The Changing Economy of Tobacco in Eastern North Carolina, 1968-98

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This paper examines the changing economy and geography of tobacco in eastern North Carolina over the past thirty years. Our primary interest is to assess the technological changes that have taken place in cultivation and harvesting, and the impacts of these changes on production practices and the agricultural landscape of one county in the region (Pitt). During the period under study, the tobacco culture of the state has undergone a tremendous transformation that has encompassed every stage of the production process. The most significant innovations in this transformation process have been bulk barns for curing and hydroponic greenhouses for the cultivation of seedlings. One impact of these particular innovations, and with mechanization in general, is that Hispanic migrant labor has become increasingly important to the operation of the tobacco farm.

Tobacco has captured the public's attention of late as concerns about public health, regulation of sales and advertising, and changes in farm legislation raise a number of questions about the future of tobacco production in the United States. These questions take on particular relevance in North Carolina where tobacco has historically played a significant role in the state's economy. Although its relative share of the economy has steadily declined over the past three decades, tobacco continues to be an important industry in the state. Its total economic impact on North Carolina is $7.7 billion, and the industry directly and indirectly employs over 280,000 North Carolinians (*North Carolina Tobacco Report*, 1996).

Yet, the industry today sits on the threshold of profound change, which renders its future in the state unclear. In addition to political pressures, global industrial restructuring and increasing competition from foreign producers are creating an uncertain future for tobacco in North Carolina. These new challenges, however, mark only the latest events in a history of ongoing transformation that has shaped the landscape of tobacco-growing regions all over the country. The intent of this paper is to examine the changing economy of tobacco in eastern North Carolina and to assess the impact changes in production technology have had on the agricultural landscape of one county --Pitt County -- in particular. In investigating how the geography of tobacco has unfolded in Pitt County over the past thirty years, we seek to understand the technological changes that have taken place in cultivation and harvesting and how these have affected production as a whole. Our findings are based on archival research and interviews with tobacco farmers, warehouse operators, and the Director of County Extension forPitt County.

This study will provide first an overview of the global tobacco economy and the position of North Carolina and Pitt County therein, and a review of the history of tobacco production in eastern North Carolina. We then turn to a discussion of the changes in the production process since the late 1960s. Following an assessment of some of the impacts mechanization has had on tobacco farming in the county, we comment briefly on the marketing system for tobacco, and conclude with a discussion of emerging trends and future prospects of tobacco for Pitt County. Most prominent trends are: a decreasing number of farms in the region while individual farm size has increased; and changes in the pattern of on-farm labor, including increasing reliance on

immigrant Hispanic labor.

North Carolina and the Global Tobacco Economy

World tobacco production currently stands at approximately six million metric tons (USDA, 1997b). Approximately eleven percent of the tobacco produced in the world comes from the United States, ranking it second in total world production only to China in 1996. The United States is the largest exporter of cigarettes and is the second largest exporter of unmanufactured tobacco after Brazil, accounting for almost twelve percent of total world exports in 1996.[1] Total exports of unmanufactured tobacco from the U.S. in 1996 reached 222,316 metric tons and were valued at $1.39 billion (USDA, 1997c). In fact, unmanufactued tobacco ranks sixth in value among U.S. agricultural commodities (USDA, 1997a), and earnings from tobacco made it the ninth largest contributor to U.S. agricultural exports in 1993 (U.S. Bureau of Census, 1995).

The type of tobacco that is by far the largest in volume and value is flue-cured (bright leaf) tobacco, which is the principal ingredient in blended cigarettes and is also used in other smoking and chewing tobaccos. Six states currently grow flue-cured tobacco: Virginia, North Carolina, South Carolina, Georgia, Florida, and Alabama (see Map 1). For many years the largest producer of flue-cured tobacco has been North Carolina, and within North Carolina, the eastern coastal plain has been the region of greatest production significance (see Map 2). North Carolina produced five hundred seventy-three million pounds of flue-cured tobacco in 1996 (NCDA, 1997d), the exports of which earned the state $574 million (NCDA, 1997c). Thirty-six percent of all tobacco farmers are located in North Carolina, and the state employs sixteen percent of the total tobacco workforce in the country (North Carolina Tobacco Report, 1996-97).

Tobacco ranks third after hogs and poultry in terms of cash receipts but in terms of value of agriculture export shares, tobacco ranks first (NCDA, 1997c). Furthermore, it is only since 1992 that hog production has overtaken tobacco. Within North Carolina, Pitt County, located in the eastern coastal plain, is the single largest producer of flue-cured tobacco. In 1996 the county harvested 33.6 million pounds, roughly 6% of the state's total that year. (NCDA, 1997f). Its importance in Pitt County is attested to by the fact that it annually nets farmers between $800 and $1400 an acre and outstrips all other field crops in gross receipts by almost $4000 per acre (Smith, 1997). No other field crop comes close to tobacco in income contribution.

