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Changing Tobacco Markets: Effects on Burley Tobacco Farms[1,2]

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AJAE Abstract

Three representative Tennessee tobacco farms are used to estimate farm-level impacts of (1) program continuation with further quota cuts, and (2) program elimination in 2000. Results indicate that program elimination has more potential to reduce farm income and that larger and more diversified farms are less affected in both scenarios.

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INTRODUCTION

Tobacco has consistently been one of the South's highest valued cash crops. A primary factor contributing to the structure and profitability of tobacco farming in the South has been the federal tobacco price support and supply control program, which has been the subject of intense political debate in recent years. Concurrent with uncertainty about the future of the tobacco program, demand for domestic tobacco has been and will likely continue to be affected by the recent settlement of state Medicaid lawsuits and potential increases in cigarette excise taxes (Milby, 1999). Regardless of the source or mechanism, increasing the price of cigarettes is expected to decrease demand for domestic tobacco leaf, intensifying uncertainty surrounding price and demand expectations for domestic tobacco.

With limited alternatives in agriculture that can provide the opportunity for a similar level of income on so few acres in many parts of the South, pressures on tobacco production and the tobacco program threaten the economic vitality of many farms and communities that are structured around tobacco. The objective of this research is to estimate the farm-level impacts on tobacco farms of varying sizes and characteristics of two hypothetical scenarios for the next tobacco crop year: (1) maintenance of the current tobacco program with further reductions in quota, and (2) elimination of the tobacco program.

REPRESENTATIVE FARMS

A set of representative farms have been developed in Tennessee through the University of Tennessee's AgFIRST (Agricultural Financial Impact and Risk Strategies for Tennessee) project, in association with Texas A&M University. Two representative burley tobacco farms and one

mixed tobacco farm have been developed, including a large Eastern Tennessee burley tobacco farm located in Greene County, a moderate Central Tennessee burley tobacco farm located in Macon County, and a Moderate Central Tennessee mixed burley and dark-fired tobacco farm in Robertson County. The Greene County large tobacco farm includes 80 acres of burley tobacco and the Macon moderate-sized farm includes 10 acres of burley tobacco. The Robertson large mixed tobacco farm includes 11 acres of burley tobacco and 22 acres of dark-fired tobacco. All three farms also include hay and pasture acreage to support cow/calf operations – 30-head operations on the large and moderate burley tobacco farms and a 90-head operation on the large mixed tobacco farm. The mixed tobacco farm also produces 123 acres of corn, 124 acres of soybeans, and 86 acres of wheat. Baseline data for each representative farm are provided in table 1, where 1998 farm-level prices and yields and other financial data are used to estimate cash receipts and financial indicators.

Table 1. Characteristics of Representative Farms.

Acreage		Enterprises			Cash Receipts	Assets		Total Liabilities	Net Worth
		Commodity	Acres or Head	Yield		Category	Value		
Greene Large Tobacco Farm									
Total	192	Burley	80	2,000	289,600	Real Estate	629,200	151,099	604,454
Owned	127	Hay	23	2.5	0	Machinery	109,465		
Leased	65	Pasture	60	2.0	0	Livestock	16,828		
		Cow/Calf	30		8,797	Total	755,553		
Macon Moderate Tobacco Farm									
Total	275	Burley	10	2,200	39,600	Real Estate	519,000	121,248	485,068
Owned	235	Hay	90	2.5	0	Machinery	71,225		
Leased	40	Pasture	75	6.0	0	Livestock	16,016		
		Cow/Calf	30		7,982	Total	606,316		
Robertson Large Mixed Tobacco Farm									
Total	650	Burley	11	2,650	47,614	Real Estate	555,250	174,766	699,145
Owned	250	Dark-Fire	22	2,850	122,724	Machinery	254,050		
Leased	400	Hay	70	2.0	0	Livestock	64,531		
		Pasture	210	2.0	0	Total	873,911		
		Corn	123	150	43,942				
		Soybeans	124	40	29,855				
		Wheat	86	53	13,027				
		Cow/Calf	90		41,387				

Panels of area farmers were instrumental in the definition of each representative farm, providing extensive information about acreages, quotas, farm operations, inputs and application rates, labor, expenses, yields, and finances. Panelists use a consensus method to characterize details of each representative farm and verify and update farm data. Representative farm data are analyzed using the FLIPSIM farm-level policy model, which generates pro forma financial statements for each simulation (Richardson, 1999; Richardson and Nixon, 1986). Representative farms are not intended to correspond directly to any one producer's situation, but most tobacco farmers in the state should be able to identify with one of the three representative farms.

