



United States
Department
of Agriculture

TBS-2002-01
February 2003



Electronic Outlook Report from the Economic Research Service

www.ers.usda.gov

Tobacco 2001 Production Costs And Returns and Recent Changes That Influence Costs

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Abstract

Cash costs per acre to produce burley tobacco in 2001 were estimated to be unchanged from the previous year, while flue-cured tobacco cash costs per acre declined slightly. Current cost estimates are based on annual updates, since the last tobacco surveys were conducted in 1995 for burley tobacco and 1996 for flue-cured tobacco. Recent changes in the tobacco industry have likely altered the cost structure of tobacco producers since tobacco production cost data were last collected.

Keywords: Tobacco, burley, flue-cured, cost of production, net returns, cost factors.

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Burley Tobacco 2001 Costs and Returns

The gross value of burley tobacco rose to \$4,094 per acre in 2001, up from \$3,942 the previous year and considerably higher than the average value of \$3,696 per acre for 1996-2000 (table 1). The higher value of production per acre resulted from increased yields as prices remained steady. Favorable growing conditions pushed the average yield to 2,078 pounds per acre in 2001, up from 2,001 pounds in 2000. In comparison, yields averaged 1,928 pounds per acre in the previous 5 years. Kentucky's burley tobacco yields averaged 2,100 pounds per acre in 2001, up 75 pounds from 2000. Tennessee's producers saw a similar increase in their yields to 2,000 pounds per acre in 2001. Overall, prices averaged \$1.97 per pound in 2001, about the same as in 2000. Auction prices averaged about \$1.95 per pound, while contract prices averaged \$2.00 per pound in 2001. The price support for the 2001 crop was set at \$1.83 per pound.

Total cash operating expenses of \$1,682 per acre in 2001 remain steady from the previous year. A significant decline in marketing expenditures was offset by increases in fertilizer and labor costs. Marketing expenditures dropped \$88 per acre to \$64 as the use of market contracts expanded to cover 65 percent of the burley tobacco production, up from 27 percent in 2000. Under the terms of the marketing contracts, tobacco growers do not pay grading or warehouse fees. Rather, these fees are paid by the leaf dealers or purchasers. Rising natural gas prices in late 2000 raised fertilizer prices in the early spring of 2001, when fertilizer purchases are often made, boosting fertilizer

expenditures by \$49 per acre. Natural gas is the primary input in fertilizer production. An increase in wage rates boosted hired labor expenditures by \$27 per acre.

Economic costs rose to \$3,666 per acre in 2001, an increase of \$106 from 2000. In addition to cash expenses, economic costs include estimates for capital replacement, and the opportunity costs for land, quota, unpaid labor, operating, and other nonland capital. Opportunity costs per acre rose for unpaid labor and tobacco quota. Rising agricultural wages increased the opportunity cost of unpaid labor during 2001. The opportunity costs of quota per acre rose due primarily to increased tobacco yields rather than rising quota lease rates. Quotas are usually leased by the pound. The opportunity costs for operating and other nonland capital fell as interest rates dropped in 2001 from 2000.

The gross value of burley tobacco production less the cash production expenditures per acre reached \$2,411 in 2001, up \$155 from 2000, and well above the 1996-2000 average of \$2,092 per acre. The increase in the 2001 net returns resulted almost entirely from an increase in the value of gross production per acre since cash expenses were stable from the previous year. The residual returns to management and risk rose to \$427 per acre in 2001, up \$46 from 2000, as gains in the value of production more than offset the rise in the economic costs of production. However, the 2001 residual returns were lower than the average return of \$598 per acre for the previous 5 years.