Tobacco has not always enjoyed such a prominent position in the states agricultural profile, however, and the importance of flue-cured tobacco in particular did not reach its peak until well into the twentieth century. Previously, other crop cultures,i.e., cotton, predominated until a series of events brought tobacco to the fore. The historical dev- elopment of tobacco culture in North Carolina is described in the section below.

The History of Tobacco in Eastern North Carolina[2]

Cultivation of tobacco originated in Maryland in the 1660s but soon moved southward into Virginia and northern North Carolina and westward into Kentucky and Ohio. By the nineteenth century tobacco had spread to parts of North Carolina and into South Carolina and Georgia, but cotton then, "became king and supplanted tobacco for a century until the boll weevil and low cotton prices [in the latter quarter of the century] reversed th[is] trend" (Daniel, 1985, p.21). Not until the last quarter of the nineteenth century would tobacco production surge in North Carolina. The most influential factors of this expansion were the declining price of cotton in conjunction with changing consumer desires and increasing demands of tobacco manufacturers (Tilley, 1948).

After the War of 1812, foreign trade had begun to favor the bright yellow variety of

[1] This figure is based on estimates of world tobacco production for 1996 and is consistent with the US's percent share of world exports in 1995 which numbered 11.7% (USDA, 1997c).

[2] See Tilley (1948) for a comprehensive history of the early bright leaf tobacco industry.

tobacco, which then obtained extraor- This then led to efforts to produce yellow-leafed tobacco in the tobacco regions of Maryland, Ohio, Kentucky, Virginia, and the Piedmont of North Carolina. Due to favorable climatic conditions, the area of the Piedmont along the Virginia-North Carolina border dom-inated bright leaf tobacco production into the mid-nineteenth century.[3] Following the Civil War consumer demand shifted to particular brands of smoking tobacco. This, combined with innovations in curing, namely the flue, and a greater understanding of proper soil types, created a growing and successful market for flue-cured, bright leaf tobacco. Bright leaf tobacco production exploded in the 1870s. It spread across North Carolina (see Table 1) into South Carolina, Georgia and Florida from the 1880s into the 1920s, constituting, "the period of greatest expansion ever made by a luxury crop" (Tilley, 1948, p.123). By 1922 the leading authorities on tobacco culture in the United States pronounced bright leaf the leading type of tobacco of the world (Tilley, 1948).

Table 1 - Census of Production, 1879-1889

County	1879	1889
Wake	94,354 lbs	479,585 lbs
Franklin	58,932	859,015
Nash	7,562	782,713
Pitt	598	27,104
Wayne	102,979	112,010
Robeson	577	10,500

Source: Tilley, N.M. 1948. *The Bright Tobacco Industry 1860-1929* (Chapel Hill: University of North Carolina Press.)

The route by which flue-cured, bright leaf tobacco entered the eastern Coastal Plain emerged in the mid-1880s when production dinarily high prices (Tilley, 1948). expanded eastward from the Old Belt into Wayne, Franklin and Nash counties. Pitt County made the transition from cotton to tobacco relatively late in 1886, but soon exceeded its predecessors in production levels. It is now the leading producer of flue-cured Tobacco in North Carolina and the United States.

Changing Production Practices and Tech-nological Innovation

The modern process of producing a crop of tobacco begins in November when farmers plow, or turn, their land to destroy old crop residue and aerate the soil. In mid-February the greenhouse is seeded, and while the seedlings are maturing, field preparation takes place. Transplanting begins in mid-April and lasts a week or two depending on the number of acres to be planted and numbers of workers hired.[4] Transplanting is followed by weekly cultivation (plowing) until June when topping and spraying to stunt sucker leaf growth take place. Depending on the extent of pests, all or part of the fields will also be periodically sprayed with pesticides. Priming and curing begins in mid-July, and by October the last tobacco is sold. While the basic production process is consistent with that prior to mechanization, the new machines and chemical inputs (fertilizers, pesticides, herbicides) have considerably reduced the number of "man-hours" needed to produce an acre of tobacco.

In the late 1950s chemical sprays for removing suckers became available, and topping machines came into widespread use a decade later. These two innovations have helped reduce the arduousness and cost of labor tremendously. The past few decades have also seen the rise of more powerful and efficient irrigation systems such as the aluminum pipe and gun systems, and more recently, the spool and reel irrigation systems. Because flue-cured tobacco leaves ideally are primed individually as they

[3] This region eventually came to be called the "Old Belt" region and consisted of ten counties. These include: Halifax, Pittsylvania, Henry, Franklin, and Patrick in Virginia; and Granville, Person, Caswell, Rockingham, and Stokes in North Carolina.

