United States
Department of
Agriculture

Economics,
Statistics, and
Cooperatives Service

Agricultural
Economic
Report No. 460 - 469
1980-81

Burley Tobacco Farming Characteristics and Potential for Change

Verner N. Grise
Owen K. Shugars

BURLEY TOBACCO FARMING CHARACTERISTICS AND POTENTIAL FOR CHANGE. By Verner N. Grise and Owen K. Shugars, U.S. Department of Agriculture; Economics, Statistics, and Cooperatives Service. Agricultural Economic Report No. 460.

ABSTRACT

Burley tobacco farms in five areas of Kentucky and Tennessee averaged 2.4 acres of tobacco. Burley producers harvested an average of 23 acres of other crops in addition to burley tobacco. Sixty-three percent of the farms produced livestock. Over two-thirds of the operator households had one or more members with off-farm employment in 1976. An average of 342 hours of labor was used per acre to produce the burley crop. The small burley acreages per farm constrain development and adoption of labor-saving technology. Loose leaf sales of burley may offer the greatest potential for cost savings to farmers. This report provides a basis for understanding the structure of burley tobacco farming and evaluating technological, institutional, and demand changes.

Key words: Burley tobacco, burley labor, tobacco producers

ACKNOWLEDGMENTS

The authors acknowledge the contribution of the farmers who cooperated in the 1977 burley tobacco farm survey and the enumerators of the U.S. Department of Agriculture's Economics, Statistics, and Cooperatives Service who conducted the interviews. Thanks are also due personnel in ESCS's Survey Division and in the State Statistical Divisions in Kentucky and Tennessee who helped develop and conduct the survey and do the computer programming. Daphene E. Tippett, Nadine Loften, and Linda Ferrell also contributed to this study. The authors also thank staff members of the University of Kentucky and the University of Tennessee for their advice and assistance.

Washington, D.C. 20250 September 1980

CONTENTS

SUMMARY

Burley tobacco farms in five areas of Kentucky and Tennessee were small both in terms of average acres of tobacco produced (2.4) and average acres of land operated (86). More than two-thirds of the producers grew 2 acres of tobacco or less. This study, based on a 1977 survey, provides a basis for understanding the structure of burley tobacco farming and technological, institutional, and demand changes.

Many burley farm households relied heavily on off-farm employment to supplement family income. A third of them received no nonfarm income or less than $2,500 from nonfarm sources. Furthermore, the small acreage of cropland (average of 14 acres) on farms with 2 acres of tobacco or less limited earnings from other farm sources. Tobacco producers with smaller acreages of tobacco tended to be older, had less education, and owned a large proportion of the land and quota they operated.

An average of 342 hours of labor per acre was used to produce burley tobacco in the study area. Over two-thirds of the labor was supplied by family members and exchange workers, but this proportion varied by area and size of farm. Forty-two percent of the labor was used for market preparation and 26 percent for harvesting.

Mechanization of harvest had not progressed in burley tobacco as it had in flue-cured. Burley presents different obstacles to mechanization. Typically, it is a stalk rather than leaf-cured product, and burley acreages per farm are smaller. Without substantial quota consolidation, harvest mechanization is likely to require relatively large investments per acre.

Loose leaf sales of burley tobacco offer potential cost savings to farmers. A 30-percent reduction in market preparation labor would result in a 7.5-million-hour labor reduction in the five study areas. The benefits of loose leaf sales to tobacco producers vary depending on if and how much prices are discounted, how much labor is hired, and alternative uses of family labor.

A reduced demand for burley tobacco (smaller quotas) would likely result in higher quota prices (lease rates). Some less efficient producers would be forced out of tobacco production. Although the production costs of smaller growers average higher when all resources used are valued at market rates, many have low out-of-pocket costs. Since many growers have little alternative income, they would continue to produce tobacco as long as their cash variable costs are covered.

Barn capacity to house about a third more tobacco than was produced in 1976 was available. This probably sets the upper limit on expansion of burley production.

Burley Tobacco Farming
Characteristics and Potential for Change

Verner N. Grise
Owen K. Shugars

INTRODUCTION

Burley tobacco, a major farm enterprise in Kentucky and Tennessee, varies by acreage of tobacco grown per farm and by production areas within the two States.

This study provides a basis for understanding the structure of burley tobacco farming and evaluating potential technological, institutional, and demand changes. It is based on a 1977 survey of burley producers. Recent information on structure and characteristics of burley tobacco growers was not available before the survey was conducted.

Background

Burley tobacco remains a labor-intensive crop. Production, harvesting, and marketing techniques have changed little over the last several decades. Some of the historical reasons for lack of change are:

- A production control program that limits consolidation of quotas and promotes price stability;
- Adequate low-cost labor supply;
- Institutional controls on leaf preparation for market; and
- The difficulty of developing feasible technological devices that protect the inherent characteristics of burley tobacco.

Some changes have occurred. Since 1971, lease and transfer of burley tobacco have been permitted within county lines, easing constraints on quota consolidation. Sucker control chemicals are used widely and tractors have largely replaced mules and horses.

Change over the next decade may be greater than during the last three decades. Labor costs are rising rapidly--30 percent from 1976 to 1979--which heightens the need for technological breakthroughs or institutional changes to reduce labor costs. The increased costs of labor and other inputs and the attendant rises in tobacco support prices could affect the U.S. competitive position in domestic and foreign markets. Increasing attacks on tobacco use because of its statistical relationship with various diseases may affect demand for tobacco products and the configuration of the government price support-supply control program.

Several university experiment stations are attempting to reduce the labor required in tobacco production. Experiments with various loose leaf methods of packaging burley tobacco have been conducted during the last 5 years. A USDA marketing experiment during the 1978-79 marketing season allowed up to 5 percent of each county's quota to be sold in bales. 1/ Agricultural engineers have experimented with prototype harvesters to stalk-cut burley tobacco, harvesters to remove the leaves from the stalk, bulk curing barns like those used to cure flue-cured tobacco, and barns designed to be filled with smaller crews.

The changes and potential changes cited affect farm operators and their families, hired workers, tobacco warehouse operators and workers, input suppliers, and others. To evaluate the effects of change requires a knowledge of current conditions. This report describes current characteristics of burley tobacco farm operations, types and sources of labor used, and potential changes in burley tobacco, and provides a data base for analyzing other changes.

Analytical Methods

Much of the prior data on burley tobacco farming was outdated or based on a few empirical observations. No adequate measure had been made of the number, characteristics, and resources of burley tobacco management units.

An onfarm survey of 790 burley tobacco farm operators conducted in 1977 in five major areas of the burley tobacco belt used a random sample. 2/ Appropriate weights were assigned to each questionnaire so that estimates for entire production areas could be obtained. In conjunction with obtaining detailed information on the cost of producing burley tobacco in 1976, information was also collected on the structure and characteristics of burley tobacco farms, including size and organization of burley tobacco management units, the method of acquiring tobacco quotas and other resources on the management unit, type and quantity of labor used, and dependence of operators on farm and nonfarm sources of income. 3/

ESCS staff members tabulated the survey data for an analysis of the key characteristics of farms producing burley tobacco. Estimates were made of labor and capital needs for these farms under various technological and institutional conditions.