METHODOLOGY

This analysis uses the set of three Tennessee representative tobacco farms to estimate the farm-level impacts of hypothetical changes in tobacco markets. With 1999 quota information in hand, farm panels arrived at a consensus on farm production levels, expected yields, expected prices, expenditures, and other relevant information required to develop a 1999 baseline for each representative farm. Quota, production, and price information underlying each baseline are presented in table 1. The baseline data are processed using the FLIPSIM farm-level policy simulation model to estimate farm performance and financial position.

Two alternative scenarios are then defined for each representative farm, based on hypothetical changes in future tobacco markets and their potential impacts on farm production, prices, and expenditures. Quota, production, and price information for each of the two alternative scenarios are also presented in table 2, as described below. The estimated impacts for burley tobacco production, quota rental rates, and price under the alternative scenarios are then simulated using representative burley tobacco farm models to estimate farm-level financial and production impacts of changing market conditions.

Table 2. Description of Baseline and Simulation Scenarios.

	Quota					Production			Price & Marketing Fees (Per Pound)					Value of Production	Grower Receipts
	Owned		Leased												
	Pounds	Acres	Pounds	Acres	Rental $/lb(acre)	Acres	Yield Per Acre	Pounds	Auction	Ware-house	No-Net	Grading	Take-Home		
Baseline															
Greene	15,000	7.50	145,000	72.50	0.08	80.00	2,000	160,000	1.91	0.086	0.010	0.005	1.81	$305,600	$289,528
Macon	2,500	1.14	19,500	8.86	0.08	10.00	2,200	22,000	1.90	0.086	0.010	0.005	1.80	$41,800	$39,600
Robertson															
Burley	5,500	2.08	23,650	8.92	0.08	11.00	2,650	29,150	1.92	0.086	0.010	0.005	1.82	$55,968	$53,027
Dark-Fire	14,250	5.00	48,450	17.00	600.00	22.00	2,850	62,700	2.62	0.118	0.012	0.005	2.49	$164,274	$155,854
Scenario 1:	**Program Maintenance With Quota Cut, Increase in Quota Rental, Increase in No-Net Assessment**														
Greene	13,500	6.75	130,500	65.25	0.15	72.00	2,000	144,000	1.91	0.086	0.050	0.005	1.77	$275,040	$254,815
Macon	2,250	1.02	17,550	7.98	0.15	9.00	2,200	19,800	1.90	0.086	0.050	0.005	1.76	$37,620	$34,848
Robertson															
Burley	4,950	1.87	21,285	8.03	0.15	9.90	2,650	26,235	1.92	0.086	0.050	0.005	1.78	$50,371	$46,675
Dark-Fire	12,825	4.50	43,605	15.30	1,200.00	19.80	2,850	56,430	2.62	0.118	0.060	0.005	2.44	$147,847	$137,554
Scenario 2:	**Program Elimination With No Change in Production, Price Reduction**														
Greene						80.00	2,000	160,000	1.43	0.064		0.005	1.36	$229,200	$218,166
Macon						10.00	2,200	22,000	1.43	0.064		0.005	1.36	$31,350	$29,840
Robertson															
Burley						11.00	2,650	29,150	1.44	0.065		0.005	1.37	$41,976	$39,956
Dark-Fire						22.00	2,850	62,700	1.97	0.088		0.005	1.87	$123,206	$117,379

Program Maintenance Scenario

The first scenario to simulate assumes that production of raw leaf tobacco falls in the next year, quota rental rates increase, and no-net cost assessments increase, while maintaining the current federal tobacco program. While the 1999 quota fell by 28.8 percent to 453 million pounds, 1998 undermarketings were sufficient to hold effective quota at 690 million pounds – 20.6 percent below the 1998 level, but still above actual marketings over the last few years. Thus the potential exists for the 1999 pool intake to be large if marketings are near effective quota levels, which would reduce effective quota in future crop years. Further, the largest purchaser of raw leaf burley has already suggested that manufacturer purchase intentions (the largest determinant of quota) will again fall for the 2000 crop (Milby, 1999). Over recent history, burley basic quota has hovered around the 600 million pound level. Analysts suggest that in light of changes in domestic and export markets and political and legal uncertainties, a more sustainable quota over the foreseeable future may be around the 500 million pound level

(Snell, 1999; 1998b). The first scenario assumes that actual production on each representative farm is constrained by 10 percent in 2000 as a result of further quota reductions and a narrower gap between basic and effective quota.