[4] One farmer we interviewed, for example, employs three adults to assist him, and it takes them approximately a week to transplant fifty-two acres.

ripen,[5] harvesting has proved the most difficult operation to mechanize[6] Mechanical harvesters, introduced after the late 1960s, are equipped with an adjustable blade that cuts leaves at the desired height and can be operated by one or two individuals. Another type harvests all the leaves of a single plant at once,which are then cured together as a mixed grade. While some farmers are willing to "sacrifice" a few green leaves for the saving in labor (Hart and Chestang, 1978), other farmers privilege leaf quality and choose to rely on human primers who can judge a leaf's readiness for harvest.

Perhaps the two most significant innovations that have marked the local landscape in eastern North Carolina during the period under study have been the bulk barn for curing and the hydroponic greenhouse for the cultivation of seedlings. The original flue-cured stick barns were supplanted by fully automated, gas-burning bulk barns in the early 1970s. Whereas the earlier barns were tall buildings accommodating five tiers of tobacco tied to sticks, the new bulk barns are long narrow structures in which leaves are impaled on pronged racks that are then hung on metal rungs ("runners") that run along the sides of the barn. The latest development in curing technology appearing on the horizon is the "box barn" in which tobacco leaves are loosely packed in metal cages that are then stacked in the barn for curing.

The driving force behind innovations in curing methods has been the effort to decrease labor costs. The bulk barn has decreased the number of workers needed to fill a barn by eliminating the stringing stage, and the new box barn has decreased this number further. With a mechanical primer and the new box barn for curing, it is conceivable that two people could prime and barn the average farmer's tobacco crop, compared to the six or more required by bulk barns.

The second, and most recent, innovation to take place in tobacco culture is the hydroponic greenhouse. Previously tobacco seedlings were cultivated in small plots called "plant beds" that were covered with straw and plastic. Seedlings were then hand-picked according to size and carried by hand to nearby fields for transplanting -- a highly labor-intense process. In the late 1980s and early 1990s farmers began using greenhouses and hydroponic technology for cultivating seedlings.[7] In addition to reducing labor costs and producing higher quality seedlings, the greenhouses are less prone to damage from the elements and pests than were the plantbeds. The use of such greenhouses has spawned a new business - one in which individuals deal exclusively in the cultivation and sale of tobacco seedlings. While some farmers deliberately plant more seedlings than they will use on their own farms with the intent of selling their excess to other farmers, other farmers have opted to focus entirely on seedling cultivation, converting their land to cultivating other crops or leasing it to other farmers.

One question or issue that arises in general discussions of mechanization is the extent to which mechanization *displaces* human labor or transpires in *response to* labor shortages. While mechanization of other crop cultures has been driven by the desire to increase production efficiency by reducing labor costs, in tobacco a shortage of labor has at least partially prompted mechanization. Certainly many farmers complain of an inability to find sufficient supply of labor and explain the drive behind

[5] This differs from other varieties of tobacco such as burley in which the entire stalk is harvested at one time.

[6] Taxi rigs, introduced in the mid 1950s, eliminated four handers but still required four primers, two stringers, and a driver More importantly, they modified labor needs allowing farmers to replace young men with elderly men, women and children (Hart and Chestang, 1978).

[7] These greenhouses consist of arched PVC or metal tubing with plastic sheeting stretched over them. Climate is controlled by fresh air vents on the sides of the house and gas heaters inside. A raised walkway runs down the middle of a six-inch high pool of water on which float Styrofoam trays of tobacco seedlings. The placement of the seeds in the trays has been routinized by a machine, which has rendered the entire process much less arduous and time consuming than previously. The greenhouse is also rigged with a lawnmower that is run over the seedlings periodically to foster strong stem growth and ensure uniformity of height.

mechanization in these terms. Yet, the complete story of this process is rather more complex.

According to Mann (1981) human labor needs by the 1960s had been greatly reduced in the early stages of production but remained concentrated in the harvesting stage. Assembling a large harvesting crew for only a few weeks at the end of summer became difficult and expensive and was further exacerbated by industrialization, which provided alternative employment opportunities to potential workers. Hart and Chestang (1978) claim, however, that while competition from new factory jobs arising in the 1950s and 1960s did pressure farmers to use labor more efficiently, it does not entirely explain the driving force behind mechanization: "Some farm workers undoubtedly were displaced when innovative farmers adopted new machines, [and] some conservative farmers undoubtedly were compelled to adopt new machines because they could no longer rely on their former labor supply,... [i]t would be completely wrong ... to assume that all tobacco farmers were forced to mechanize by labor shortages" (Hart and Chestang, 1978, pp.450-1). Rather, according to their analysis, the two processes seemed to have unfolded hand-in-hand.

