 1969 and 9,122,379 acres in 1997, a decline of 3,611,372 acres (or 28,4%). Total "cleared" farmland (or the total farmland amounts minus total farm woodland per county) for the macro-region was 290,450,990 acres in 1969 and 250,936,021 acres in 1997; a decrease of 40,514,969 acres (or 13.1%). For North Carolina, these data for

Table 1. North Carolina Agricultural Land Dimensions, 1969-1997

Year	Cleared Farmland*	No. Farms	Average Farm Size*
1969	8,699,458	119,386	107
1974	7,206,640	91,280	123
1978	7,129,457	81,706	135
1982	6,993,652	72,792	142
1987	7,694,450	59,264	159
1992	6,323,501	51,854	172
1997	6,482,653	49,406	185

*Acres

Sources: U.S. Census of Agriculture: North Carolina State and County Data for 1969, 1974, 1978, 1982, 1987, 1992, and 1997

Table 2: Cleared Farmland in Eastern North Carolina, 1969-1997, in Acres

County	1969	1997	% Change
Duplin	176,126	181,354	+3.0%
Hyde	53,175	86,299	+62.3%
Lenoir	107,182	118,638	+10.8%
Pamlico	27,807	45,651	+64.2%
Pasquotuck	58,777	83,711	+42.4%
Perquimans	66,167	71,137	+7.5%
Tyrell	21,623	52,046	+140.7%
Washington	71,415	95,115	+33.2%

Sources: U.S. Census of Agriculture: North Carolina State and County Data for 1969 and 1997

1969 were 8,696,458 acres of cleared farmland. For 1997, there were 6,482,653 acres, or a decline of 2,213,802 acres (25.5%). North Carolina actually lost farmland in use at a rate that was significantly higher than the pattern for the thirty-one state macro-region (Table 1 and Figures 1 and 2).

Closely related to the variable of cleared farmland are two other variables; the number of farms and average farm size. Again, from the view of the larger region, there were 1,918,141 farms in the eastern United States in 1969, and 1,203,969 in 1997. This was a loss of 714,172 farms (or 37.2%). In North Carolina, in contrast, there were 119,386 farms in 1969 and 49,406 farms in 1997; a massive loss of 69,980 farms (or 58.6%) (Figures 3 and 4). North Carolina also saw a state-wide increase in average farm size from 107 acres in 1969 to 185 acres in 1997 (an increase of 130.3% for the macro-region and an increase of 72.9% for North Carolina) (Figures 5 and 6).

Patterns of North Carolina Agricultural Land, 1969 to 1997

The patterns of agricultural land change within North Carolina from 1969 to 1997 were as striking and distinctive as were those at the state-by-state scale. One of the characteristics that distinguished North Carolina from the rest of the original study area was the patterns of change for all three of the state's environmental/agricultural regions.

Upon examining its dimensions of cleared farmland from 1969 to 1997, the Coastal Plain areas of eastern North Carolina stand out in stark contrast to much of the rest of the state. A total of eight counties (Duplin, Hyde, Lenoir, Pamlico, Pasquotunk, Perquimans, Tyrrell, and Washington) experienced a gain in the amount of cleared land on their farms for the time 1969 to 1997 (Table 2). All are within the Coastal Plain. Much of this increase in cleared farmland and implied farming activity is related to a fundamental alteration in the agricultural activities of the past and the development of several new specialties over the past thirty years. Much of the lands in the coastal plains area once planted mostly in tobacco have experienced a significant decline in their tobacco activities (Hapke, et al., 1998). In the place of tobacco have evolved large and growing acreage and production in other crops, especially soybeans, and the development of a number of large-scale commercial producers of hogs (U.S. Census of Agriculture, 1969-1997; Furuseth, 1997a). As market conditions for tobacco waned and the future of tobacco as a profitable crop has become murky with law suits against tobacco businesses, soybeans and hogs have become the leading economic components of the coastal plains agricultural sector of North Carolina.

Most of the rest of the counties of the eastern section of the state witnessed much smaller amounts and intensities of cleared farmland losses when compared to the other regions of the state. Arguably, the highest rates of loss of cleared farmland occurred in the western areas of the state within the Appalachian realm. When combined with the facts that this west-