The scenario also assumes that the reduction in demand and production puts further pressure on quota rental rates. Tennessee is the only state that allows cross-county leasing of quota so quota rental rates have traditionally been much lower in Tennessee than in other burley areas, especially Kentucky. Over the last few years, average quota rental rates across the state have been around $0.05 to $0.07 per pound. The significant quota cuts experienced in 1999 are already resulting in upward pressure on quota rental rates with some producers reporting that they are paying as much as $0.12 per pound for this year's crop. The first scenario assumes that quota rental rates rise from a level of $0.08 in the baseline to $0.15 for burley and that dark-fired acreage quota rates double, from $600 to $1,200 per acre.

One source of pressure on the current tobacco program is the claim that the program is not entirely self-financing and that it is inconsistent for the government to spend money to treat tobacco-induced health problems and reduce smoking rates while simultaneously providing financial support for the production of tobacco. Research by Snell has estimated that, on average, it would cost an additional $60 million per year to cover all costs associated with the tobacco program, including crop insurance subsidies, program administration, market news and analysis, and extension and research activities (Snell, 1998a). Recent quota cuts are expected to increase pool stocks and costs of covering CCC loan guarantees, further pressuring marketing assessment levels. Snell estimates that full costs of the program and quota financing requirements brought about by quota cuts could escalate the no-net cost fees to more than $0.05

per pound (Snell, 1998a). Thus, it is further assumed that the first scenario includes a $0.04 per pound increase in the no-net cost, raising it from the baseline level of $0.01 to $0.05.

Program Elimination Scenario

The second scenario to simulate assumes that the federal tobacco program is eliminated in 2000. While pressure to eliminate the tobacco program is not a new phenomenon, political movement away from government intervention in agriculture, the recent tobacco settlement (including voluntary payments by manufacturers to tobacco growers), pending tobacco litigation, quota volatility, international competition, and changing social attitudes are all contributing to uncertainty about its continued survival. Most tobacco policy analysts agree that elimination of the program would eventually result in a net increase in tobacco production, a significant decrease in the price of tobacco, consolidation of farms, and a net exodus of tobacco farmers.

Research by Brown and others has been conducted to estimate the price and production impacts of program elimination (Brown, 1995; Brown, et al., 1999). Research suggests that the absence of a program, coupled with rising cigarette prices, could reduce the price of burley tobacco by over 20 percent from its program level (Brown, et al., 1999).[4] Thus, the second scenario assumes that elimination of the program results in a 25 percent reduction in the gross price of burley tobacco for all farms. Research estimating the change in burley production levels in absence of a program ranges from an increase of 8 percent to a decrease of 6 percent, compared to current levels (Brown, et al., 1999). This scenario assumes that such production changes will happen gradually and that production in the first year following program elimination will remain at the baseline level for each of the representative farms. This

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[4] Research is based on an assumed $1.00 per pack increase in cigarette prices. Such estimates appear relevant for this analysis in light of the near $0.50 per pack increase in cigarette prices following the announcement of the

assumption seems reasonable, given that all of these representative farms are relatively large for tobacco farms in Tennessee – where average tobacco production in Tennessee is 4 acres (USDA, 1999) – and all are full-time farmers, suggesting that the farms will want to remain in tobacco production if it is profitable. While the size of the representative farms may be expected to change over time as markets and production adjust to operation without a program, it is assumed to remain unchanged in the first year. The scenario assumes that manufacturers will continue to use the warehouse system currently in place to purchase the product, which would not exclude the execution of individual contracts with manufacturers. Thus, marketing fees similar to those that currently exist would still apply in the absence of the current program. Warehouse fees are assumed to remain constant at the rate of 4.5 percent of the gross sale price. But with sale prices one quarter lower than in the baseline, warehouse fees are also one quarter lower than in the baseline. A one-half cent per pound grading fee is assumed to remain in effect as part of the marketing costs, but no-net costs associated with the program are eliminated.

