



A tobacco field converted to trellis tomatoes in western N.C.

Vegetable and Fruit Crops —

Viable Alternatives for Tobacco Farmers

by Frank Adams

Hundreds of North Carolina's family farmers are quietly searching for profitable alternatives to tobacco, a crop many of them learned about at the knees of fathers or grandfathers, and a crop which is as much a way of life as a source of income. That way of life and of producing income has changed dramatically in recent decades. Tobacco operations have increased in size, requiring large capital investments. Bulk curing barns and mechanical harvesters are transforming tobacco production from a labor-intensive to a capital-intensive enterprise.

As a result, today fewer farmers than in years past can afford to grow tobacco. In 1972, according to the U.S. Department of Agriculture (USDA), there were about 40,500 flue-cured operations in the major growing regions of Virginia, North Carolina, South Carolina, and Georgia; by 1979 the number had fallen to 29,000 a 28 percent decline in seven years.*

The director of the N.C. Agricultural Extension Service, T.C. Blalock, sums it up: "Tobacco farmers are either going big and mechanized or they are leasing [their allotments] . . . Thousands of farm-

ers who used to be full time have now taken a job in industry." This is especially true for tobacco farmers who haven't the capital to invest in mechanized systems, for small allotment-holders who can make more money leasing than growing, and for sharecroppers who have had the allotments they used to grow leased away to large-scale operations.

Farmers with small tobacco operations seem to have three options: 1) they can continue to borrow money and invest in their tobacco operations, hoping to be one of the shrinking number of survivors; 2) they can take an off-farm job (and perhaps grow a little corn, hay, or other pasture crop part-time); or 3) they can try to change to crops other than tobacco and remain on the farm. This article addresses prospects and problems of the third option.

Tobacco farmers have grown accustomed to guaranteed market outlets and sales price levels, both of which are assured through the federal support system. Coping with new crop systems can be a difficult challenge for a tobacco farmer, especially at the marketing end. "Yes, there are

* Grise, Verner N., "Flue-Cured Tobacco Farming: Structural Characteristics, Labor Use, and Mechanization," paper presented at the 29th Tobacco Workers Conference, Lexington, Ky., January 21, 1981, Economics and Statistics Service, USDA.

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alternatives to tobacco," says J.E. Legate, dean of North Carolina State University's School of Agriculture. But he adds, "No other crop for which we have a stable market can provide the per-acre return that is realized from tobacco." (emphasis added)

For those who determine agricultural policy in tobacco-belt states, the quest for suitable substitutes to tobacco and a regular market for those substitutes looms large in economic and political importance. Finding ways to keep people on their farms and out of unemployment lines and cities lowers the monetary and social costs of displacement out of tobacco. Keeping people on farms relieves the pressure that industrial recruiters face to provide jobs in rural areas for farmers forced off their land. Most importantly, alternative crops and new market mechanisms can help farmers continue what they want to do and know how to do: farm.

A Lack of Government Support

Displaced tobacco farmers cannot make a transition to soybeans, corn, wheat, or some other grain. All these crops require large acreage units for a profit. In 1979, soybeans netted about \$72 per acre in North Carolina; wheat, \$63; corn, \$106; and even fresh market corn, \$250 (see table on this page). Meanwhile, the state's flue-cured tobacco crop brought about \$1200 profit per acre.

Various fruit and vegetable crops, however, are viable alternatives for tobacco farmers. Strawberries, for example, netted over \$3000 an acre in North Carolina in 1979. Trellis tomatoes, peaches, and apples also topped the per acre return of flue-cured tobacco; blueberries, cucumbers, and sweet potatoes weren't far behind (see table). Moreover, all these crops can be grown on small acreage units, similar to the old-style, three-to-five acre tobacco farm.

To switch to these crops, tobacco farmers need a great deal of technical advice and support. They face large, sometimes insurmountable hurdles. Many of them have large investments in modern curing and harvesting equipment; some lack the practical skills needed for growing unfamiliar crops. And the biggest constraint is the lack of a guaranteed market.

If strawberries, trellis tomatoes, apples, and other high-income yielding crops had guaranteed markets and sales prices, many now reluctant farmers might see their way clear to diversifying their operations into vegetables or fruits. In a state like North Carolina, the agricultural support systems are geared to those crops — like tobacco — where federal programs are already functioning, rather than to crops for which backup systems have yet to be developed. Research in Washington

and in field stations, farm bulletins and surveys, and extension projects all have the funding and momentum of the tobacco program behind them. Alternative crops do not receive the same research or attention from the government support systems, such as the land-grant universities and the farmer loan agencies, that tobacco gets.