Study Area

The geographic study area covered 45 counties in Kentucky and 20 in Tennessee. Counties were grouped into five separate areas based on similarities in topography, enterprise combinations, amounts of tobacco grown, and general economic characteristics. The 65 counties surveyed produce about half of the burley tobacco in the United States.

1/ The experiment was continued for the 1979-80 marketing season with 20 percent of each State's quota eligible for sale in bales.

2/ The survey was conducted by the Economic Research Service (ERS), a predecessor agency of the Economics, Statistics, and Cooperatives Service. ERS became a part of ESCS on Jan. 1, 1978.

3/ A quota is essentially a "permit" or "license" to produce a given quantity of tobacco. See appendix B for a description of the current burley tobacco price support-supply control program.

Area 1

Area 1 covers seven counties in what is generally known as the inner Bluegrass of Kentucky (fig. 1). Soils are the most productive in the Bluegrass and tobacco quotas are the largest in the burley belt. Lexington, Ky., a highly industrialized city, lies near the center of this area and with its heavy demand for labor affects the labor supply and thus wage rates for tobacco work.

Area 2

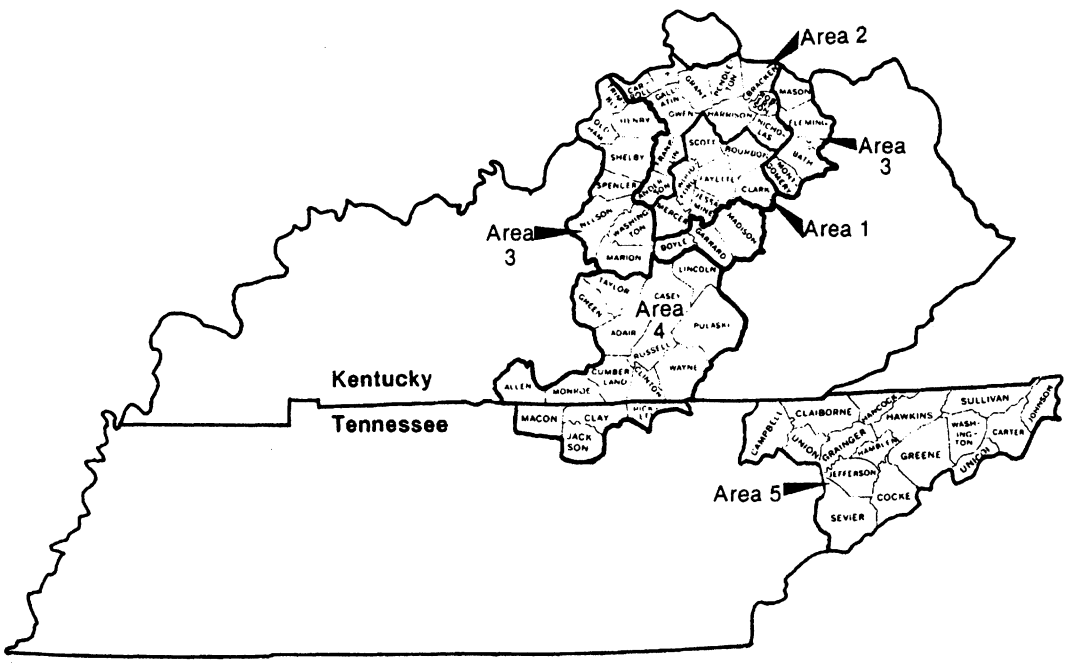
Area 2 covers 11 counties, more than half of which lie in what is generally known as the intermediate Bluegrass of Kentucky (fig. 1). Much of this area is a thoroughly dissected plateau consisting of many narrow, winding ridges and hills with slopes ranging from 25 to 35 percent. Part-time farming is prevalent in this area because the topography is not suited to intensive farming and because of the area's proximity to three industrialized cities (Louisville and Lexington, Ky., and Cincinatti, Ohio).

Area 3

Area 3 covers 15 counties with more than half of their physical area in the outer Bluegrass of Kentucky (fig. 1). Topography of this area is similar to area 1 except that it is more rolling. The soils contain less calcium phosphate and the internal drainage is not as good as in area 1. Burley quotas are smaller than area 1 and enterprise combinations are different.

Figure 1

Burley Tobacco Survey Areas, Kentucky and Tennessee



Area 4

Area 4 includes 12 counties in south central Kentucky and 4 in north central Tennessee (fig. 1). The area is undulating to hilly, and tobacco quotas are smaller than in areas 1, 2, and 3. The labor supply is probably more adequate for peak labor jobs than in the Bluegrass area because of the smaller tobacco acreages per farm.

Area 5

Area 5 includes 16 eastern counties of Tennessee (fig. 1). The topography is mainly rolling to hilly. Tobacco quotas are smaller than in any other area even though tobacco represents a very important component in agriculture in the area. Off-farm employment is important because of the small farms and the availability of off-farm jobs.

LAND AND QUOTA USE AND CONTROL

Burley tobacco farms are small both in terms of acreage of tobacco grown and total acreage of all crops produced. 4/ The amount of tobacco grown, other crops and livestock produced on the farm, and the type of control the grower has over tobacco quota and land are important. They affect the prospects and effects of potential changes in production technology and demand for tobacco.

Farm Numbers and Tobacco Acreages

An average of 2.4 acres of tobacco was produced on 74,438 management units in the five study areas in 1976 (table 1). The acreage produced ranged from 5.5 acres of tobacco in area 1 to 1.2 acres in area 5. An average of 1.5 quotas per farm was used to produce and market tobacco.

Over two-thirds of the growers produced 2 acres of tobacco or less; another one-fifth produced less than 6 acres of tobacco (table 2). Study areas varied; almost two-thirds of the producers grew more than 2 acres of tobacco in area 1, compared with less than one-tenth in area 5.

The two-thirds of the growers that raised 2 or fewer acres of tobacco produced only 30 percent of the crop. Growers with 15 acres of tobacco or more comprised less than 2 percent of the producers but grew nearly 10 percent of the crop.

Cropland Acreages and Enterprises

Burley tobacco farms averaged 86 acres of land, half of which was cropland used for crops or pasture (table 3). Average cropland per farm varied directly with tobacco acreage (appendix table 1). Average cropland in the study area ranged from 25 acres in area 5 to 72 acres in area 1 (table 3). Farms with less than 10 acres of cropland accounted for 45 percent of the operations (table 4).

Burley growers harvested an average of 23 acres of crops in addition to burley tobacco in 1976. Hay and corn for grain were the crops most often reported in

4/ In this report, the term farm is synonomous with management unit and operator unit and is defined as all the land and quota operated by an individual or group as a single farming operation. Only burley farms were studied.