The lifting of restrictions on leases, transfer of allotments by Congress in 1961 and a change in law in 1968 that allowed the loose-leaf sale of tobacco were also significant in promoting mechanization The first initiative allowed farmers, particularly in the coastal region, to consolidate tobacco acreage into large-scale units through leasing or purchasing other farmers' allotments, which removed a significant barrier to mechanization (Mann, 1981).[8] Dalton (1981) notes that between 1966 and 1979, the amount of acreage allotments leased in North Carolina increased 250%. And, the sale of loose leaves of tobacco allowed bulk curing to take place, thus eliminating the number of laborers needed to barn a crop of tobacco. These three political events, in conjunction with technological innovation and industrialization, facilitated a major economic transformation in the entire landscape of tobacco production (Mann, 1981, p.41). The overall impact has been to effect a transition from small tobacco farms to large-scale farming.

Impact of Mechanization and Emerging Trends in Tobacco Farming in Pitt County

There are approximately five hundred eighty working farms in Pitt County. Of these, two hundred produce tobacco. The average farm size in the county is three hundred thirty-three acres, and the average acreage of tobacco farmed by an individual farm unit is approximately eighty acres (Smith, 1997). With mechanization, the trend all over North Carolina has been toward consolidation of land holdings on fewer farms. Dalton observes that throughout the 1970s, flue-cured tobacco farms in North Carolina became, "larger and more mechanized, requiring fewer and fewer farmers and relying on more and more leased quota. ... [A]s mechanization increases, farms get bigger, more tobacco is leased, and fewer people grow it" (1981, p.63). According to his research, the number of farms in North Carolina producing flue-cured tobacco declined from seventy-seven thousand in 1964 to thirty-four thousand in 1978, while average acreage per farm more than doubled during this time (Dalton, 1981).

Hart and Chestang (1978; 1996) observed that in seven NC counties (including Pitt County), the number of farms decreased from 26,315 in 1954 to 6,331 in 1974 -- a decline of seventy-six percent. Acreage under tobacco decreased by forty-four percent from 161,365 in 1954 to 90,862 in 1974, but production dropped by only twelve percent, which they attribute to higher yields per acre. Using these figures, we can also see that the average acres per farm more than doubled from six acres in 1954 to fourteen acres in 1974. This period of consolidation can apparently be

[8] Mann (1981) notes that the first mechanical harvester had a forty acre break-even capacity, therefore, its use became feasible after the limitation on leasing more than five acres was lifted and tobacco acreage could be consolidated.

attributed in part to a shift away from tenant farming and sharecropping as a result of New Deal legislation (see Daniel, 1985) and the fact that land owners found these tenuerial arrangements increasingly disadvantageous (Mann, 1981).

Since 1970 the trend toward consolidation has continued and is depicted in Figures 1 and 2 below. The number of all farms in the state as a whole has decreased from nearly 150,000 in 1971 to 60,000 in 1992 while average size has increased from 100 acres to approximately 160acres. In Pitt County during the same period farm size increased from approximately 110 to 330 acres, while the number of farms has dropped from 2400 to580.

If we break this down by category of farm size, the number of farms in all categories decreased between eleven and seventeen percent from 1987 to 1992 with the exception those in the largest-size bracket (1,000 acres or more), which actually increased by thirteen percent (Census of Agriculture, 1992) (See Table 2) Although the exact figures for tobacco farms over this period are not available, Mitch Smith, County Extension Director for Pitt County has observed a notable decrease in the number of tobacco farmers over the past fourteen years. Table 3below illustrates trends in allotments, base acreage and poundage for North Carolina and Pitt County since 1970.

This consolidation of land after 1970 is perhaps more directly attributable to mechanization than previously in that while labor requirements have certainly decreased, overall costs of production have increased in other ways. For example, recent innovations in chemical inputs have produced pesticides and herbicides that are less toxic and more biodegradable than their predecessors, but they are considerably more expensive than earlier versions. More importantly, financial investment for machinery can run between $250,000 and $500,000. It is no surprise that these costs have resulted in a trend toward fewer but larger-sized operations over the past few decades.