RESULTS

Greene Large Tobacco Farm Results

Baseline and simulation results for the large burley tobacco farm in Greene County are presented in table 3. Tobacco provides 97 percent of the $289,600 in total cash receipts that the Greene farm generates, thus it is not surprising that the reduction in quota in the first scenario and the reduction in price in the second scenario reduce net cash farm income by 24.2 percent and 39.8 percent, respectively. In the program maintenance scenario, tobacco cash receipts decrease $34,720 (12 percent) from the baseline level. This decrease is brought about both by

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Master Settlement Agreement in November 1998, a scheduled $0.10 increase in the federal excise tax in 2000 and $0.05 in 2002, pending tobacco litigation, and the possibility of a federal suit against manufacturers.

changes in the tobacco price that the grower receives and also by tobacco production constraints. The $0.04 per pound reduction in take-home price accounts for 18.5 percent of the reduction in tobacco revenues, while the remaining 81.5 percent is explained by the farm's 10 percent reduction in quota and production. Total cash receipts for the farm (including livestock receipts) are 11.6 percent lower than in the baseline. Expenditures on obtaining quota account for 7.8 percent ($11,600) of total expenditures in the baseline and rise to 13 percent ($19,575) in the program maintenance scenario. Higher expenditures on quota are partially offset by reduced expenditures due to a lower level of production, so that total cash expenses are $1,490 higher in the program maintenance scenario than in the baseline. The combined result of lower crop receipts and higher cash expenses is a $36,211 reduction in net cash farm income (24.2 percent) due to lower production, a higher quota rental rate, and a higher no-net cost assessment. Compared to the baseline, total assets for the farm are 2.5 percent lower and the farm's net worth is 2.9 percent lower than in the baseline.

Table 3. Greene Large Tobacco Farm Results.

	Program Maintenance Scenario				Program Elimination Scenario			
	1999 Baseline	2000 Scenario 1	Difference	% Change	1999 Baseline	2000 Scenario 2	Difference	% Change
Cash Receipts for Tobacco	289,600	254,880	-34,720	-12.0%	289,600	217,600	-72,000	-24.9%
Total Crop Cash Receipts	289,600	254,880	-34,720	-12.0%	289,600	217,600	-72,000	-24.9%
Total Cash Receipts	298,397	263,677	-34,720	-11.6%	298,397	226,397	-72,000	-24.1%
Var. Costs Less Quota Costs	61,045	55,277	-5,768	-9.4%	72,645	61,045	-11,600	-16.0%
Tobacco	57,680	51,912	-5,768	-10.0%	69,280	57,680	-11,600	-16.7%
Hay	1,265	1,265	0	0.0%	1,265	1,265	0	0.0%
Pasture	2,100	2,100	0	0.0%	2,100	2,100	0	0.0%
Total Quota Rental Costs	11,600	19,575	7,975	68.7%	11,600	0	-11,600	-100.0%
Total Cash Expenses	148,515	150,005	1,490	1.0%	148,515	136,228	-12,287	-8.3%
Net Cash Farm Income	149,882	113,671	-36,211	-24.2%	149,882	90,169	-59,713	-39.8%
Total Assets	808,908	788,848	-20,060	-2.5%	808,908	771,626	-37,282	-4.6%
Net Worth	678,256	658,609	-19,647	-2.9%	678,256	641,740	-36,516	-5.4%

Comparing the scenario eliminating the program to the baseline, the 25 percent reduction in price, without a change in the level of production, reduces cash receipts by $72,000, on the Greene large tobacco farm. This reduction in receipts is partially offset by a reduction in cash expenses related to elimination of the need to obtain quota, but not enough to prevent net cash farm income from falling nearly 40 percent compared to the baseline. Net cash farm income in the baseline is $149,882 and falls to $90,169 in the program elimination scenario, primarily as a result of declining prices for tobacco.