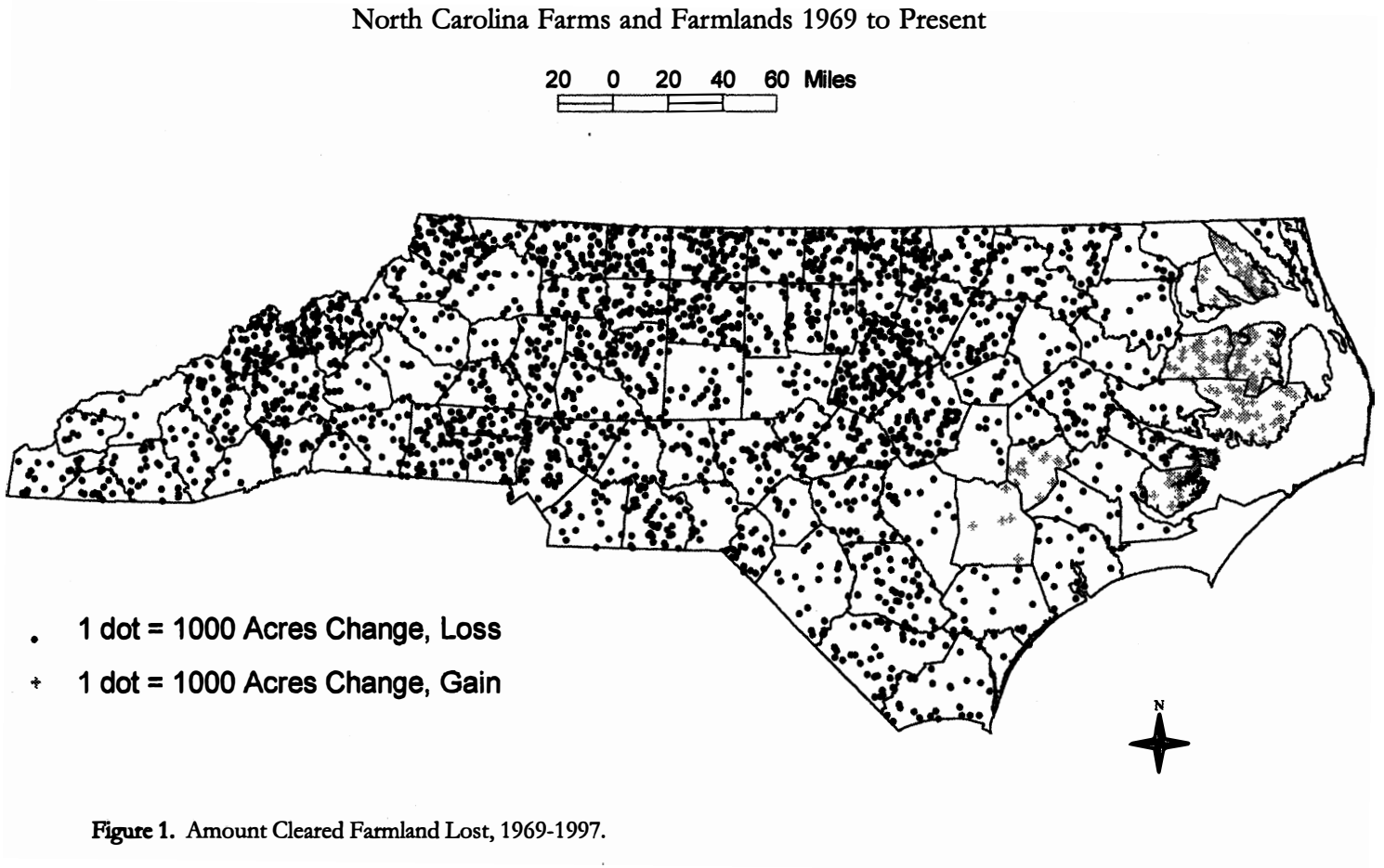

Figure 1. Amount Cleared Farmland Lost, 1969-1997.