Table 1--Burley tobacco quotas, management units, and tobacco production, study area, 1976

Item	Unit	Study area 1/					
		1	2	3	4	5	All
Average size of individual quota	Pounds	7,679	5,104	5,070	2,094	1,751	3,289
Farms	Number	6,111	6,437	15,734	19,175	26,980	74,438
Acreage per farm	Acre	5.5	4.4	3.1	1.7	1.2	2.4
Quota per farm	Pounds	12,075	9,303	6,489	3,409	2,624	4,997
Total tobacco produced, 1976	1,000 lbs.	77,300	67,063	109,390	66,299	63,685	383,737

1/ Area 1 represents inner Bluegrass of Kentucky, area 2 represents intermediate Bluegrass of Kentucky, area 3 represents outer Bluegrass of Kentucky, area 4 represents south central Kentucky - north central Tennessee, and area 5 represents eastern Tennessee.

Sources: Price Support and Loan Division, Agricultural Stabilization and Conservation Service, USDA, and Economic Research Service, USDA.

Table 2--Acres of tobacco produced on burley tobacco farms, study area, 1976

Acres grown	Study area					
	1	2	3	4	5	All
	Percentage of farms					
Less than 2.1	35	42	49	78	90	70
2.1-5.9	33	37	37	18	8	21
6.0-14.9	25	17	14	4	2	8
15.0 and over	7	4	1/	1/	1/	1
Total	100	100	100	100	100	100

Note: For study area divisions, see table 1.

1/ Less than 1 percent.

Source: ERS farm survey.

Table 3--Average acres of land in various uses on burley tobacco farms, study area, 1976

Type of land	Study area					
	1	2	3	4	5	All
	Acres					
Cropland	31.3	30.6	38.8	22.9	17.9	25.8
Cropland pasture	40.6	24.8	27.3	11.4	7.1	16.8
Permanent pasture	34.7	64.5	36.9	16.5	13.7	25.5
Woodland	4.8	13.1	17.8	19.2	12.9	14.9
Other 1/	6.4	3.8	3.3	1.8	2.3	2.9
Total	117.8	136.8	124.1	71.8	53.9	85.9

Note: For study area divisions, see table 1.

1/ Includes roads, ditches, ponds, and dwellings.

Source: ERS farm survey.

Table 4--Acres of cropland operated on burley tobacco farms, study area, 1976

Acres of cropland	Study area					
	1	2	3	4	5	All
	Percentage of farms					
Less than 10	23	38	31	49	59	45
10-49	38	27	36	27	28	30
50-99	15	17	18	15	9	14
100-219	17	14	9	8	3	8
220 and over	7	4	6	1	1	3
Total	100	100	100	100	100	100
	Acres					
Average per farm	72	56	66	34	25	43

Note: For study area divisions, see table 1.

Source: ERS farm survey.

addition to tobacco (table 5 and appendix table 2). Hay was harvested on nearly half of the farms, and corn for grain on about one-third (table 5).

Livestock is important on burley tobacco farms; 63 percent reported one or more types on hand (table 5). Beef production ranked first in relative importance. The proportion of farms reporting beef cows ranged from one-third in area 4 to more than one-half in area 2. Herd size ranged from 14 beef cows per farm in area 5 to 39 in area 1. Dairying, though less prevalent than beef production, was significant with 14 percent of the farms reporting dairy cows. Farms with dairy cows averaged 26 head ranging from 12 in area 4 to 71 in area 1. Dairying was relatively more important in the other study areas, however, where greater percentages reported this enterprise.

Methods of Controlling Land and Tobacco Quota

Tenure of operators varied markedly by area (table 6). Nearly three-fourths of the tobacco farmers owned some or all the land they operated. However, some or all the land was rented by more than one-half. Renting was most common in the Bluegrass area where about two-thirds of the operators rented all or some of the land. The inner Bluegrass had the highest proportion of full renters--42 percent--and eastern Tennessee the lowest--18 percent.

Burley tobacco quotas are assigned to specific farms. Besides owning and renting quota, operators can lease quota from quota holders whose farm is in the same county as their own. Leased quota can be transferred either to an owned or rented farm.

Nearly 40 percent of the farm operators owned the entire tobacco quota they produced in 1976 (table 7). Another 30 percent rented all their quota. About one of every four producers leased some quota. Leasing was most common in areas two and

Table 5--Major crops and livestock reported on burley tobacco farms, study area, 1976

Crop or livestock	Farms reporting, study area						Acres or number per farm reporting, study area					
	1	2	3	4	5	All	1	2	3	4	5	All
	Percent						Acres					
Burley tobacco	100	100	100	100	100	100	5.5	4.4	3.1	1.7	1.2	2.4
Corn-grain	28	25	42	33	27	32	18.3	14.6	35.8	18.7	11.1	20.8
Corn-silage	8	12	13	7	5	8	36.9	15.9	23.4	13.9	47.2	26.5
Soybeans	2/	2/	1	2	1	1	2/	2/	15.7	36.2	9.6	32.1
Hay	56	58	52	44	46	49	29.2	31.5	27.6	21.5	17.5	23.3
Small grains	2	5	5	4	7	5	46.2	10.1	45.1	23.6	22.5	27.4
Other field crops 1/	2/	3	2	5	3	3	2/	2.0	13.7	2.0	3.6	4.0
							Number					
Beef:												
Cows	47	51	42	33	38	39	39.0	18.1	21.7	20.8	14.1	20.1
Heifers	16	41	10	16	16	17	17.1	6.4	16.0	7.0	3.8	7.6
Bulls	38	42	25	25	26	28	2.1	1.8	1.6	1.4	1.4	1.6
Feeder cattle	27	36	32	19	7	20	26.5	13.7	22.5	17.6	21.2	20.2
Slaughter cattle	6	2	2	2	1	2	9.0	19.6	24.0	6.0	1.7	10.7
Dairy:												
Cows	4	19	13	20	11	14	70.7	31.1	34.9	12.0	13.5	25.7
Heifers	3	14	10	9	7	9	19.3	11.1	10.1	7.8	21.5	13.5
Other	2	17	19	12	3	10	17.8	11.2	5.3	8.0	10.9	7.7
Hogs and pigs:												
Brood sows	11	5	6	17	5	9	9.3	7.1	6.3	4.8	4.2	5.5
Boars	11	4	4	9	2	5	1.3	1.5	1.1	1.1	1.3	1.2
Feeder pigs	9	3	5	11	9	8	49.4	71.5	107.8	22.4	2.6	29.8
Market hogs	2	1	2	8	1	3	4.0	12.9	126.1	9.7	6.1	26.8
Sheep	3	1	2/	2/	2/	2/	51.1	15.0	2/	2/	2/	2/
Poultry	10	21	7	20	12	14	21.4	37.6	40.1	23.6	245.9	96.6
Other	1	2/	2/	1	1	1	3/	3/	3/	3/	3/	3/
Any livestock	64	70	71	63	56	63	3/	3/	3/	3/	3/	3/

Note: For study area divisions, see table 1.

1/ Includes crops such as vegetables, sorghum, and milo.
2/ Less than 1 percent.
3/ Data not available.

Source: ERS farm survey.