Macon Moderate Tobacco Farm Results

Baseline and simulation results for the moderate burley tobacco farm in Macon County are presented in table 4. Tobacco is responsible for 83 percent of the $48,582 in total cash receipts for the farm. In the program maintenance scenario, the 10 percent reduction in production coupled with a $0.04 per pound reduction in the net price (as a result of increasing the no-net assessment) decrease tobacco receipts by $4,752, which is a 12 percent reduction in tobacco receipts and a 9.8 percent decrease in total cash receipts. The increase in expenses for quota ($1,065) are partially offset by a reduction in other production expenses due to a decreased level of production. But the net result is a 2.8 percent increase in total cash expenses, which rise from $34,185 in the baseline to $35,127 in the program maintenance scenario. Considering both reduced receipts and higher expenses, the net result is a 39.5 percent reduction in net cash farm income, which falls from $14,397 in the baseline to $8,703 in the first scenario. The farm proceeds with a scheduled machinery purchase in 2000 which increases total assets by 1.4 percent. The additional liability for the equipment, along with a cash deficit and the need for a higher operating loan in 2000, result in a 1.9 percent reduction in real net worth for the farm.

Table 4. Macon Moderate Tobacco Farm Results.

	Program Maintenance Scenario				Program Elimination Scenario			
	1999 Baseline	2000 Scenario 1	Difference	% Change	1999 Baseline	2000 Scenario 2	Difference	% Change
Cash Receipts for Tobacco	39,600	34,848	-4,752	-12.0%	39,600	29,920	-9,680	-24.4%
Total Crop Cash Receipts	39,600	34,848	-4,752	-12.0%	39,600	29,920	-9,680	-24.4%
Total Cash Receipts	48,582	43,830	-4,752	-9.8%	48,582	38,902	-9,680	-19.9%
Var. Costs Less Quota Costs	11,554	10,750	-804	-7.0%	11,554	11,554	0	0.0%
Tobacco	8,044	7,240	-804	-10.0%	8,044	8,044	0	0.0%
Hay	3,510	3,510	0	0.0%	3,510	3,510	0	0.0%
Pasture	0	0	0	0.0%	0	0	0	0.0%
Total Quota Rental Costs	1,560	2,625	1,065	68.3%	1,560	0	-1,560	-100.0%
Total Cash Expenses	34,185	35,127	942	2.8%	34,185	33,202	-983	-2.9%
Net Cash Farm Income	14,397	8,703	-5,694	-39.5%	14,397	5,700	-8,697	-60.4%
Total Assets	611,492	620,212	8,720	1.4%	611,492	620,212	8,720	1.4%
Real Net Worth	471,611	462,745	-8,866	-1.9%	471,611	459,803	-11,808	-2.5%

An examination of the results for the program elimination scenario reveals an even greater impact on the bottom line for the Macon moderate burley farm, where net cash farm income falls by over 60 percent, from $14,397 to $5,700. Most of the reduction in net income is attributable to a $9,680 reduction in tobacco receipts due to a lower tobacco price, which reduces total cash receipts by 19.9 percent. The elimination of quota rental costs reduces total cash expenses to mitigate the impact of the lower tobacco price somewhat, but not enough to prevent the large loss in net income. The farm's $5,700 in net cash farm income is not sufficient to cover family living withdrawals and principal payments on land and machinery loans, leaving the farm with a cash deficit that reduces the farm's real net worth by $11,808 (2.5 percent).

Robertson Large Mixed Tobacco Farm Results

Baseline and simulation results for the large mixed burley and dark-fired tobacco farm in Macon County are presented in table 5. Tobacco is responsible for only 63 percent of the $288,785 in total cash receipts on the Robertson farm (compared to 83 percent on the Macon farm and 97 percent on the Greene farm). As tobacco production and take-home price are reduced and quota rental rates are increased in the program maintenance scenario, the relative

diversification of the Robertson farm helps to mitigate the losses in net cash farm income which total $26,686, a 19.6 percent reduction from the baseline level of $135,821. Tobacco cash receipts fell $21,764 from the baseline, with 16.4 percent of the reduction attributable to a lower take-home price and 82.6 percent due to the production constraint. These losses in tobacco receipts are partially offset by an increase in cash receipts generated by non-tobacco crops in the amount of $1,891, so that total cash receipts fell by only $19,873 (6.9 percent). The increase in quota lease rates in the first scenario increases expenditures on quota by $9,461, but reduced tobacco acreage also decreases production expenses by $2,957 so that total cash expenditures increase by only $6,813. Total assets for the farm are reduced by 1.5 percent, contributing to a loss of real net worth of $15,147 (2.0 percent).