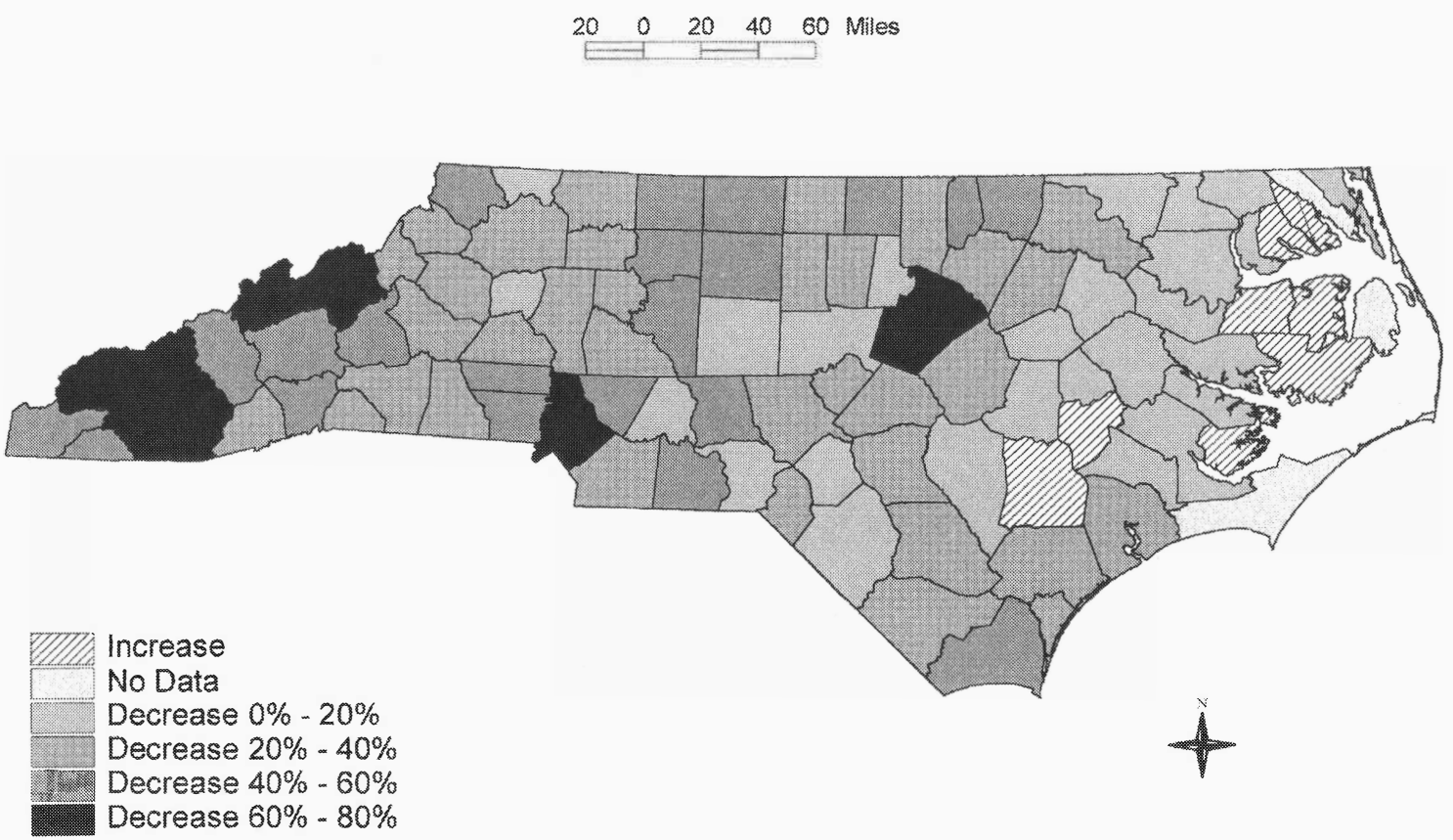

Figure2. Cleared Farmland, Percent Change in Acreage 1969-1997.