Table 6--Operators' tenure on burley tobacco farms, study area, 1976

Tenure	Study area					
	1	2	3	4	5	All
	Percentage of farms					
Own	33	29	36	51	57	46
Rent	42	34	33	22	18	26
Own and rent	25	37	31	27	25	28
Total	100	100	100	100	100	100

Note: For study area divisions, see table 1.

Source: ERS farm survey.

Table 7--Operators' tenure for tobacco quota on burley tobacco farms, study area, 1976

Tenure	Study area					
	1	2	3	4	5	All
	Percentage of farms					
Own allotment	28	23	23	45	51	39
Rent allotment	39	35	35	25	24	29
Own and rent	13	8	9	11	4	8
Own and lease	14	14	27	11	17	17
Rent and lease	3	12	1	3	1	3
Own, rent, and lease	3	8	5	5	3	4
Total	100	100	100	100	100	100

Note: For study area divisions, see table 1.

Source: ERS farm survey.

three where one of every three producers engaged in this activity. About one of every five producers used this method to obtain quota in the other areas. 5/

As expected, operators of the smallest tobacco acreages were the most likely to own the entire quota (table 8). Rental of all quota varied little but was greatest for the largest size group and was lowest for the smallest group. Part-ownership was much less prevalent for the smallest size group. Leasing was more prevalent for larger farms but was used by one of five producers with 2 acres of tobacco or less, reflecting the fact that a large number of quotas run less than 2 acres of tobacco. Leasing was less common in the largest size group (15 acres or more) than in the next to largest size group (6.0-14.9 acres). Most of the largest farms are in areas 1 and 2 where tobacco quotas are larger.

5/ Renting quota refers to an arrangement where the quota is grown on a farm to which the quota is assigned. Leasing quota refers to an arrangement where the quota is produced on a farm other than the one to which the quota is assigned.

Table 8--Operators' tenure for tobacco quotas, by acres of tobacco grown, study area, 1976

Tenure	Acres of tobacco grown				
	Less than 2.1	2.1-5.9	6.0-14.9	15.0 and over	All
	Percentage of farms				
Own allotment	50	18	11	11	39
Rent allotment	26	34	32	37	29
Own and rent	4	17	20	23	8
Own and lease	18	17	14	2	17
Rent and lease	2	3	6	13	3
Own, rent, and lease	1/	11	17	14	4
Total	100	100	100	100	100

1/ Less than 1 percent.

Source: ERS farm survey.

AGE AND EDUCATION OF BURLEY TOBACCO FARMERS

The operator's age and education may affect decisions about the farming operation such as expanding or contracting the size of the farm operation. Older operators may respond differently than younger ones to technological and institutional changes.

Age

Older burley tobacco farmers are less likely to expand operations. In the study area, 87 percent of operators 65 years and older grew less than 2.1 acres of tobacco. Only about 3 percent grew as much as 6 acres of tobacco. Moreover, older operators were less likely than younger ones to rent or lease quota. For example, 75 percent of those 65 and over and 73 percent of those 55 to 64 produced only tobacco with owned quota.

Two-thirds of the operators were less than 55 years old (table 9). Only one of every eight operators was 65 or older. Nearly 30 percent of the operators were under 35. Area 1 had a somewhat lower proportion of operators under 35 but a much larger proportion between 35 and 54 years of age (fig. 2 and appendix table 3). Area 5 had a somewhat larger share of operators 55 and over.

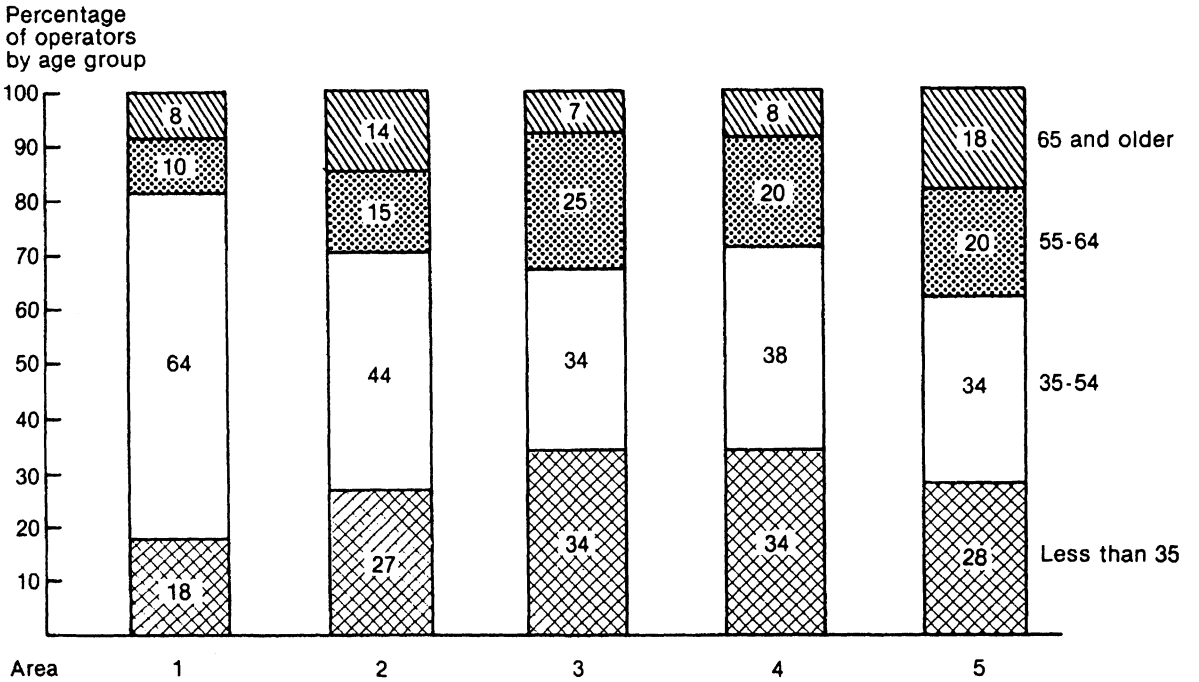
Table 9--Age of burley tobacco farm operators, by acres of tobacco grown, study area, 1976

Acres grown	Age (years)			
	Under 35	35-54	55-64	65 and over
	Percentage of operators			
Less than 2.1	31	34	20	15
2.1-5.9	25	45	24	6
6.0-14.9	25	59	12	4
15.0 and over	33	51	11	5
All size groups	30	38	20	12

Source: ERS farm survey.

Figure 2

Age of Burley Tobacco Farm Operators, by Size Group and Production Area, 1976



Older operators owned a larger proportion of the tobacco acreage produced (table 10). About three of every four operators 55 years or older owned all the quota they produced, compared with only one of four of those under 35. Younger operators relied heavily on renting.

Education

Nealy 60 percent of the operators had less than a high school education (table 11). A larger proportion of operators with 15 or more acres of tobacco had at least a high school education compared with those in any other size group. Operators with 2.1 to 5.9 acres attended fewer years of school than those in the smallest size group.