Table 1--U.S. burley tobacco production costs and returns, 1996-2001

Item	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
	Dollars per acre						Dollars per cwt					
Gross value of production	3,774.72	3,662.82	3,629.00	3,471.30	3,941.97	4,093.66	192.04	189.00	190.40	189.87	196.55	197.46
Cash expenses:												
Seed and plant bed	103.80	100.04	100.04	98.33	102.61	106.33	5.28	5.16	5.24	5.38	5.13	5.12
Fertilizer	305.84	296.94	296.88	290.96	288.81	338.12	15.56	15.32	15.54	15.93	14.43	16.27
Chemicals	97.83	98.65	100.29	99.47	98.65	98.65	4.98	5.09	5.25	5.44	4.93	4.75
Custom operations	12.90	14.48	13.58	13.35	13.35	13.57	0.66	0.75	0.71	0.73	0.67	0.65
Fuel, lube, and electricity	73.35	77.66	63.28	66.88	96.36	87.01	3.73	4.01	3.31	3.66	4.82	4.19
Repairs	70.41	72.25	72.86	74.08	75.92	78.37	3.58	3.73	3.81	4.05	3.79	3.77
Hired labor	421.80	432.59	455.40	497.01	499.76	526.92	21.46	22.32	23.84	27.20	24.98	25.36
Marketing expenses	139.20	128.69	165.02	161.32	152.65	64.42	7.08	6.64	8.64	8.83	7.63	3.10
Other variable cash expenses	18.10	18.58	20.58	19.88	20.78	21.50	0.92	0.96	1.08	1.09	1.04	1.03
Total, variable cash expenses	1,243.23	1,239.88	1,287.93	1,321.28	1,348.89	1,334.89	63.24	63.98	67.42	72.31	73.82	73.05
General farm overhead	163.48	210.40	202.86	206.27	211.38	218.20	8.32	10.86	10.62	11.29	10.56	10.50
Taxes and insurance	40.13	44.22	44.88	45.45	46.19	47.18	2.04	2.28	2.35	2.49	2.31	2.27
Interest	64.50	71.22	76.68	74.57	78.79	82.31	3.28	3.67	4.01	4.08	3.94	3.96
Total, fixed cash expenses	268.11	325.84	324.42	326.29	336.36	347.69	13.64	16.81	16.99	17.86	16.81	16.73
Total, cash expenses	1,511.34	1,565.72	1,612.35	1,647.57	1,685.25	1,682.58	76.87	80.79	84.42	90.18	84.22	80.97
Gross value of prod. less cash expenses	2,263.38	2,097.10	2,016.65	1,823.73	2,256.72	2,411.08	115.13	108.21	105.99	99.71	112.32	116.51
Economic (full ownership) costs:												
Variable cash expenses	1,243.23	1,239.88	1,287.93	1,321.28	1,348.89	1,334.89	63.25	63.98	67.43	72.32	67.41	64.24
General farm overhead	163.48	210.40	202.86	206.27	211.38	218.20	8.32	10.86	10.62	11.29	10.56	10.50
Taxes and insurance	40.13	44.22	44.88	45.45	46.19	47.18	2.04	2.28	2.35	2.49	2.31	2.27
Capital replacement	91.07	97.25	100.27	104.27	134.13	142.02	4.63	5.02	5.25	5.71	6.70	6.83
Operating capital	31.64	32.11	31.23	31.45	40.91	23.02	1.61	1.66	1.64	1.72	2.04	1.11
Other nonland capital	104.28	113.12	104.87	102.80	94.08	88.16	5.31	5.84	5.49	5.63	4.70	4.24
Land and quota	751.25	512.67	531.74	633.44	991.31	1,081.99	38.22	26.45	27.84	34.67	49.54	52.07
Unpaid labor	585.19	600.16	631.80	689.53	693.35	731.03	29.77	30.97	33.08	37.74	34.65	35.18
Total, economic (full ownership) costs	3,010.27	2,849.81	2,935.58	3,134.49	3,560.24	3,666.49	153.12	147.05	153.70	171.57	177.92	176.44
Residual returns to management and risk	764.45	813.01	693.42	336.81	381.73	427.17	38.88	41.95	36.70	18.31	18.63	21.04
Price (dollars/lb and cwt)	1.92	1.89	1.90	1.90	1.97	1.97	192.16	189.00	190.40	189.87	196.55	197.46
Yield (lb and cwt/acre)	1,966	1,938	1,910	1,827	2,001	2,078	19.66	19.38	19.10	18.27	20.01	20.78

Source: Estimates were developed from the 1995 Farm Costs and Returns Survey.