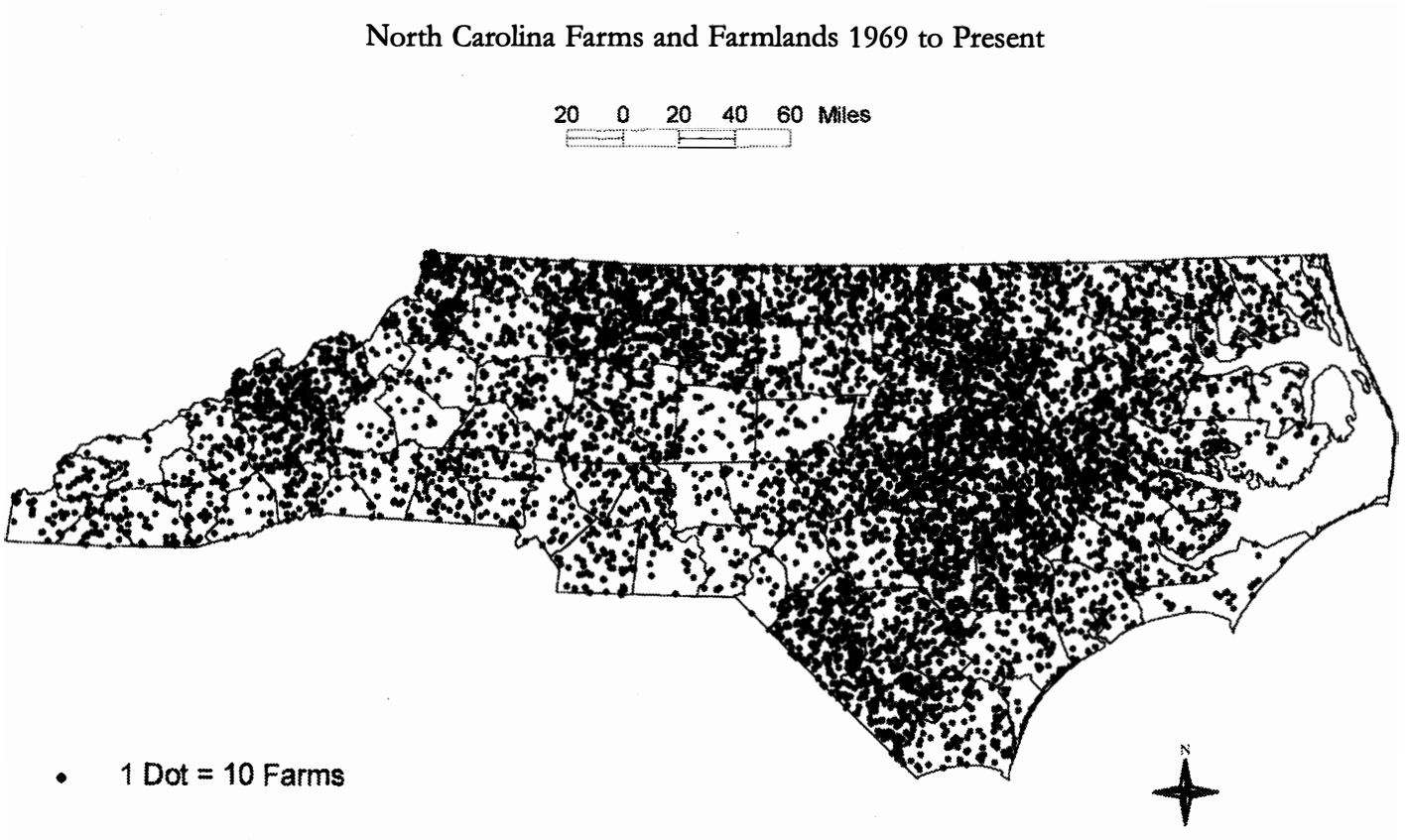

Figure 3. Decrease in Number of Farms, 1969-1997

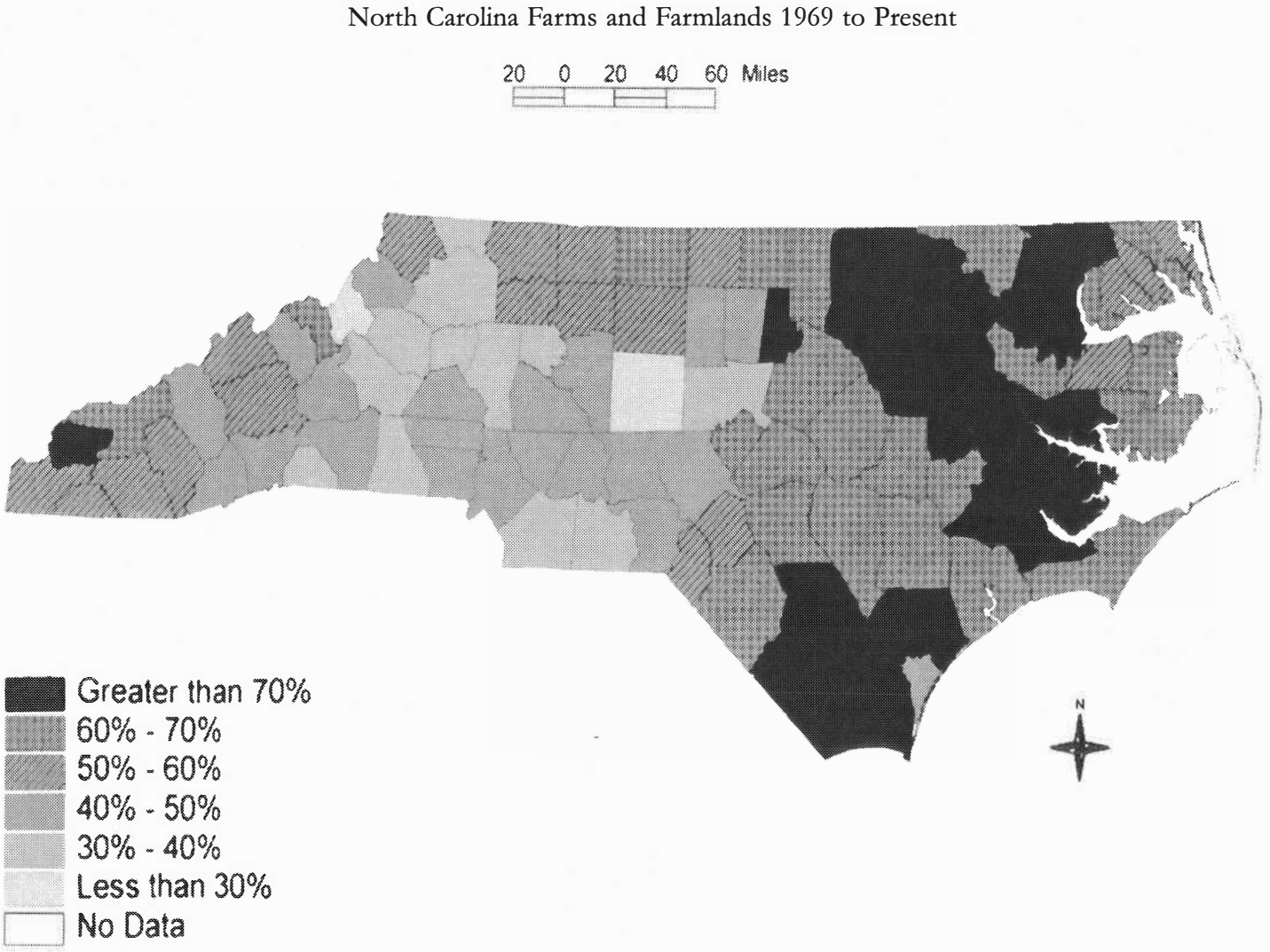