EMPLOYMENT AND INCOME

Off-farm employment is an important source of income for many burley tobacco producers. The amount of off-farm employment varies by acres of tobacco grown and production area.

Off-Farm Work

For the five areas combined, 68 percent of the farms reported one or more family members working off-farm in 1976. Only 30 percent reported the equivalent of full-time employment (2,000 or more hours annually) off the farm, however.

Fifty-five percent of the operators and 26 percent of the spouses worked off the farm (table 12). More operators and operator household members worked off the farm in area 5 than in any other area. However, a greater proportion of operator

Table 10--Age of burley tobacco farm operators, by tenure, study area, 1976

Tenure class	Age (years)				
	Under 35	35-54	55-64	65 and over	All
	Percentage of operators				
Full owner	26	40	73	75	46
Part owner	28	34	20	19	28
Full renter	46	26	7	6	26

Source: ERS farm survey.

Table 11--Years of education completed by burley tobacco farm operators, by acres grown, study area, 1976

Acres of tobacco grown	Education (years completed)		
	Less than 8	8-11	12 and over
	Percentage of operators		
Less than 2.1	28	30	42
2.1-5.9	30	36	34
6.0-14.9	20	30	50
15.0 and over	15	24	61
All sizes	28	31	41

Source: ERS farm survey.

Table 12--Off-farm work of burley tobacco operator households, study area, 1976

Household member	Study area					
	1	2	3	4	5	All
	Percent 1/					
Operator	48	50	51	58	59	55
Spouse	15	21	31	28	26	26
Children	1	7	12	5	13	9
Other family	1	9	4	3	3	4
All family members	60	67	65	69	72	68

Note: For study area divisions, see table 1.

1/ Percent reporting any off-farm employment.

Source: ERS farm survey.

spouses worked off the farm in areas 3 and 4 than in area 5. Nonfarm income, which includes wages from employment off the farm plus such items as investment income, social security, and rent, exceeded $5,000 on about half the farms (table 13). Less than $100 of nonfarm income was reported on 20 percent of the farms. Seventy-two percent of farms with 2 acres of tobacco or less had nonfarm income of $2,500 or more, which means some 15,000 small operator households had nonfarm incomes of less than $2,500. Yet about the same number of households with 2 acres of tobacco or less had nonfarm incomes of $10,000 or more (appendix table 4). About half the operators of farms with more than 2 acres of tobacco had nonfarm incomes over $2,500.

Sources of Farm Income

Nearly half the gross farm receipts on burley tobacco farms comes from the sale of tobacco (table 14). The remainder is evenly distributed between other crop and livestock enterprises.

The proportion of gross farm receipts from tobacco increases on farms with larger acreages of tobacco. By area, the proportion of gross receipts from tobacco was quite different (appendix table 5). Although gross receipts from tobacco approached two-thirds of gross farm receipts in areas 1 and 2, they were only one-third of gross farm receipts in area 5. However, total gross farm receipts in areas 1 and 2 were more than double those in area 5.

Table 13--Nonfarm income of burley tobacco operator households, by acres grown, study area, 1976

Acres of tobacco grown	Nonfarm income class				
	Less than $100	$100-$2,499	$2,500-$4,999	$5,000-$9,999	$10,000 and over
	Percent				
Less than 2.1	13	15	19	25	28
2.1-5.9	32	16	10	22	20
6.0-14.9	40	16	11	18	15
15.0 and over	33	13	5	15	34
All sizes	20	15	16	23	26

Source: ERS farm survey.

Table 14--Gross receipts from agricultural products on burley tobacco farms, by acres grown, study area, 1976

Acres of tobacco grown	Commodity					
	Tobacco		Other crops		Livestock	
	Dollars	Percent	Dollars	Percent	Dollars	Percent
Less than 2.1	2,211	39	1,652	29	1,843	32
2.1-5.9	8,530	46	5,451	29	4,632	25
6.0-14.9	21,152	51	10,404	25	10,146	24
15.0 and over	54,580	63	15,331	18	16,471	19
All sizes	5,606	46	3,303	27	3,251	27

Source: ERS farm survey.

Gross Farm and Nonfarm Income

Nonfarm receipts averaged higher than burley tobacco gross receipts (table 15). This reflects the high number of part-time farmers in burley tobacco production. Nonfarm receipts were higher than all farm receipts combined on the smallest farms. Although tobacco sales are low on the small farms, they are probably a very important part of total income because of the low level of total receipts from all sources for this group.

Receipts from burley tobacco are considerably higher than nonfarm receipts on farms with more than 2 acres of tobacco. Nonfarm receipts are lowest on intermediate size farms (2.1 acres to 14.9 acres of tobacco). This results from less off-farm employment by this group than by the smaller operators. About the same proportion of larger operators (15 acres or more of tobacco) as intermediate size operators had nonfarm income. But nonfarm earnings averaged much higher on the larger farms. Perhaps this results from a higher level of education of these operator household members, thereby leading to higher wages or proprietorship earnings.

LABOR USE AND CHARACTERISTICS

Burley tobacco is a labor-intensive crop. Much of the labor is provided by family members but the proportion varies by job.

Amount of Labor Used

An average of 342 hours of labor per acre, or 15.7 hours per 100 pounds, was used in the study area to grow burley tobacco (table 16). Harvesting the crop--which must be completed in about 4 weeks--took 26 percent of the labor. 6/ Tasks performed for market preparation after the tobacco was cured took 42 percent.7/ About 12 percent of the total labor was used in transplanting. 8/

Labor use varied considerably by size of farm and production area. Farms with 15 or more acres of tobacco used only three-fourths as much labor per acre as those with 2 acres or less (fig. 3 and table 17). Larger farms use bigger tractors and machinery and thus fewer hours of labor per acre for field operations. The incentive to manage the use of labor more efficiently may also have been greater since large farms are more dependent on hired labor.

Family Labor

Family members provided 54 percent of the labor used to produce burley tobacco (table 18). An additional 14 percent was done by exchange workers and the remainder by hired workers. Since exchange work was paid for in "kind," the total family labor contribution was 68 percent. The family labor contribution, however, varies by job. The proportion of the labor input provided by family members was lowest for cutting and spearing and hauling and housing. The family labor contribution was highest in area 4 and lowest in area 1 where farms are largest (appendix tables 6-10).

6/ Harvesting tasks include loading, hauling, and dropping sticks; cutting and spearing; and hauling and housing tobacco.

7/ Market preparation tasks include taking the tobacco down from the barn tiers, stripping leaf from the stalk, tying hands, bulking, and hauling the tobacco to market.

8/ Transplanting includes pulling plants, setting, and resetting the tobacco.