Despite increasing consolidation of holdings, it is interesting to note that tobacco still represents a fraction of the entire farm operation in terms of acreage, though not of earnings.[10] For example, the tobacco farmers we interviewed all plant a combination of crops that include cotton, corn, soybeans, and peanuts in addition to tobacco. Of the three farms we surveyed in Pitt County, the smallest cultivates 172 total acres with 52 acres in tobacco (or 30%). The other two farms are considerably larger - 650 total acres, of which 50 acres are in tobacco (8%), and 980 total acres, with 100 acres in tobacco (10%).[11]

On average, sixty percent of the cultivated land in tobacco on a given farm is leased from another allotment holder, and approximately half of the net profits from tobacco are paid to the actual owner of the allotments, yet gross tobacco earnings per acre outstrip any other field crop. Three hundred seventy-two acres of cotton would have to replace fifty acres of tobacco to equal the latter's gross income. This means that until substitute crops become more lucrative, farmers in eastern North Carolina will continue to grow tobacco.

A second visible trend emerging in tobacco farming over the past two decades pertains to changes in labor patterns on farms. Several studies have observed a general trend of the increasing importance in off-farm employment to farming households as a whole (see, for example, (Hart & Chestang, 1996; Danbom, 1995; Bartlett, 1993; Friedberger, 1988), and all three of the farmers in Pitt County that we interviewed reported at least one adult working off the farm. More recent is an apparent shift away from local, "native" labor toward the use of Hispanic immigrant and migrant labor, primarily from Mexico. One of the farmers we interviewed employs about twelve Mexican laborers every season in addition to two family members and an African American man who has worked on the farm for nearly twenty years. Two other farms have replaced local high students with fifteen to twenty migrant laborers from Mexico, and a fourth farm, which is one of the largest in the county, has been

[10] See also Hart andChestang (1996) for a discussion of diversification in farming in eastern North Carolina.

[11] Note: In 1998, tobacco acreage was reduced by 17%.

Table 2. Number of Farms in North Carolina by Farm-size Category, 1987-92

Farms by size:	1987	1992	% Change
1 to 9 acres	5,253	4,651	-11.5
10 to 49 acres	8,088	15,852	-12.4
50 to 179 acres	2,680	19,366	-14.6
180 to 499 acres	9,337	8,007	-16.6
500 to 999 acres	2,676	2,564	- 4.2
1000 acres or more	1,250	1,414	+13.0

Source: 1992 Census of Agriculture - North Carolina Agriculture Highlights

Table 3. Flue-Cured Tobacco Allotments, #Farms, Base Acreage & Base Poundage - 1970 to 1997 North Carolina & Pitt County.

#Farms (Allotments)

	1970 #	1975 # (%)	1980 # (%)	1985 # (%)	1990 # (%)	1995 # (%)
Pitt County	2,600	2,512 (-3.4)	2,456 (-2.2)	2,275 (-7.4)	1,715 (-24.6)	1,406 (-18.0)
NC Total	115,397	114,517 (-0.8)	115,779 (+1.1)	100,039 (-13.6)	44,417 (-55.6)	34,364 (-22.6)

Base Acreage

Pitt County	20,309	28,252 (+39.1)	20,895 (-26.0)	14,032 (-32.8)	15,384 (+9.6)	16,358 (+6.3)
NC Total	380,645	529,722 (+39.2)	388,749 (-26.6)	255,859 (-34.2)	276,312 (+8.0)	293,418 (+6.2)

Base Poundage (million pounds)

Pitt County	39.307	54.621 (+39.0)	40.381 (-26.0)	28.553 (-29.2)	32.351 (+13.3)	34.416 (+6.4)
NC Total	707.168	983.465 (+39.1)	722.016 (-26.6)	510.870 (-29.2)	578.177 (+13.2)	615.765 (+6.5)

Source: USDA Agricultural Stabilization and Conservation Service. In (NCDA) *North Carolina Tobacco Report 1996-97.*