Figure 4. Percent Decline in Number of Farms, 1969-1997.

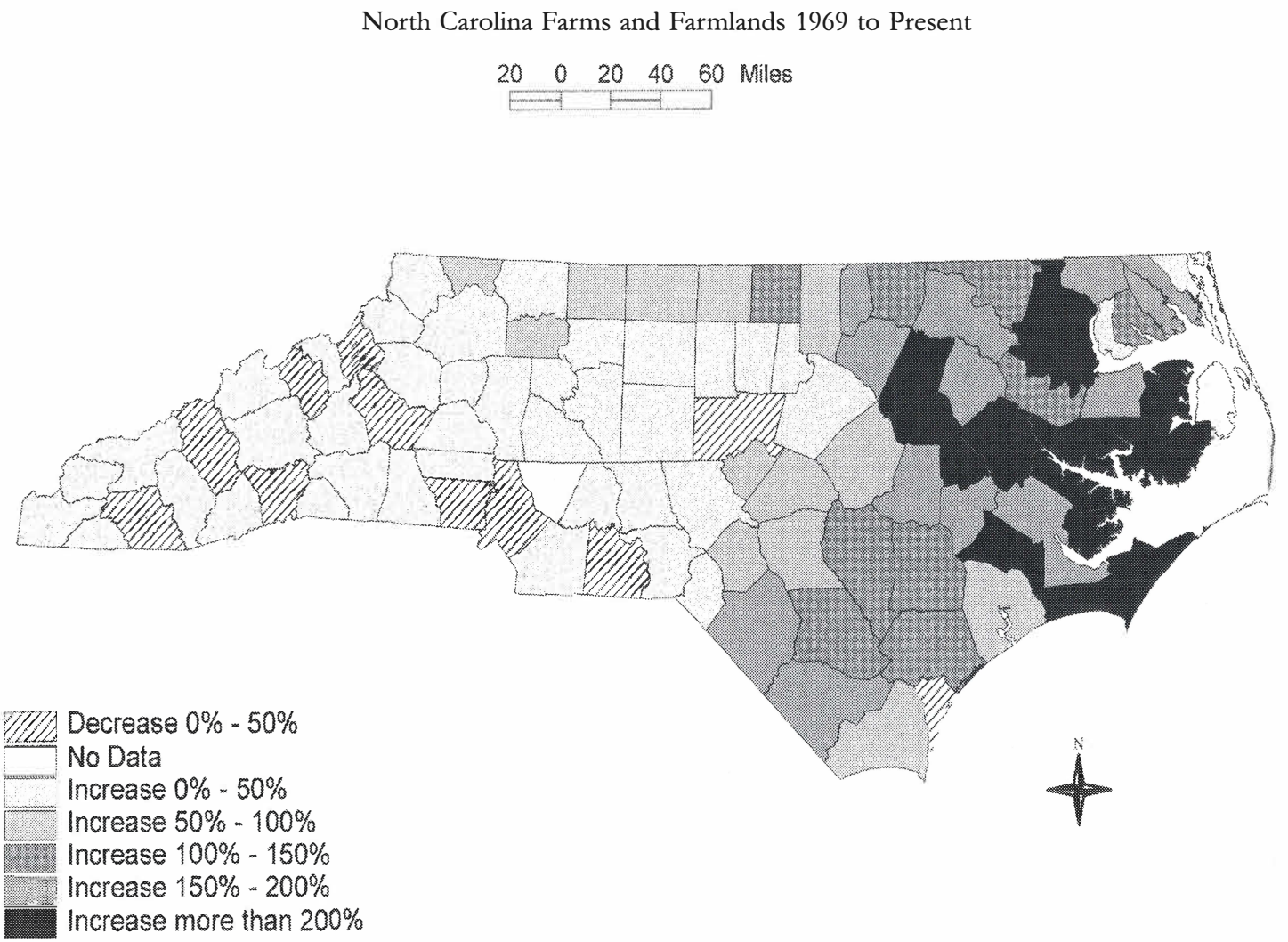

Figure 5. Percent Change in Average Farm Size, 1969-1997.