Table 15--Estimated nonfarm, gross burley tobacco, and gross farm receipts, by acres grown, study area, 1976

Acres of tobacco grown	Gross nonfarm receipts 1/		Gross tobacco receipts		Gross farm receipts		Total receipts	
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent
Less than 2.1	7,472	57	2,211	17	5,706	43	13,178	100
2.1-5.9	5,675	23	8,530	35	18,613	77	24,288	100
6.0-14.9	5,262	11	21,152	45	41,702	89	46,964	100
15.0 and over	8,829	9	54,580	57	86,382	91	95,211	100
All sizes	7,050	37	5,606	29	12,160	63	19,210	100

1/ Gross nonfarm receipts are estimated by taking the midpoint of reported nonfarm income categories and multiplying by the proportion of farms whose nonfarm income fell in that category. $30,000 is assumed for those farmers with more than $20,000 in nonfarm income. Information to calculate net receipts is not available. However, net nonfarm receipts would more closely approximate gross nonfarm receipts than would gross and net farm receipts.

Source: ERS farm survey.

Table 16--Labor used on burley tobacco farms, by job category, study area, 1976

Job	Study area											
	1		2		3		4		5		All	
	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.
Plant bed work 1/	13.1	0.57	16.0	0.67	15.2	0.67	17.4	0.86	17.6	0.93	15.8	0.73
Field preparation 1/	10.9	.47	14.7	.57	11.0	.48	16.1	.80	15.5	.81	13.2	.61
Transplanting 1/	39.0	1.69	42.9	1.79	40.5	1.78	37.0	1.83	41.1	2.16	40.0	1.83
Field care 1/	29.7	1.29	30.1	1.26	30.4	1.34	45.0	2.23	52.7	2.77	37.1	1.71
Harvest and curing 1/	78.5	3.41	91.0	3.81	76.9	3.38	95.2	4.71	100.6	5.29	88.1	4.04
Market preparation 1/	131.3	5.70	163.1	6.82	147.3	6.48	143.8	7.11	143.3	7.53	143.5	6.58
Custom work 2/	2.2	.10	3.1	.13	2.9	.13	8.0	.40	6.1	.32	4.4	.20
Total	304.7	13.23	360.9	15.05	324.2	14.26	362.5	17.94	376.9	19.81	342.1	15.70

Note: For study area divisions, see table 1.

1/ Includes family, exchange, and hired workers paid on both a time and piece rate basis.
2/ Estimated time spent for custom jobs such as land preparation, pesticide applications, and various hauling operations.

Source: ERS farm survey.

Table 17--Labor used on burley tobacco farms, by acres grown, study area, 1976

Acres of tobacco grown	Study area											
	1		2		3		4		5		All	
	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.	Hours/ acre	Hours/ 100 lbs.
2 acres or less	439.7	21.1	404.7	17.4	331.3	17.2	358.2	19.0	387.9	21.1	375.5	19.7
2.1-5.9	325.0	13.5	381.4	16.3	323.5	14.4	354.2	16.5	355.7	16.7	343.6	15.3
6.0-14.9	302.1	13.0	334.7	13.3	303.8	12.5	379.3	18.0	322.5	17.2	319.2	13.7
15.0 and over	258.6	11.4	335.3	14.9	276.6	11.2	1/	1/	1/	1/	281.8	12.4
All sizes	304.7	13.23	360.9	15.05	324.2	14.26	362.5	17.94	376.9	19.81	342.1	15.70

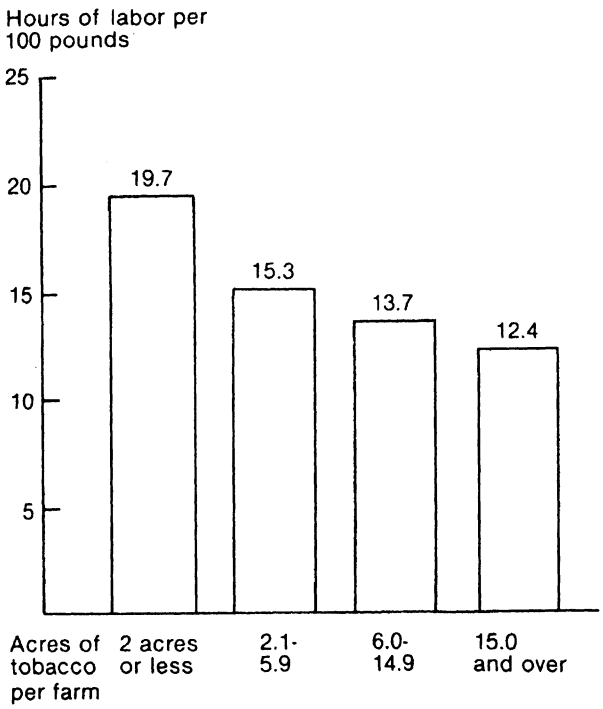
Note: For study area divisions, see table 1.

1/ Less than 1 percent of farms.

Source: For study area divisions, see table 1.

Figure 3

Labor Use by Size of Acreage, Study Area, 1976



Family members and exchange workers provided more than nine-tenths of the labor for many of the preparation and care activities such as subsoiling, plowing, disking, fertilizing, cultivating, and spraying. Their contribution was less than two-thirds for stripping and about three-fourths for transplanting. Stripping is the most labor-intensive job but can be spread over a longer period of time. Exchange work is most prevalent in transplanting the tobacco but is an important component of the labor input for harvesting, market preparation, and preparing and caring for the plant bed.

Harvesting, market preparation, and transplanting account for much of the hired labor used in producing burley tobacco (table 18). About 45 percent of the labor used for cutting, spearing, hauling, and housing was hired. About one-third of the labor to strip and one-fourth to transplant was hired. Total labor hired is highest in area 1 and lowest in areas 4 and 5, reflecting the effect of larger tobacco acreages in area 1.

The Family and Hired Labor Force

The primary source of family labor was the operator who provided 71 percent of the total family input. The spouse and children together provided about 26 percent, with other family members who live in the household providing the remainder. Distribution of family labor varies little by area or by size of farm, although the proportion of total labor provided by the family was lower for larger farms. The labor contribution by children was low, since much of the labor-intensive harvesting and market preparation occurs while children are in school.

Most of the people hired on a seasonal basis work in harvesting, market preparation, and transplanting the tobacco. Only 2 percent of hired workers were classified as regular hired or essentially full-time workers on the farm. The hired work force is primarily comprised of people in their prime working years but who probably only work in burley tobacco on a seasonal basis. Two-thirds of the hired workers were 18 to 45 years of age, 15 percent were 45 years old or older, and only 19 percent were less than 18 years old.

Wage Rates

In 1976, burley tobacco workers in the five study areas received an average wage rate of $2.45 an hour. Since then, wage rates have increased, running about 30 percent above the 1976 level in 1979. Wage rates varied by job and area (table 19), the former primarily because of the difference in demand for workers at the time the job is done and the skills and stamina needed for the job.