Figure 1 - Comparison of Farm Size to Number Farms - North Carolina

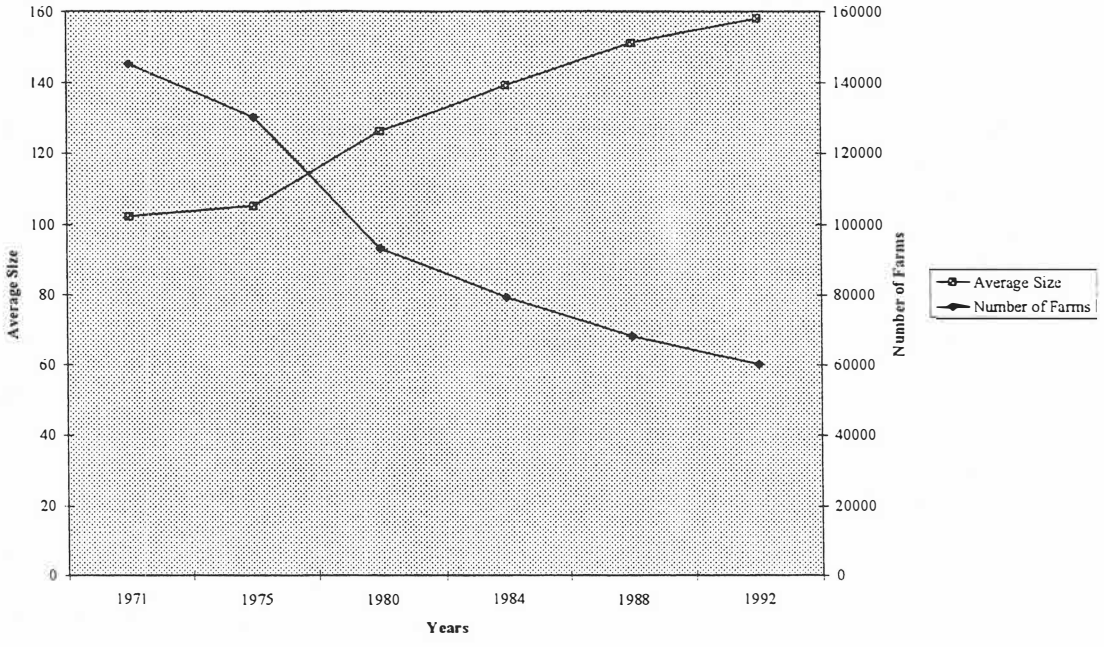
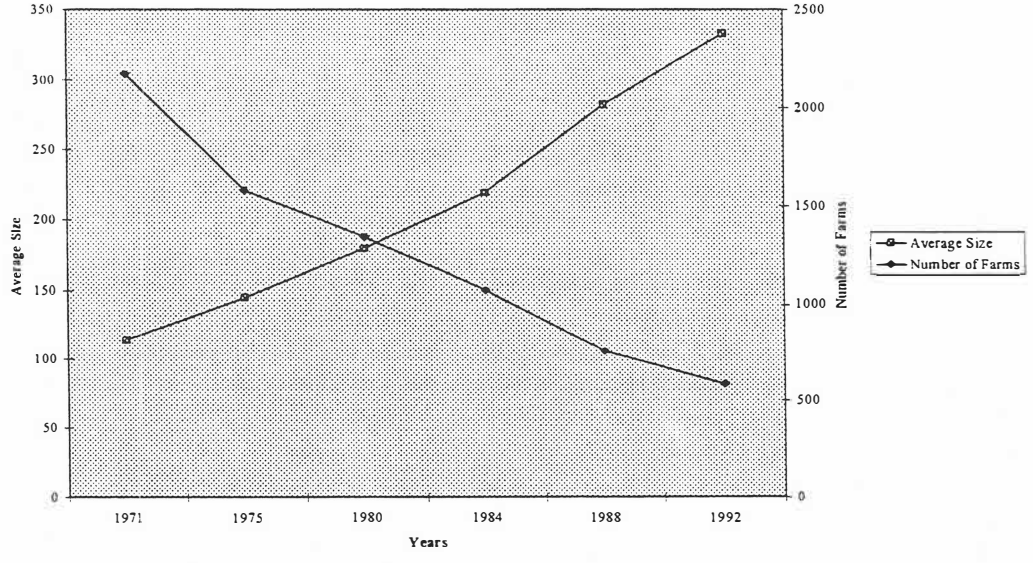


Figure 2 - Comparison of Farm Size to Number Farms - Pitt County



employing eight to ten migrant laborers exclusively in its tobacco operation since 1981. The smallest of the farms we examined prefers to hire high school students for topping and loading the bulk barns for curing. An elderly African American man and woman, and a younger Mexican man, who have all worked for this farmer for years, help with transplanting and other stages of production. He explained this preference as stemming from complications posed by language and the difficulty of explaining his particular cultivation methods to non-English speaking workers. These anecdotal observations and the fact that an estimated eighty percent of farms in Pitt County now rely on immigrant labor, though not systemically studied in this project, indicate potentially interesting areas of further research.

The Marketing of Tobacco

No discussion of the tobacco industry would be complete without attention to marketing and the role of the warehouse. The marketing process has changed little over the past thirty years. No innovation has yet rendered the structure of the sales process obsolete, and the basic farmer-warehouse relationship has remained rather constant amidst the many changes that have swept through the industry. Nevertheless, the warehouse and its role in the production of tobacco warrants brief attention.

The warehouse is the "middleman" of the tobacco industry, mediating transactions between the growers and the tobacco manufacturing companies. Before harvest, farmers contract with a particular warehouse. Growers choose their warehouse based on traditional relationships with owners, accessibility, and/or its reputation for obtaining high prices. It is not unusual for a large tobacco farmer to sell his/her crop at more than one warehouse, and often the advancement of loans to the farmer by the warehouse owner secures a contract for the sale of his/her tobacco.