Table 5. Robertson Large Mixed Tobacco Farm Results.

	Program Maintenance Scenario				Program Elimination Scenario			
	1999 Baseline	2000 Scenario 1	Difference	% Change	1999 Baseline	2000 Scenario 2	Difference	% Change
Cash Receipts for Tobacco	181,162	159,398	-21,764	-12.0%	181,162	136,133	-45,029	-24.9%
Total Crop Cash Receipts	247,397	227,525	-19,872	-8.0%	247,397	204,386	-43,011	-17.4%
Total Cash Receipts	288,785	268,912	-19,873	-6.9%	288,785	245,773	-43,012	-14.9%
Var. Costs Less Quota Costs	62,280	59,323	-2,957	-4.7%	62,280	62,280	0	0.0%
Burley Tobacco	8,646	7,781	-865	-10.0%	8,646	8,646	0	0.0%
Hay	2,240	2,240	0	0.0%	2,240	2,240	0	0.0%
Pasture	4,620	4,620	0	0.0%	4,620	4,620	0	0.0%
Dark-Fire Tobacco	20,922	18,830	-2,092	-10.0%	20,922	20,922	0	0.0%
Corn	14,963	14,963	0	0.0%	14,963	14,963	0	0.0%
Soybeans	5,729	5,729	0	0.0%	5,729	5,729	0	0.0%
Wheat	5,160	5,160	0	0.0%	5,160	5,160	0	0.0%
Quota Costs	12,092	21,553	9,461	78.2%	12,092	0	-12,092	-100.0%
Burley Quota Costs	1,892	3,193	1,301	68.8%	1,892	0	-1,892	-100.0%
Dark-Fire Quota Costs	10,200	18,360	8,160	80.0%	10,200	0	-10,200	-100.0%
Total Cash Expenses	152,964	159,777	6,813	4.5%	152,964	139,886	-13,078	-8.5%
Net Cash Farm Income	135,821	109,135	-26,686	-19.6%	135,821	105,887	-29,934	-22.0%
Total Assets	956,611	942,151	-14,460	-1.5%	956,611	939,772	-16,839	-1.8%
Real Net Worth	751,401	736,254	-15,147	-2.0%	751,401	733,923	-17,478	-2.3%

In the second scenario, diversification again helps to deflect some of the impact of the large tobacco price cuts. A $45,209 reduction in tobacco receipts is offset slightly by higher receipts for other farm crops so that total cash receipts are 14.9 percent lower in the second scenario than

in the baseline. The elimination of quota rental costs also plays a more significant role in minimizing the impact on the bottom line, since quota rental comprises a larger portion of total variable costs for larger tobacco farms – quota rental comprises approximately 16 percent of total variable costs for the two large farms, compared to 12 percent for the moderate sized farm. Together, the price reduction and elimination of quota and program costs reduce net cash farm income by $29,942, which is 22 percent below the baseline level of $135,821. This results in a 1.8 percent reduction in total assets for the farm and a $17,478 reduction (2.3 percent) in the farm's real net worth.

SUMMARY AND DISCUSSION

This research uses three Tennessee representative tobacco farms to estimate the potential farm-level impacts that would result from two alternative scenarios for changes in tobacco markets in 2000: (1) maintenance of the tobacco program with quota cuts that result in a 10 percent reduction in production, increase in the quota rental rate, and increase in the no-net cost assessment, and (2) program elimination with a 25 percent reduction in the price of tobacco. Results indicate that all farms fare better with continuation of the program, despite production losses and higher expenses, than they do in the absence of a program. In the program maintenance scenario, net cash farm income is reduced most significantly on the 10-acre farm (39.5 percent) and to a lesser extent on the 80-acre farm (24.2 percent) and the more diversified mixed tobacco farm (19.6 percent). Similar, but more pronounced, results are estimated in the program elimination scenario, where net cash farm income is reduced by 60.4 percent on the 10-acre farm, 39.8 percent on the 80-acre farm, and 22 percent on the diversified mixed tobacco farm.

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