Table 18--Proportion of labor done by various types of workers on burley tobacco farms, study area, 1976

Job	Type of worker		
	Family	Exchange	Hired
	Percent		
Plant bed work:			
Preparation	71	16	13
Care	75	12	13
Field preparation:			
Applying manure	79	10	11
Subsoiling	86	8	6
Plowing	89	4	7
Disking, harrowing, dragging	89	4	7
Fertilizing	86	8	6
Transplanting:			
Pulling plants	48	21	31
Transplanting	53	21	26
Resetting	78	8	14
Field care:			
Hoeing	71	9	20
Cultivating	85	6	9
Sidedressing fertilizer	86	7	7
Applying insecticides	92	5	3
Applying sucker control	83	8	9
Topping and suckering	65	12	23
Harvesting and curing:			
Loading, hauling, dropping sticks	63	16	21
Cutting and spearing	36	15	49
Hauling and housing	35	16	49
Opening vents	98	1	1
Market preparation:			
Taking down and bulking	55	10	35
Stripping and bulking	51	13	36
Hauling to market	67	16	17
/All jobs	54	14	32

Source: ERS farm survey.

Wage rates for stripping and land preparation and care were nearly the same in all areas, the latter varying only 11 cents. However, wage rates for harvesting were much higher in the Bluegrass areas than in the eastern Tennessee area. The heightened demand for labor during the critical 4- to 6-week harvest period creates a tight labor situation in the Bluegrass.

Table 19--Average hourly wage rates paid burley tobacco workers by job, study area, 1976

Job category	Study area					
	1	2	3	4	5	All
	Dollars per hour					
Land preparation and care 1/	2.00	2.05	2.03	2.11	2.07	2.03
Transplanting	2.24	2.06	2.06	2.12	2.12	2.13
Hauling and dropping sticks	2.83	2.98	2.96	2.43	2.09	2.65
Cutting and spearing	4.19	3.43	3.53	2.85	2.16	3.23
Housing	4.16	3.53	3.43	2.80	2.14	3.27
Taking down and bulking	2.11	1.96	1.97	2.02	2.08	2.02
Stripping	2.08	1.99	2.06	2.02	2.06	2.05
Marketing	2.13	1.98	1.98	2.10	2.32	2.10
All jobs	2.68	2.50	2.53	2.30	2.10	2.45

Note: For study area divisions, see table 1.

1/ Includes preparation and care activities such as preparing the seedbed, plowing, disking, cultivating, and spraying.

Source: ERS farm survey.

POTENTIAL FOR AND EFFECTS OF REDUCTIONS IN LABOR USE

Harvest and market preparation account for over two-thirds of total labor use in burley tobacco production. Nearly a third of the cost of producing the crop is reflected in labor charges for these activities. 9/ With continuing wage hikes, greater pressure is being exerted to reduce labor requirements for these activities.

Tobacco Harvest

The major problem of harvest mechanization in burley tobacco has been the lack of a feasible harvester which maintains the characteristics and quality of burley tobacco. Agricultural engineers at the various burley belt agricultural colleges have been successful in designing barns that can be filled with smaller crews and have experimented with stalk-cutting harvesting aids. 10/ Some labor savings may be realized from these technologies. However, widespread adoption has not yet occurred, so evaluations of their economic effects remain largely hypothetical.

/ As machines are developed, tested, and made available for a farmer's use, the decision to adopt the machine will be based on economics (cost and returns). Other factors such as labor availability, ease of quota consolidation, obsolescence, and how long the operator plans to grow tobacco also have a bearing.

9/ Costs exclude land and quota charges. Family and exchange work are valued at prevailing wage rates.

10/ Mechanical harvesters that remove the leaves from the stalk and bulk-curing barns currently used for flue-cured tobacco have been tested. Research has not advanced to the stage that these can be considered as bona fide burley tobacco harvest alternatives, however.

Table 20--Annual fixed costs of various investment levels for hypothetical burley tobacco harvest mechanization

Dollar investment	Life	Depreciation	Interest	Taxes and insurance	Repairs	Total annual fixed costs
	Years			Dollars		
1,000	8	125	40	10	20	195
2,000	8	250	80	20	40	390
4,000	8	500	160	40	80	780
6,000	8	750	240	60	120	1,170
8,000	8	1,000	320	80	160	1,560
10,000	8	1,250	400	100	200	1,950

For illustration purposes, it is assumed that investment items for hypothetical burley tobacco mechanization have a useful life of 8 years (table 20). Annual repair costs for the investment items are 2 percent of the initial cost, interest on the investments amount to 4 percent (8 percent of the average value of the investment over its assumed life), and insurance and taxes amount to 1 percent. No salvage value is assumed.

At various levels of investment, the acreage needed to justify the investment if harvest labor is reduced by specified amounts is determined (table 21). The acreage at which a specified investment is justified is termed the break-even acreage. It is the acreage beyond which costs may be lowered by making the labor-saving investment.

Without acreages larger than those produced in 1976, most burley farmers can justify investment in labor-saving harvest technology only when a relatively small investment results in substantial labor savings. Harvest labor savings of 50 to 70 percent are needed for three-fourths of the 1976 producers to adopt an innovation costing only $2,000. In contrast, a producer with 30 acres of tobacco could justify at least an $8,000 investment with only a 20-percent reduction in labor use. However, 30 acres is over 12 times the average burley acreage produced per operator in 1976. These figures point up the severe problems associated with labor-saving harvest technologies and current burley tobacco acreages.

The 2 percent of the burley producers who grew 15 acres of burley tobacco in 1976 grew nearly 10 percent of the total acreage. These producers could justify an investment of $7,000 if it reduced labor use by 30 percent.

The prospects for adoption of harvest technology appear to be limited unless investment costs are quite low or the burley quotas are consolidated. Even with substantially higher wage rates, it would not be economically feasible for most growers to invest more than $2,000 in harvest equipment unless labor savings were substantial.

Market Preparation

An average of 144 hours of labor was used to take down, strip and tie hands, bulk, and market burley tobacco in the study area in 1976. This accounts for 42 percent of the total labor used compared with 26 percent for harvesting.

Table 21--Break-even acreages for investments in burley tobacco mechanization with specified labor reductions, by area

Dollar investment level	Assumed reduction in harvest labor 1/					
	10 percent	20 percent	30 percent	40 percent	50 percent	60 percent
			Break-even acreage 2/			
Area 1:						
1,000	5.9	3.0	2.0	1.5	1.2	1.0
2,000	11.8	6.0	4.0	3.0	2.4	2.0
4,000	23.6	12.0	8.0	6.0	4.8	4.0
6,000	35.4	18.0	12.0	9.0	7.2	6.0
8,000	47.2	24.0	16.0	12.0	9.6	8.0
10,000	59.0	30.0	20.0	15.0	12.0	10.0
Area 2:						
1,000	6.2	3.1	2.1	1.6	1.2	1.0
2,000	12.4	6.2	4.2	3.2	2.4	2.0
4,000	24.8	12.4	8.4	6.4	4.8	4.0
6,000	37.2	18.6	12.6	9.6	7.2	6.0
8,000	49.6	25.8	16.8	12.8	9.6	8.0
10,000	62.0	31.0	21.0	16.0	12.0	10.0
Area 3:						
1,000	7.2	3.6	2.4	1.8	1.4	1.2
2,000	14.4	7.2	4.8	3.6	2.8	2.4
4,000	28.8	14.4	9.6	7.2	5.6	4.8
6,000	43.2	21.6	14.4	10.8	8.4	7.2
8,000	57.6	28.8	19.2	14.4	11.2	9.6
10,000	72.0	36.0	24.0	18.0	14.0	12.0
Area 4:						
1,000	7.2	3.6	2.4	1.8	1.4	1.2
2,000	14.4	7.2	4.8	3.6	2.8	2.4
4,000	28.8	14.4	9.6	7.2	5.6	4.8
6,000	43.2	21.6	14.4	10.8	8.4	7.2
8,000	57.6	28.8	19.2	14.4	11.2	9.6
10,000	72.0	36.0	24.0	18.0	14.0	12.0
Area 5:						
1,000	9.0	4.5	3.0	2.2	1.8	1.5
2,000	18.0	9.0	6.0	4.4	3.6	3.0
4,000	36.0	18.0	12.0	8.8	7.2	6.0
6,000	54.0	27.0	18.0	13.2	10.8	9.0
8,000	72.0	36.0	24.0	17.6	14.4	12.0
10,000	90.0	45.0	30.0	22.0	18.0	15.0