The N.C. Agricultural Extension Service, for example, has assisted in seeking alternative crops for tobacco farmers in only isolated instances. In the western counties, the Extension Service did assist in expanding the trellis tomato industry, which has helped some burley farmers. But it has not mounted any type of intensive effort to help tobacco farmers throughout the state adapt their

RANKING OF CROPS ACCORDING TO NET RETURN PER ACRE IN NORTH CAROLINA (1980)

1. tomatoes (mountains; trellis)	\$3454.46
2. strawberries (fresh market)	3008.00
3. apples	1974.65
4. peaches (fresh market)	1960.00
5. strawberries (pick your own)	1278.00
6. tobacco (flue-cured)	1198.02
7. blueberries (fresh market)	1142.37
8. cucumbers (fresh market)	799.19
9. watermelons	775.15
10. sweet potatoes	653.05
11. okra (fresh market)	466.96
12. cabbage	437.96
13. summer squash (fresh market)	339.04
14. snap beans (fresh market)	330.24
15. pole beans	301.16
16. white potatoes	260.84
17. sweet corn (fresh market)	249.89
18. peanuts	223.18
19. alfalfa hay	171.00
20. tomatoes (processing; hand harvested)	157.42
21. snap beans (processing)	144.39
22. cotton	130.44
23. green pepper (fresh market)	125.00
24. red clover/orchard grass hay	117.68
25. okra (processing)	116.74
26. cucumbers (processing)	107.41
27. corn (no till)	106.34
28. corn	101.71
29. tall fescue hay	101.22
30. wheat and soybeans (double cropped)	98.30
31. grapes	97.52
32. soybeans	72.45
33. wheat	62.77
34. milo	39.61
35. barley	30.92
36. oats	0.51
37. coastal bermuda hay	-98.50

Source: Crop budgets prepared by the Agricultural Extension Service at North Carolina State University, updated with current market data in January, 1980, by Mark Epp, coordinator of training and research, Frank Porter Graham Center, Wadesboro, N.C.



T.C. Blalock, director of the North Carolina Agricultural Extension Service, at his desk in Raleigh, N.C.

operations to other crops. Its research efforts have also been limited. In 1978, when the Governor's office expressed concern regarding possible modification or loss of the tobacco program, the state extension office at North Carolina State University made a study of alternative gross farm incomes that might be generated in case of some catastrophic drop in tobacco income. The study put far greater hopes in beef cattle, poultry, swine, dairying, and horticulture than in a minor category called agronomy (new crops).^{*} In addition, any initiatives toward finding new ways to adapt tobacco farms to fruit and vegetable operations do not appear likely. "We have not done any overall study since that report," says Extension Director Blalock.

The experiences of Phil Wood, a tobacco farmer in Fuquay-Varina, N.C., illustrate another limitation of government support for alternatives to tobacco. In 1980, Wood grew 55 acres of flue-cured tobacco, but even a farm that big wasn't enough. "Expenses were so high that I had to start borrowing for the winter," Wood says. "I just broke even, didn't make a thing." For the 1981 season, Wood wanted to grow 20 acres of peppers and 40 acres of cotton, but he ran into another kind of money problem. Farmers borrow large sums each year to get their crop in the ground, and Wood went to the usual lending source, Production Credit Association. But Production Credit, which was willing to lend Wood money to grow tobacco, would not take a risk on peppers or cotton. "I'm in a trap right now," Wood said in January, 1981, still deciding what to plant in the spring. "Production Credit won't loan me money so I can diversify and Farmers Home [Association] won't loan me

any money unless Production Credit refuses [to give] me [money]." Since Production Credit is willing to loan Wood money for tobacco, he's stuck. "I can't diversify now because funds aren't available to me."

How to Survive the Constraints to Switching

In Wadesboro, N.C., a private, nonprofit research farm is working to provide models for small farmers to continue living and working on the land. A project of the 45-year-old National Sharecroppers Fund, the Frank Porter Graham Center has been training small farmers and conducting crop and livestock experimentation for almost 10 years. The bottom line for any commodity tested at the Graham Center is profits; the central concern is what the net income yield per acre will be. The farm's staff also examine closely possible constraints farmers face in growing particular crops, especially on three-to-five acre operations — the size of a small tobacco farm. The Graham Center has found that most of the crops listed on page 19 can be grown profitably

^{*} Letter from T.C. Blalock, director of the Agricultural Extension Service, to W.D. Lewis, agricultural policy advisor to North Carolina Governor James Hunt, July 7, 1978, which said, in part:

"In view of the apprehension from the Governor's office regarding the possible modification or loss of the tobacco support program, I have asked our commodity-oriented departments to estimate the additional annual gross cash farm income that might be generated through accelerated efforts on the part of producers and processors working with the Agricultural Extension Service if a substantial drop in tobacco income were to occur. A summary of these estimates is attached...."