Beginning mid-July, the farmer delivers cured tobacco to the warehouse in sheets weighing between 250 to 300 pounds. The sheets are weighed and transferred to the warehouse floor where they are placed in long rows, graded and prepared for sale. The sale itself is a frantic race. To the outside observer, the auctioneer's call is incomprehensible as he and the buyers walk down the rows of tobacco bidding on individual sheets of tobacco. Usually six or so buyers walk the floor with the auctioneer, warehouse sales manager, a very fast ticket writer (who notes the sale price for each sheet), and someone to attach the ticket to the sheet. The entire process lasts about an hour and a half.

The warehouse collects payment from the companies purchasing the tobacco and disburses it to the farmers on a weekly basis, taking out its commission and the stabilization program fee (two to three cents per pound sold).[12] Warehouses employ as many as twenty people who perform jobs ranging from clerical staff to auctioneers to floor workers who unload, load, and prepare tobacco for sale. A shift in the ethnic makeup of the warehouse labor force is emerging. As with farm labor, immigrant Hispanic workers appear to be replacing young African American and Caucasian men on the warehouse floor. A second trend is toward baling tobacco in lots weighing seven hundred fifty pounds, which will require a new round of investment in

[12] This is a program that allows farmers to receive a minimum support price. Since 1982 the program has been entirely self-financed by tobacco farmers.

machinery by farmers. There is also discussion of tobacco companies attempting to reduce warehouse costs by contracting directly with farmers, which will, of course, eliminate the warehouse from tobacco culture altogether.

Conclusion - Prospects for the Future

It is apparent from the foregoing analysis that the tobacco culture of eastern North Carolina has undergone a tremendous transformation over the past three decades. Between mechanization and other production innovations, every stage of the production process from the planting of seedlings to harvesting and curing has undergone change, and this has had a number of impacts on the local landscape of eastern North Carolina. With mechanization has emerged a trend toward consolidation of holdings and increased scale of operation. The size of individual farms has increased at the same time their number has decreased. While limitations on the lease and sale of tobacco allotments initially constrained such expansion, once removed, mechanization and consolidation seem to have advanced hand-in-hand. The decline in the number of tobacco farmers in Pitt County is apparent. As one of the farmers we interview noted, "When I was in school, almost all of my classmates' families worked in tobacco. Now my sons are the only kids in their class who live on a tobacco farm."

The second apparent trend associated with tobacco cultivation is the change in human labor. To some extent, the shortage of labor and industialization have driven mech-anization. Also, the demographic profile of the tobacco worker is changing. The average age of the farmer has steadily increased, as has, it appears, the average of the locally hired laborer. Although this latter observation is yet to be documented adequately, anecdotal evidence suggests that fewer young people who are native to the area work as agricultural laborers. Instead, we have noted the influx of workers from Latin America and the changing demographic profile of the region as a result. The role and experiences of these workers in the tobacco economy point to a number of interesting questions yet to be adequately investigated.

Finally, although not assessed here, there is sufficient evidence to suggest that industrial restructuring and the changing global economy of tobacco, not to mention free trade initiatives, proposed changes in the tobacco program, and public health litigation, are pressing in on the American tobacco farmer. Further mechanization in the form of baling may continue to push small farmers out of production as this will require a new round of investment in machinery. A shift to contract purchasing is under discussion, and this is likely to change the terms under which farmers grow and sell tobacco as the warehouse is eliminated from the equation and the relationship between the farmer and large tobacco companies gets reworked. Ultimately, the future is at best unclear, and the events of the next five years or will prove interesting.

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References

Akehurst, B.C. (1968) *Tobacco.* Boston: Longman.

Bartlett, P.R. (1993) *American Dreams, Rural Realities: Family Farms in Crisis.* Chapel Hill: University of North Carolina Press.

Brown, B. (1997) "Tobacco Settlement Update," Online. NC State University Department of Agri-cultural and Resource Economics. www2.ncsu.edu/ncsu/cals/ag_rec/.

Census of Agriculture (1992) "North Carolina Had 51,854 Farms in 1992," Online. U.S. Department of Commerce, Bureau of the Census. www.census.gov/agts/agcen/view/92a29nc.txt. 14 October 1997.

----- (1992) "North Carolina Highlights," Online. U.S. Department of Commerce, Bureau of the Census.(www.census.gov/agts/agcen/view/92a29nc.txt) February 1998.

Dalton, R. (1981) "Changes in the Structure of the Flue-Cured Tobacco Farm: A Compilation of Available Data Sources," in Finger, W.R. ed. *The Tobacco Industry in Transition.* Lexington, MA: Lexington Books.