Flue-Cured Tobacco 2001 Costs and Returns

The gross value per acre of flue-cured tobacco reached a record-high in 2001 as yields and prices rose. Unusually good weather for flue-cured tobacco production in 2001 increased tobacco quality and boosted the average yield to 2,429 pounds, up from 2,393 pounds last year (table 2). Virginia was the only State where the average yield declined from 2000. Prices averaged \$1.86 per pound in 2001, up from \$1.79 per pound in 2000. Prices rose due to increased use of marketing contracts, tighter supplies, and higher quality tobacco. Marketing contracts covered 80 percent of the 2001 flue-cured tobacco crop compared with 8 percent in 2000. Many flue-cured tobacco producers signed contracts as major tobacco purchasers announced that they intended to contract most of their tobacco, causing growers to fear loss of markets for their leaf. In addition, prices under marketing contracts averaged 4.3 cents per pound higher than auction prices in 2001. Under marketing contracts, the tobacco purchaser, rather than the producer, assumes responsibility for the costs of grading and storing tobacco. Tighter tobacco supplies, resulting from quota reductions in the past several years, also may have contributed to higher prices. A 3-percent decrease in the effective quota for 2001 was partially responsible for the 5-percent decline in harvested acres from the previous year. Good weather in 2001 boosted tobacco quality, which caused the average price for tobacco to increase since purchasers pay more for higher quality tobacco.

The \$23 decline in cash expenses per acre in 2001 was mostly attributable to the decline in the expenditures for marketing and curing fuel, while expenditures for fertilizer and labor rose. Marketing expenses declined

by \$98 to \$89 per acre in 2001, despite increased yields, as the use of marketing contracts greatly expanded. The cost of curing tobacco fell \$31 per acre in 2001 as fuel prices began to decline in the early summer of that year. Fertilizer prices were higher in the spring of 2001 than in the previous year due to higher natural gas prices and fears of shortages caused by reductions in fertilizer production by some manufacturers. Natural gas is a major input for fertilizer production. Increases in agricultural wage rates boosted hired labor expenditures per acre.

The economic costs of producing flue-cure tobacco rose \$29 per acre to \$4,449 in 2001 as increases in opportunity costs for land, quota, and unpaid labor overcame the decline in cash and operating expenses between 2000 and 2001. The estimated value of land and quota continued to climb in 2001 as the effective quota declined slightly in 2001. The opportunity costs for unpaid labor rose as the agricultural wage rates increased.

Net cash returns to flue-cured tobacco production, the gross production value less total cash expenses, rose to \$2,009 per acre in 2001 from \$1,750 in the previous year. The gross value of production rose by \$234 to \$4,518 per acre as prices and yields of flue-cured tobacco increased, while cash expenses declined by \$24 per acre to \$2,509. Economic costs per acre rose less than 1 percent to \$4,449. The residual return to management and risk, at \$68 per acre, climbed into the positive territory in 2001 from a negative return of \$137 per acre in 2000. The positive return to management and risk in 2001 was the first since 1998.