Commodity category	Present estimated annual gross farm income	Future estimated annual gross farm income
Christmas trees	\$ 5,400,000	\$ 21,000,000
Beef cattle	94,600,000	253,900,000
Horses	110,000,000	300,000,000
Dairying	171,130,000	214,378,932
Horticulture	246,200,000	432,900,000
Poultry	606,205,000	893,471,743
Swine	314,000,000	450,000,000
Agronomy (new crops)	671,000	2,240,000

These estimates are not considered additive because they were developed independently and do not reflect competition for the same resources of production. However, if all this expansion could occur under the most favorable circumstances, even so we could not replace all the income normally resulting from tobacco production. This optimistic pattern of increased production of alternatives to tobacco would require about as much land as is required for tobacco. Depending upon the degree of mechanization adopted, the alternatives to tobacco could require almost as much labor as for tobacco. Some of these enterprises would require substantial amounts of investment capital."

on a small farm operation. Moreover, few carry with them technical or investment problems that cannot be overcome. Some possible constraints and ways to overcome them are:

- **Irrigation** — Vegetables and berry crops require more water than tobacco, and irrigation would be necessary during especially dry years. Graham Center staff member Mark Epp says the cost of an irrigation system is not insurmountable to small farmers. An irrigation system for a 10-to-15 acre vegetable operation can be installed for \$10,000-\$15,000 by using a pond dug on the farm, says Epp. And the Farmers Home Administration will loan money for irrigation systems. "Though it's expensive, it's no more expensive than a lot of machinery and energy used in grains and tobacco," Epp explains.

- **Start-up time** — Farmers interested in orchards as a livelihood are often deterred by the long wait for fruit trees to mature. Peach trees require a three-year start-up time; apple trees need five years before producing the first crop. The Graham Center suggests planting row-crops, such as sweet potatoes, sorghum cane, peanuts, or watermelons between the rows of young trees while they are maturing, thus alleviating an income dormancy during this period.

- **Machinery and labor** — Many tobacco farmers have sizable investments in curing barns and other equipment associated exclusively with tobacco, and they naturally fear the loss of their investments if they switch to alternate crops. In addition, one initial reason for purchasing tobacco production technology was probably the farmer's difficulty in finding and affording seasonal labor. So, another obstacle to growing crops other than tobacco is the farmer's fear of a renewed, increased need for hand labor.

Farmers who own one-row planting and tilling equipment require little capital investment when starting alternative crop farming, aside from irrigation costs already mentioned. The tobacco transplanter can be used to set out sweet potatoes or tomato plants, and bulk barns might be used for sweet potato curing or peanut drying. Farmers might have to sell automatic tobacco harvesters since only one-row machinery transfers to vegetable crops, but many smaller tobacco farmers have not yet invested in that costly piece of machinery.

Labor used to produce flue-cured tobacco averaged about 172 hours per acre in 1979, with over two-thirds of that labor used to harvest and prepare the tobacco for market, according to the USDA. Most crops studied at the Graham Center to date require a similar amount of labor for production and harvest. If some alternate crops do require more hand labor than tobacco, the savings in capital costs and fuel bills may soften that particular blow.



Irrigation system fed from a pond on the same farm.

- **Energy** — Tobacco is an energy-intensive crop, particularly as the harvest and curing becomes more mechanized. Flue-cured tobacco accounts for over 60 percent of North Carolina's energy uses in agriculture. Approximately 316 gallons of fuel are needed on an average acre.* Nationally, tobacco grows on only 0.03 percent of the available cropland but consumes only 15 percent less energy than what is used to raise all the vegetables in the United States. Many farm chemicals are oil-based, and one USDA study found a higher percentage of tobacco acres sprayed with insecticides than any other major crop.** Alternative crops tested at the Graham Center pose no greater pest or disease threat than tobacco and historically have required less fuel and oil-based chemicals.

- **Soil and climate** — There is nothing unique about the soil which supports the successful growth of tobacco. It can be raised on a great variety of soils in all climates from southern Canada to tropical areas. Tobacco production was frozen in its present location by the federal tobacco program enacted in 1933. Most crops tested at the Graham Center would grow well in all the major tobacco belts.