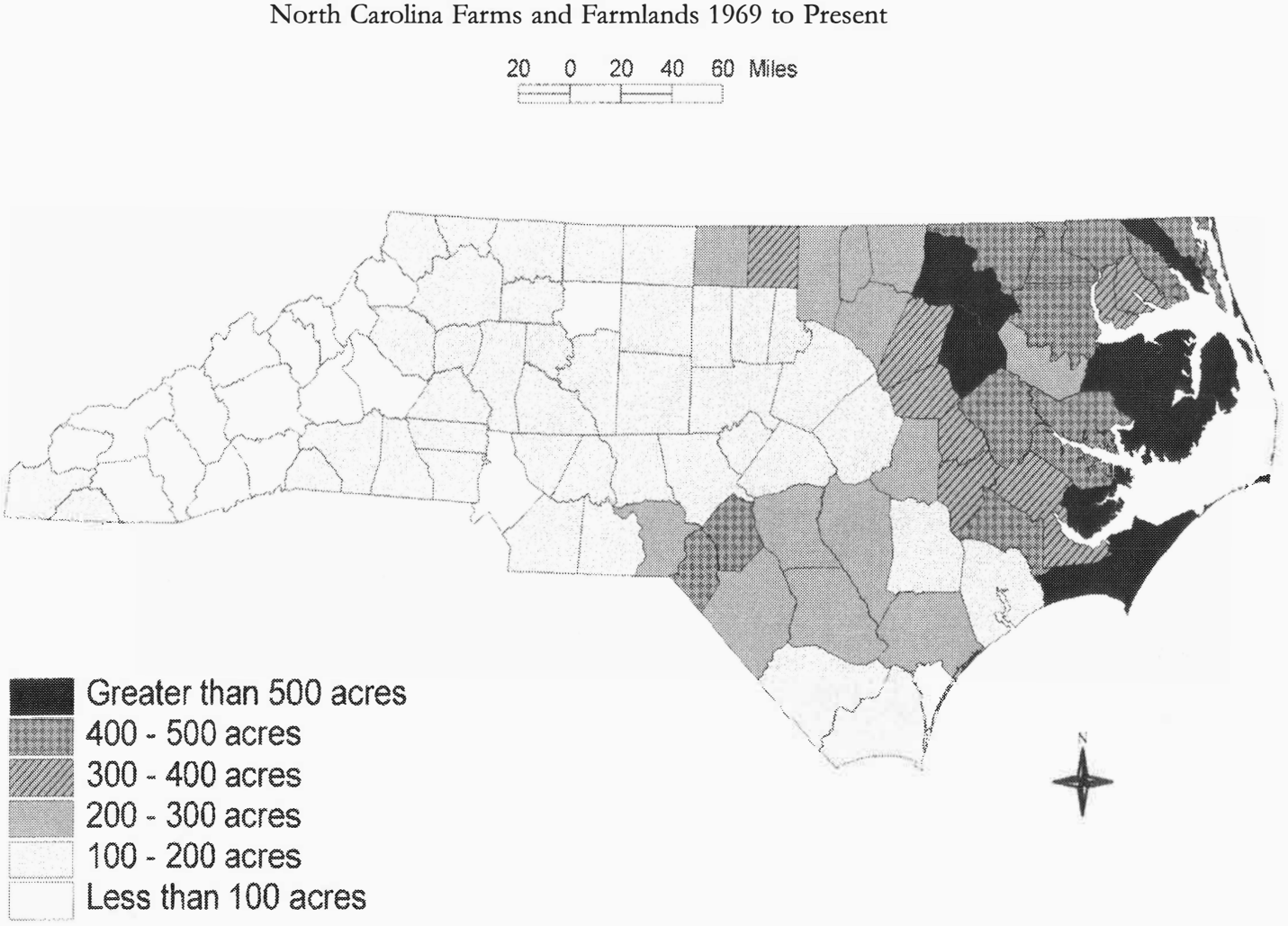

Figure 6. Average Acreage Per Farm for 1997.

ern area also declined in numbers of farms and average farm size, it becomes evident that this mountainous west of North Carolina is in active "agricultural decline" and evidently is being converted to other land and economic uses such as tourism, forest preserves, and second home properties. The "Piedmont" areas of the state show a more mixed though still substantial loss in cleared farmland since 1969. One probable cause for this varied pattern, the effects of urban sprawl and suburbanization, has an uneven pattern. For example, Mecklenberg County (Charlotte –63.6%), Wake County (Raleigh, -76.2%), and Guilford County (Greensboro, -48.5%) all had sharp losses in cleared farmland as their urban areas grew significantly in area, content and complexity since 1969 (Henderson and Walsh, 1995). Counties with smaller urban areas and levels of urbanization, like Cumberland (Fayettteville, -29.1%), and Durham (Durham, -16.3%) counties, experienced less farmland loss. The less urbanized counties of this Piedmont area fell between the extreme losses of the western areas of the state and the actual gains in the east.