Table 2--U.S. flue-cured tobacco production costs and returns, 1996-2001

Item	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
	Dollars per acre						Dollars per cwt					
Gross value of production	3,941.28	3,921.60	3,846.50	3,744.48	4,283.47	4,517.94	183.70	172.00	175.36	173.70	179.30	185.70
Cash expenses:												
Seed and plant bed	55.71	57.65	59.10	63.46	60.07	63.95	2.60	2.53	2.69	2.95	2.51	2.63
Fertilizer	282.59	290.73	304.39	282.66	273.93	320.04	13.19	12.75	13.85	13.13	11.45	13.18
Chemicals	216.56	218.38	220.18	218.38	216.58	216.58	10.11	9.58	10.02	10.15	9.05	8.92
Custom operations	9.07	9.88	8.00	7.86	7.79	7.92	0.42	0.43	0.36	0.37	0.33	0.33
Fuel, lube, and electricity	67.75	71.74	59.56	62.94	90.69	81.89	3.16	3.15	2.71	2.92	3.79	3.37
Curing fuel	272.91	301.50	258.98	325.72	477.38	446.30	12.74	13.22	11.78	15.14	19.95	18.37
Repairs	106.95	109.74	110.67	112.53	115.32	119.04	4.99	4.81	5.04	5.23	4.82	4.90
Hired labor	468.02	491.96	554.12	582.09	594.35	634.61	21.85	21.58	25.21	27.05	24.84	26.13
Marketing expenses	143.42	151.39	145.95	160.76	187.24	88.95	6.70	6.64	6.64	7.47	7.82	3.66
Other variable cash expenses	3.91	4.01	3.88	3.81	3.98	4.12	0.18	0.18	0.18	0.18	0.17	0.17
Total, variable cash expenses	1,626.89	1,706.98	1,724.83	1,820.21	2,027.33	1,983.40	75.94	74.87	78.47	84.59	84.73	81.66
General farm overhead	116.32	149.71	181.75	184.80	189.38	195.49	5.43	6.57	8.27	8.59	7.91	8.05
Taxes and insurance	111.78	122.91	140.61	141.26	142.27	148.49	5.22	5.39	6.40	6.56	5.95	6.11
Interest	129.03	142.47	169.37	164.71	174.03	181.80	6.02	6.25	7.71	7.65	7.27	7.48
Total, fixed cash expenses	357.13	415.09	491.73	490.77	505.68	525.78	16.67	18.21	22.38	22.80	21.13	21.64
Total, cash expenses	1,984.02	2,122.07	2,216.56	2,310.98	2,533.01	2,509.18	92.61	93.08	100.85	107.39	105.86	103.30
Gross value of prod. less cash expenses	1,957.26	1,799.53	1,629.94	1,433.50	1,750.46	2,008.76	91.09	78.92	74.51	66.31	73.44	82.40
Economic (full ownership) costs:												
Variable cash expenses	1,626.89	1,706.98	1,724.83	1,820.21	2,027.33	1,983.40	75.94	74.87	78.47	84.59	84.73	81.66
General farm overhead	116.32	149.71	181.75	184.80	189.38	195.49	5.43	6.57	8.27	8.59	7.91	8.05
Taxes and insurance	111.78	122.91	140.61	141.26	142.27	148.49	5.22	5.39	6.40	6.56	5.95	6.11
Capital replacement	255.67	273.03	283.70	295.02	313.34	320.86	11.94	11.98	12.91	12.91	13.09	13.21
Operating capital	41.60	44.21	41.83	43.32	59.30	33.72	1.94	1.94	1.90	1.94	2.48	1.39
Other nonland capital	77.81	84.40	80.10	79.19	77.52	76.83	3.63	3.70	3.64	3.64	3.24	3.16
Land and quota	853.63	843.73	974.05	1,131.93	1,370.37	1,433.20	39.85	37.01	44.32	36.35	57.27	59.00
Unpaid labor	189.91	199.62	224.84	236.19	241.16	257.49	8.87	8.76	10.23	10.23	10.08	10.60
Total, economic (full ownership) costs	3,273.61	3,424.59	3,651.71	3,931.92	4,420.67	4,449.48	152.82	150.22	166.15	164.81	184.75	183.18
Residual returns to management and risk	667.67	497.01	194.79	-187.44	-137.20	68.46	30.88	21.78	9.21	8.89	-5.45	2.52
Price (dollars/lb and cwt)	1.84	1.72	1.75	1.74	1.79	1.86	183.70	172.00	175.36	173.70	179.30	185.70
Yield (lb and cwt/acre)	2,141.90	2,280.00	2,198.00	2,152.00	2,393.00	2,429.00	21.42	22.80	21.98	21.52	23.93	24.29

Source: Estimates were developed from the 1996 Agricultural Resource Management Survey.