In sum, then, other than the cost of irrigation for berries and some vegetable crops, changing over to any of the alternatives as profitable as tobacco does not present multiple hurdles. None would require additional machinery or labor; dependency on fuel and pesticides would probably

* 1979 Tobacco Information, North Carolina State University Extension Service, p. 62.

** Agriculture and Energy, edited by William Lockeretz, Academic Press, 1977, p. 704.

decrease for tobacco farmers who switch; and soil and climate conditions offer no obstacles. But alternative crops grown widely would require a dependable and accessible market, plus additional organizational means for distribution.

Marketing — the Biggest Deterrent

The key deterrent to tobacco farmers interested in growing alternative crops is the lack of a stable market and distribution system. Only tobacco has a guaranteed market. Warehouses are located in dozens of hamlets, and, due to the support price and quota system, tobacco prices do not fluctuate according to supply and demand. Prices for many other crops do fluctuate, rendering growers' incomes uncertain from year to year.

It is ironic that North Carolina, with its bountiful fields and many miles of as yet undeveloped land, imports more than three-fourths of the vegetables its residents consume. In the central Piedmont alone, there are more than two million consumers who, conceivably, could buy local produce if farmers chose to grow it and if it were made accessible. But because of established marketing and distribution systems, getting large quantities of locally grown vegetables into consumers' grocery bags is no easy enterprise.

If enough vegetable farmers pool their individual harvests into an adequate quantity, it is possible to make the links to established bulk buyers — jobbers, wholesalers, and processors — who sell in large population centers and through supermarket chains. One such cooperative effort underway may handily serve Piedmont vegetable growers someday, and, if successful, will serve as a much needed marketing model for farmers in other areas.

In the Piedmont, where small-size tobacco operations are steadily dwindling in number, a group of farmers has been working to establish the Piedmont Vegetable Marketing Cooperative, Inc. The Co-op has its roots among a small group of Chatham County farmers who quickly discovered that a key step toward obtaining start-up capital from traditional lending institutions is a USDA feasibility study. The USDA ascertains the need for a marketing co-op, ensures that a sufficient number of farmers wish to take part, and finds the probable buyers for the co-op's supply of produce. In 1978, the farmers wrote USDA requesting the feasibility study, which USDA does for free. Two USDA agricultural economists surveyed 131 farmers in six Piedmont counties to learn about their current crop production and their interest in a vegetable co-op warehouse in their area. During this time, the North Carolina Land Trustees, a nonprofit group based in Durham, was providing technical assistance to the Co-op and holding meetings in the six counties

to generate interest in the idea.

The economists found that 66 percent of those surveyed farmed full time, raising tobacco, soybeans, hogs, beef, and vegetables. They planted a total of 815 acres in vegetables, an average of about six acres each. (See table on page 23 for a description of the types of vegetables grown and their yields.) Twenty-two farmers sold their vegetables on consignment, and four sold on contract. Fifteen relied on door-to-door sales. The economists multiplied the farmers' reported yields by the 1978 N.C. average seasonal price and determined their total gross revenue was \$858,857.97 (see table). Nearly to a man, the 131 farmers told the economists that if a market were established, they would be willing to expand their vegetable production.

The feasibility study sought to determine the demand for home-grown produce, the prices farmers could expect, the location of the markets, and any requisite quality standards. In gathering data the USDA contacted packing sheds, wholesale shippers, processors, retailers, and a few consumer food cooperatives. Each operation was questioned about grading and packing preferences, minimum volume requirements, contractual arrangements, and pricing patterns. The USDA report suggested three marketing strategies for the Piedmont vegetable growers: 1) that the farmers form a cooperative based initially on sweet potatoes, cucumbers, and green peppers; 2) that the co-op find a warehouse where produce could be assembled, cleaned, graded, and packed on a large-scale basis; and 3) that the co-op hire a full-time manager.

With this blueprint in mind, the fledgling Piedmont Co-op set out to gather the membership and raise the equity necessary to lease warehouse space, to furnish it with loading docks and refrigerated storage, and to hire a manager. On July 15, 1980, farmers from six Piedmont counties voted to create a co-op for shipping green peas, cucumbers, summer squash, okra, and sweet potatoes to local markets and to Washington and Baltimore. In September, the Co-op formally organized and incorporated itself with about 50 members. Next came the critical step: generating the start-up capital.