Numbers of Farms and Farm Sizes, 1969-1997

While North Carolina's agricultural sector experienced a variable regional pattern of change in cleared farmland over the study time, all counties of the state saw losses in total number of farms with the abandonment of more marginal lands, the conversion of farmland to other land uses, and farm consolidation. Again, however, this variable was distinctly regional in its distribution and in the intensity of loss. First, in contrast to the increase or very modest losses in cleared farmland by county, the eastern third of North Carolina experienced large and pervasive losses in the number of farms (Figures 3 and 4). Obviously, the remaining farm units have gone through a significant process of consolidation and an increased level of commercialism and industrialization as their activities, products, and structure have evolved over the past thirty years (Hart and Chestang, 1978). Toward the central and western areas of the state, a more mixed picture of farm loss exists. Randolph County, in the geometric center of the state, and Avery County, on the state's border with Tennessee, were the two counties in the state with the least losses of farms, probably resulting in part from earlier declines and local legislation/planning initiatives to halt the loss of what is left of their farms. The far southwest corner of the state, however, lost farms at a rate of (usually) over 50% from 1969 to 1997, as did counties along the northern tier bordering Virginia. Much of the rest of this western two-thirds of the state had already experienced large farm losses, however, and had simply fewer marginal farm units to lose.

Farm size dimensions also has distinctive patterns. Again, most of the eastern third of the state experienced the largest average increases in farm size by county. This is another indication of farm consolidation, increased industrialization, and commercial change in this region. Again, in contrast, most of the central and western counties of North Carolina increased their farm size average less than 50% between 1969 to 1997 (as opposed to several eastern counties that saw their average farm size by county increase by over 200%, including Hertford, Hyde, Jones, Nash, Pamlico, Pitt, and Tyrrell counties). Ten other counties in the Piedmont and Appalachian areas actually declined in their average farm size (Macon, Haywood, Henderson, Yancey, Avery, Burke, Gaston, Mecklenberg, Anson, and Chatham counties). And, one tiny county on the east coast, New Hanover (with the city of Wilmington) also decreased in average farm size. While urbanization is an obvious factor for such decline in a few of these counties (e.g., New Hanover, Mecklenberg, and Gaston), other reasons such as a more general decline in farming and land abandonment seem to be at work in the other counties as more traditional tobacco and other forms of farming decline in profitability (Furuseth 1997a; Hart and Chestang 1978).

Reflections and Summary

A most compelling question now is "what is causing these patterns?" These causes appear to be complex, interrelated with regional and national forces, and are associated with non-agricultural influences. Perhaps foremost among these forces for regional change in North Carolina's agricultural sector is the

fundamental refocusing by North Carolina farmers on very different products and styles of farming.

The traditional and long-time commercial crop of a large number of North Carolina farmers has been tobacco. Few crops in North Carolina's existence have been so important, dominating, and lucrative as has been tobacco, but that has been changing during the past thirty years. There have been several factors of change in the tobacco industry that have been a part of the farmland changes of the state. This once-hand labor oriented activity has finally become mechanized at all levels of its production. This, in turn, has encouraged land consolidation and has produced an increased need for capital used in such consolidation and industrialization. This has also meant that fewer farmers were needed, which in turn reduced the number of people who do plant tobacco. Where human labor is still used, increasingly it is immigrant labor from Latin America. Larger marketing patterns, the end of "local" storage, processing, and handling has pushed the business more toward large (and sometimes internationally oriented) companies. And, the concerns of many over the health aspects of tobacco use have, at best, made the near future of tobacco growing uncertain and suspect (Hapke, et al, 1998). Since many of the tobacco farms of the past were more numerous and smaller in size, this consolidation force becomes very evident now.