Data Sources and Methods

Most of the data used to compute the costs of production for various commodities are derived from the Agricultural Resource Management Survey (ARMS) for 1996 and later years, and the Farm Costs and Returns Survey (FCRS) prior to 1996. Multiple versions of the survey are conducted each year. On the ARMS, one version of the annual survey collects data for the entire farm operation, while one or more additional versions collect commodity-specific data.² Data on a specific commodity are collected on a rotating basis every 3 to 8 years. Agricultural commodities included in the survey program are: corn, soybeans, wheat, cotton, grain sorghum, rice, peanuts, oats, barley, sugarbeets, burley tobacco, flue-cured tobacco, milk, hogs, and cow-calf.

Data from the 1995 FCRS provide the base for the burley tobacco cost of production estimates since the 1995 FCRS was the last survey to collect burley tobacco production and cost information. The information was collected from personal interviews with 131 Kentucky farmers and 104 Tennessee farmers. The 1996 tobacco version of the ARMS collected data on the costs of production for flue-cured tobacco from

316 flue-cured tobacco producers in four States: Virginia, North Carolina, South Carolina, and Georgia.

Costs of production estimates after the survey year are computed by adjusting the survey year's estimates by an index of the current year's to the survey year's input prices and, in some cases, adjusting for yield change. This procedure holds production input and technology levels constant for post-survey years. Hence, cost of production estimates are generally most accurate for the survey year since these estimates reflect the level of technology and the sizes of farm enterprises at that time. The accuracy of the cost estimates for post-survey years depends on changes in production practices, enterprise size, and technology since the last survey.

Data for computing the annual update come from a variety of sources. The National Agricultural Statistics Service (NASS) provides most of the data used in the process. NASS reports annual and sometimes monthly estimates of quantities and prices for a variety of farm input items. NASS also provides State figures for harvested tobacco acreage, yields, and production as well as information on the average cash rents for farmland. Data for updating marketing costs come from the Agricultural Marketing Service. The quota rental rate is estimated based on historical relationships between quota cash rents and the effective quota for burley tobacco.

² For more information on ARMS, please visit the ARMS briefing room ERS web site, <<http://www.ers.usda.gov/briefing/ARMS/>>.

Major Factors Influencing Recent Costs

There have been several significant changes in the tobacco industry since tobacco surveys were conducted in 1995 and 1996. Since then, the tobacco quota has fallen significantly while marketing contract usage has risen considerably for burley and flue-cured tobacco. Additionally, flue-cured tobacco producers have increased their use of heat exchangers and began balancing their tobacco. These changes have likely influenced the cost structure of tobacco production. Readers need to recognize that many of these structural changes are not reflected in the tobacco costs of production estimates.

Flue-cured and burley tobacco quotas³ declined yearly after reaching a peak in 1997 for both tobacco types. In 1996, when detailed data were collected on flue-cured tobacco production practices, the effective quota was 944 million pounds. The quota rose to 1,020 million pounds in 1997 before declining to 545 million pounds in 2001, a 42-percent reduction from the survey year. In 1995, the effective quota for burley tobacco was 578 million pounds. The quota peaked at 880 million pounds in 1997 and then declined to 352 million pounds in 2001, for a reduction of 39 percent from the 1995 survey year.

The quota reduction caused tobacco producers to reduce their planted and harvested tobacco acreage. Harvested acres of flue-cured tobacco declined 44 percent, while harvested burley acres declined by 28 percent since tobacco producers were last surveyed. It is likely that producers now plant tobacco only on their best land for tobacco production. This action may reduce their tobacco production costs per acre and increase yields.

As a result of the quota reduction, most tobacco producers were suddenly faced with the prospect of under-utilization of their tobacco-related equipment and structures and a rising cost structure as their fixed costs were spread among fewer production units. Many tobacco producers tried to obtain more quota to maintain cost efficient farm operations. This increased competition for quotas, along with phase II tobacco settlement and other payments, boosted quota lease rates. The most efficient tobacco producers were likely

the ones most able to pay higher quota lease rates. Estimates of the higher lease rates have been incorporated into the tobacco costs of production accounts.