To be a member, a farmer has to buy one share in the Co-op (\$30). The feasibility study indicated that at least 650 acres of produce were needed as commitment from members before the Co-op's success could be assured. Lending institutions look closely at the portion of start-up capital invested by the Co-op members. The Co-op board decided that for the project to be on solid footing, the members would have to contribute 30 to 50 percent of the start-up capital needed. Depending upon inflation, grant applications, and other

USDA FEASIBILITY SURVEY RESULTS FOR GROWERS IN SIX PIEDMONT COUNTIES

Crop	Unit	Acres harvested	Yield per acre	Price	Total yield	Total
				per unit		revenue
				Dollars		Dollars
Cabbage	Pounds	36.65	18,000	.08	659,700	52,776.00
Cucumbers	Bushels	155.40	188	3.07	29,215	89,690.64
Okra	Pounds	15.20	9,800	.20	148,960	29,792.00
Peppers	Bushels	57.50	338	6.09	19,435	118,359.15
Pole beans	Bushels	29.90	225	6.00	6,728	40,365.00
Snap beans	Pounds	37.15	3,000	.07	111,450	7,801.50
Summer squash	Bushels	23.50	225	7.00	5,288	37,012.50
Sweet corn	Crates	135.45	187	3.50	29,329	88,652.03
Sweet potatoes	Bushels	86.20	337	3.50	29,049	101,672.90
White potatoes	Pounds	25.30	15,000	.11	379,500	41,745.00
Tomatoes	Pounds	30.80	22,500	.15	693,000	103,950.00
Watermelons	Pounds	64.95	16,875	.04	1,096,031	43,841.25
Cantaloupes	Pounds	68.80	6,000	.25	412,800	103,200.00
Total a/		766.80				858,857.97

a/ The figure for total acres harvested does not take into account that growers allocated 48.2 acres to the production of crops such as grapes, peas, collards, etc. The total acreage of all vegetables harvested thus becomes 815 acres.

Source: Preliminary Report, U.S. Department of Agriculture Economics, Statistics, and Cooperative Service, Washington, D.C. 20250. "Vegetable Growers Cooperative, Piedmont Area of North Carolina," n.d.

factors, the board thinks each member might have to invest up to \$300 per acre for each acre of vegetables he plans to sell through the warehouse. If this equity could be raised from members, the rest of the financing necessary — some \$150,000 to \$200,000 — could be secured more easily than if adequate member equity is lacking.

While farmers can sometimes get low interest loans from Production Credit or Farmers Home Administration for investing in a co-op, making such an investment commitment has been difficult for many farmers, especially after a poor 1980 crop. Consequently, the Co-op did not reach its goal of a 650-acre commitment from members in time for the 1981 season. "It's a chicken and egg problem," says Arnie Katz, a Land Trustees staff member who works with the Co-op. "There's no doubt several hundred farmers would join in a year once they saw it going." Katz has talked to many tobacco farmers who either want to diversify or leave tobacco altogether. An uncertain market remains a severe initial deterrent. The Piedmont Co-op's board of directors is continuing efforts to build interest — and equity — in their venture, and will coordinate a smaller, pilot operation during the 1981 marketing season.

Conclusion

These private endeavors to rearrange economic relations on a small scale provide policy-makers with valuable practical examples of how new economic institutions can be forged for the benefit of family farmers. The Graham Center's work reaffirms the viability of small farms; the

efforts of farmers to establish their own marketing mechanism show that the will to continue their traditional way of making a living is as strong as ever. The problems enterprising small farmers face — and their reluctance to put their money and efforts into new ventures before they see some strong assurance of success — should point the way toward redirected government efforts as well, both in the administration of state-level agriculture programs and at the land-grant university centers such as North Carolina State University. Meaningful policies could result from public discussion about why family farmers are searching for alternatives to tobacco. Solid research and technical assistance is needed on ways to improve marketing and distribution systems for small farmers' potentially valuable contribution: food crops.

Tobacco farmers generally have had an edge over other kinds of farmers for many years because of their guaranteed market and support program. But small operators lack the capital to keep up with intensive mechanization trends. Tobacco farmers have to find new ways to survive on the land or join the hundreds of thousands who must search for non-farm employment. Tobacco farmers who wish to grow alternative crops, such as vegetables, have some advantages from the start: much of their equipment will transfer to their revamped operations; in most cases, they will save on energy costs; many of the alternative crops could provide them even better profits than does tobacco; and they can stay on the farm. In marketing their produce, though, they will need assistance, and that is the challenge that private and public interests must meet, cooperatively. □