While tobacco's contributions to the agricultural sector of North Carolina have changed a great deal, there has also been a refocusing of agricultural activities, particularly in the eastern third of the state. Much of this revolves about a massive "boom" in hog raising and poultry farming (Hart, 1991; Furuseth, 1997a; Furuseth, 1997b). Hogs and poultry were part of the products of North Carolina from its earliest of colonial days, and some commercial activity regarding the raising of both have long been components of the North Carolina agricultural scene. However, since the 1970s both poultry and hog raising have exploded in North Carolina in terms of the numbers of farmers, agri-business firms, and workers involved, land used, capital expended, profits made, and other aspects such as environmental impacts of animal manure (Furuseth 1997A; Furuseth 1997b). These operations producing the "other white meat," broilers, eggs, and other products have focused in the eastern counties of the state and have been the prime focus for farmland con-

Table 3: Agricultural Losses in North Carolina, Fall, 1999

Livestock	Number Lost	Total $ Lost
Hogs	28,000	$1,680,000
Chickens	2,107,857	$3,583,357
Turkeys	752,970	$7,153,215
Cattle	1,180	$495,600
		$12,912,172

Crops	Acres Affected	Total $ Lost
Corn	379,716	$49,377,709
Soybeans	1,086,566	$69,580,564
Tobacco	80,911	$95,114,346
Cotton	781,564	$193,587,047
Peanuts	119,536	$39,925,706
Fruit-Veg.	55,861	$79,590,892
		$543,275,892

Source: North Carolina Department of Agriculture and Consumer Services

solidation and increased cleared farmland in the same area. The land holdings where these changes have occurred have also expanded on average over time (Furuseth, 1997a). The areas of the state which have not experienced this conversion to hog and poultry raising, and that are not engaged in growing soybeans and corn to be used for animal fodder, have experienced either a lack of growth in their agricultural activities and production, or have suffered actual declines.

In sum, much of the state's agricultural sector is now being driven by the burgeoning hog and poultry businesses concentrated and developing in the eastern portion of the state. This includes the expanding cleared farmland in the east, as opposed to its loss in the west and some of the Piedmont and the unexpected increases in some eastern counties of numbers of farms and farm sizes.

Postscript

Fall of 1999 brought to North Carolina a set of natural disasters named "Floyd" that was not only deadly and destructive to the people, homes and communities of the state, but was also immensely damaging to the state's agriculture. Much of this disaster impact occurred in the eastern areas of the state, exactly where most of the hog and poultry activities have redirected the state's agricultural geography. Although the state's Department of Agricultural and Consumer Services have not provided county breakdowns of losses, the data in Table 3 provide at least a partial review of losses by the farmers of North Carolina from this storm and resulting floods.

References

Furuseth, O.J. (1997a) "Restructuring of Hog Farming in North Carolina: Explosion and Implosion," *Professional Geographer*, 49: 391-403.

_____ (1997b) "Sustainability Issues in the Industrialization of Hog Production in the United States," in B. Ilbery, Q. Chiotti, and T. Rickard, eds. *Agricultural Restructuring and Sustainability: A Geographical Perspective*. Wallingford, U.K.: CAB International, 293-312.

Hapke, H.M., Purvis, S.M., Pate, D.B., Daisey, G.R., George, E.M., Hill, J.R., Hoffman, C., Howard, R., III, Jackson, P.R., III, Murphy, C, and **Wescott, F.M., III.** (1998) "The Changing Economy of Tobacco in Eastern North Carolina, 1968-98," North Carolina Geographer, 6: 22-33.

Hart, J.F. (1968) "Loss and Abandonment of Cleared Farm Land in the Eastern United States," *Annals of the Association of American Geographers*, 58(3): 417-440.

_____ (1991) *The Land That Feeds Us*. New York: W.W. Norton.

Hart, J.F. and **Chestang, E.L.** (1978) "Rural Revolution in East Carolina," *Geographical Review*, 68(3): 435-458.

Henderson, B.M. and **Walsh, S.J.** (1995) "Planed, Paved or in Succession: Land-Cover change on the North Carolina Piedmont," *Southeastern Geographer*, 35(2): 137-149.

Paterson, J.H. (1994) *North America*, 9th edition. New York: Oxford University Press.

U.S. Department of Agriculture (1972) *North Carolina State and County Data for 1969*, Washington, D.C.: U.S. Government Printing Office.

_____(1977) *North Carolina State and County Data for 1974*, Washington, D.C.: U.S. Government Printing Office.

_____ (1981) *North Carolina State and County Data for 1978*, Washington, D.C.: U.S. Government Printing Office.

_____(1984) *North Carolina State and County Data for 1982*, Washington, D.C.: U.S. Government Printing Office.

_____ (1989) *North Carolina State and County Data for 1987*, Washington, D.C.: U.S. Government Printing Office.

_____(1994) *North Carolina State and County Data for 1992*, Washington, D.C.: U.S. Government Printing Office.

_____(1999) *North Carolina State and County Data for 1997*, Washington, D.C.: U.S. Government Printing Office.

_____ (1972) *1969 Census of Agriculture of the United States: Summary and State Data, Vol. 1, Geographic Area Series*, Washington, D.C.: U.S. Government Printing Office.

_____ (1999) *1997 Census of Agriculture of the United States: Summary and State Data, Vol. 1, Geographic Area Series*, Washington, D.C.: U.S. Government Printing Office.