Marketing of tobacco has changed rapidly. When the last tobacco surveys were conducted, all burley and flue-cured tobacco was sold through an auction system. Under this system, tobacco producers brought their tobacco to warehouses to be inspected, graded, and auctioned. Producers paid for fees associated with auctioning tobacco, such as the warehouse and grading fees. In 2000, tobacco companies began offering marketing contracts to tobacco producers. By the following year, the majority of the burley and flue-cured tobacco crop were covered under marketing contracts. Marketing contracts allow manufacturers to more readily obtain the leaf qualities they desire. Marketing contracts also offer tobacco producers higher prices and lower marketing expenses, while guaranteeing a market for their entire tobacco crop.⁴ Under marketing contracts, tobacco purchasers assume responsibility for warehouse and grading fees. Most marketing contracts require that all tobacco marketed by a farm operation be covered under the contract.

In 1999, tobacco companies announced that U.S. flue-cured tobacco contained high levels of nitrosamines, a cancer-causing chemical that forms when tobacco is exposed to fumes from the heat source used during curing. By July 2001, all curing barns had to be retrofitted with heat exchangers to prevent direct fume exposure since tobacco companies would no longer purchase tobacco with high nitrosamines.

The cost to retrofit barns was shared between tobacco producers and the tobacco industry. The producers' share of the costs to retrofit barns is a capital investment that would be recovered over several years. An estimate was made of the annual capital replacement costs and incorporated into the cost of production accounts. However, other cost effects from retrofitting barns are unknown. Some producers have reported higher fuel costs, while others have reported lower costs. No adjustments were made to curing fuel costs

³ Quotas give the quota owner the right to market or sell tobacco. These rights can be rented to others. Thus, farmers and nonfarmers own quota.

⁴ For further details on tobacco marketing contracts, see "Tobacco Industry Downsizing, Restructuring" *Agricultural Outlook*, Jan.-Feb. 2002, ERS, USDA, <<http://jan.mannlib.cornell.edu/reports/erssor/economics/ao-bb/2002/ao289.pdf>>.

due to lack of information regarding the aggregate influence of this change.

Baling flue-cured tobacco is another change that has occurred since cost data were last collected. Baling tobacco is the tying of tobacco leaves into a bundle for transportation from farm to warehouse and on to processor. Prior to 1998, nearly all flue-cured tobacco was bundled onto burlap sheets with corners of the sheets tied together. Each burlap bundle contained approximately 250 pounds of tobacco, an amount that could be easily lifted by several workers. Tobacco handlers and purchasers desired larger bundles that could be moved easily by machinery. As a result, producers began to bundle flue-cured tobacco into bales weighing 650 to 850 pounds in 1998. Handling bundles of this size requires special baling machinery and lifting equipment. Increases in bundle weight likely increased equipment costs, but reduced labor hours and labor costs to prepare tobacco for marketing. Producers have the option of using the smaller bundles or baling their tobacco. Baling tobacco may give larger tobacco enterprises an advantage over smaller ones, since larger

enterprises can spread their fixed equipment costs over more production units. However, it has not been possible to adjust the flue-cured production cost account for changes in bundle sizes since little information is available on the percentage of tobacco baled and cost differences for forming and transporting large and small tobacco bundles.

Tobacco costs of production estimates would certainly be different if costs resulting from the factors mentioned in the previous paragraphs were adequately incorporated into the costs of production accounts. It is not possible to determine whether average tobacco production costs would be higher or lower. Also, the relative costs of production for producers with small and large tobacco operations are likely to have changed. Extension agents are reporting that farms with larger tobacco enterprises are much more likely to have a marketing contract than farms with small tobacco enterprises. Further changes in quota levels or in the tobacco program are likely to increase the probability of changes in tobacco production costs.