Danbom, D.B. (1995) *Born in the Country: A History of Rural America.* Baltimore and London: Johns Hopkins University Press.

Daniel, P. (1985) *Breaking the Land: the Transformation of Cotton, Tobacco, and Rice Cultures since 1880.* Urbana and Chicago: University of Illinois Press.

Flue-Cured Tobacco Cooperative Stabilization Corporation (FCTCSC) (n.d.), "Tobacco Production in the United States," Raleigh, NC.

Friedberger, M. (1988) *Farm Families and Change in Twentieth Century America.* Lexington, KY: University of Kentucky Press.

Hart, J.F. and **E.L. Chestang** (1978) "Rural Revolution in East Carolina," *Geographical Review* 68.4, 435-458.

----- (1996) "Turmoil in Tobaccoland," *Geographical Review* 86.4:550-572.

Mann, C.K. (1981) "The Tobacco Franchise for Whom?" in Finger, W.R. ed. *The Tobacco Industry in Transition.* Lexington, MA: Lexington Books.

North Carolina Department of Agriculture (NCDA)(1996-97), *North Carolina Tobacco Reports.* Raleigh: State of North Carolina.

----- (1997a) "Cash Receipts from Farming by Commodity," North Carolina Department of Agriculture- Statistics - Cash Receipts. Online. www.agr.state.nc.us/stats/cashrcpt/cshcomyr.htm. 24 March 1997.

----- (1997b) "Cash Receipts Source Pie Chart," North Carolina Department of Agriculture - Statistics - Cash Receipts. Online. www.agr.state.nc.us/stats/cashrcpt. 6 June 1997.

----- (1997c) "Exports," North Carolina Department of Agriculture - Statistics - Farm Income - Exports. Online. www.agr.state.nc.us/stats/ncexpo~1.htm. 21 April 1997.

Bartlett, P.R. (1993) *American Dreams, Rural Realities: Family Farms in Crisis.* Chapel Hill: University of North Carolina Press.

Brown, B. (1997) "Tobacco Settlement Update," Online. NC State University Department of Agri-cultural and Resource Economics. www2.ncsu.edu/ncsu/cals/ag_rec/.

Census of Agriculture (1992) "North Carolina Had 51,854 Farms in 1992," Online. U.S. Department of Commerce, Bureau of the Census. www.census.gov/agts/agcen/view/92a29nc.txt. 14 October 1997.

----- (1992) "North Carolina Highlights," Online. U.S. Department of Commerce, Bureau of the Census.(www.census.gov/agts/agcen/view/92a29nc.txt) February 1998.

Dalton, R. (1981) "Changes in the Structure of the Flue-Cured Tobacco Farm: A Compilation of Available Data Sources," in Finger, W.R. ed. *The Tobacco Industry in Transition.* Lexington, MA: Lexington Books.

Danbom, D.B. (1995) *Born in the Country: A History of Rural America.* Baltimore and London: Johns Hopkins University Press.

Daniel, P. (1985) *Breaking the Land: the Transformation of Cotton, Tobacco, and Rice Cultures since 1880.* Urbana and Chicago: University of Illinois Press.

Flue-Cured Tobacco Cooperative Stabilization Corporation (FCTCSC) (n.d.), "Tobacco Production in the United States," Raleigh, NC.

Friedberger, M. (1988) *Farm Families and Change in Twentieth Century America.* Lexington, KY: University of Kentucky Press.

Hart, J.F. and **E.L. Chestang** (1978) "Rural Revolution in East Carolina," *Geographical Review* 68.4, 435-458.

----- (1996) "Turmoil in Tobaccoland," *Geographical Review* 86.4:550-572.

Mann, C.K. (1981) "The Tobacco Franchise for Whom?" in Finger, W.R. ed. *The Tobacco Industry in Transition.* Lexington, MA: Lexington Books.

North Carolina Department of Agriculture (NCDA)(1996-97), *North Carolina Tobacco Reports.* Raleigh: State of North Carolina.

----- (1997a) "Cash Receipts from Farming by Commodity," North Carolina Department of Agriculture- Statistics - Cash Receipts. Online. www.agr.state.nc.us/stats/cashrcpt/cshcomyr.htm. 24 March 1997.

----- (1997b) "Cash Receipts Source Pie Chart," North Carolina Department of Agriculture - Statistics - Cash Receipts. Online. www.agr.state.nc.us/stats/cashrcpt. 6 June 1997.

----- (1997c) "Exports," North Carolina Department of Agriculture - Statistics - Farm Income - Exports. Online. www.agr.state.nc.us/stats/ncexpo~1.htm. 21 April 1997.