Note: For study area divisions, see table 1.

1/ Includes dropping sticks, cutting and spearing, and hauling and housing.
2/ Wage rates used are shown in table 19 and labor used for harvest is shown in table 12.

Researchers at several universities in burley tobacco producing States have studied ways to reduce labor requirements for market preparation. The research, begun in 1973, has centered on developing a stripping machine and alternative methods of selling tobacco that eliminates hand tying (5). 11/

The results of studies on loose leaf sales of burley tobacco indicate savings of 25 to 57 percent for stripping with tying eliminated, depending on whether leaves were oriented (laid the same way) or nonoriented, the type of package used, the number of grades, and other factors (1, 2, 5, 6). Various aspects of loose leaf selling continue to be researched. During the 1978/79 marketing season, up to 5 percent of each county's tobacco quota was permitted to be sold in loose leaf bales. Only 1- by 2- by 3-foot bales were permitted for the 1-year experiment that was designed to evaluate the economic effects of loose leaf sales. 12/

Labor and cost savings associated with loose leaf burley sales appear substantial from the tobacco producers' perspective. In 1976, about 25 million hours of labor were used to prepare burley tobacco for market in the study area. Applying the estimated 1976 wage rate of $2.45 per hour to all labor used for market preparation, labor costs were $61 million. Assuming all tobacco was sold loose leaf and that a 30-percent reduction in total market preparation labor was achieved, labor costs would have been reduced from $61 million to $43 million--an $18 million savings, or about 5 cents per pound of tobacco produced.

The effect of loose leaf sales would likely vary by production area and acres of tobacco grown. In 1976, an average of 36 percent of the labor for stripping was hired. However, the percentage ranged from 31 in area 4 to 55 in area 1 (app. tables 6-10). Farms with 15 acres of tobacco or more hired about 70 percent of the labor used for stripping, whereas those with 2 acres of tobacco or less only hired 20 percent.

Small farm growers may realize lower savings from a shift to loose leaf sales than may larger growers. They hire a smaller proportion of market preparation labor, thus lowering their "out of pocket" cost savings. Cost savings with loose leaf sales on small farms depends on the opportunity cost of family labor. Farmers who hire little or no labor and have little alternative use for their labor would benefit little from loose leaf sales. On the other hand, if the total labor savings is a reduction in labor hired, the full 5 cents a pound cost savings (1976 wage rates) could be realized.

The benefits or losses associated with loose leaf sales also depend on whether the price of baled tobacco is lower than that for tied tobacco. Prices of baled burley averaged 1 cent a pound lower during the experimental sales of the 1978/79 marketing season. With this discount, the profitability or loss from baling tobacco varies. A grower that uses only family labor which has no alternative uses would lose the full amount of the price discount. A producer who realizes the full labor savings by reducing only hired labor would gain 5 cents a pound (1976 wage rates) by selling tobacco in loose leaf form. If price support was offered on all quota sales, it is uncertain how much baled tobacco would be discounted.

At least part of the cost savings reflected in baled sales might be capitalized into quota values in the long run if cost savings exceed the price discount. Producers who own quota would clearly benefit. Renters would benefit in the short run because of lower labor requirements and because they might be able to produce larger acreages of tobacco. Some of the renters' cost savings from lower labor requirements might be offset in the long run by a change in rental rates which reflect higher quota values.

11/ Note: Underscored numbers in parentheses refer to items in the bibliography.
12/ The experiment was continued in 1979-80. See details on page 2.

The demand for hired workers to prepare burley tobacco for market would clearly decline if loose leaf sales were adopted on a large scale. Data on the supply of hired workers is insufficient to evaluate the economic impact of loose leaf sales on the hired tobacco work force.

As indicated earlier, about two-thirds of the workers hired in tobacco production are between 18 and 45 years old. Two-thirds of the workers hired to strip tobacco in Kentucky are male and one-third female (4). Hired workers provided about 9 million hours of labor for burley market preparation in the study area, but the number of people who perform this work is unknown. Assuming that each worker is hired to prepare tobacco for market for an average of 150 to 300 hours annually gives an estimate of from 30,000 to 60,000 workers. These figures would translate into earnings of $350 to $750 per worker.

But data are not available to answer several very important questions about the hired tobacco market preparation work force. Such questions include how many people work in preparing tobacco for market, whether other employment exists for hired tobacco market preparers during the remainder of the year, the proportion of total household earnings from market preparation, and what alternative employment opportunities are available to hired workers who prepare tobacco for market.

The extent to which the hired work force for preparing tobacco for market overlaps the work force for harvesting and transplanting tobacco is not known. A shortage of harvest workers could result, however, if there is substantial overlap and loss of jobs in market preparation caused workers to find other employment.

The effect of loose leaf sales on warehouse and buyer costs and its effect on export prospects are also important considerations in evaluating a change to loose leaf burley sales. The 1978/79 marketing experiment revealed little about the impact of bales on warehouse operations; the relatively small volume of tobacco handled probably had little effect on their operations, however. Larger volumes might offer some efficiencies in warehouse operations (2).

Eight buying companies surveyed in 1979 indicated that increased costs were incurred in handling and processing baled tobacco. However, some indicated that a complete switch to bales might ultimately result in cost savings. Some buyers were concerned that baled sales could cause the United States to lose burley exports because of a deterioration in quality and condition of burley (2).

POTENTIAL EFFECTS OF DEMAND CHANGES

Future burley tobacco production in the United States is uncertain. Its level depends on a number of factors which have a bearing on who produces the crop, how much is produced, and the price received for the crop.

Reduced Demand

Demand for U.S. burley tobacco may be reduced if antismoking forces effectively discourage tobacco use, if foreign-produced burley substitutes for domestic production of burley, or because of technological advances which lower the quantity of tobacco per cigarette even further. For discussion purposes, it is assumed that reduced demand translates into a smaller tobacco quota so that the price received for tobacco would be equal to that with stable demand and current quota levels. The smaller tobacco quota places a premium on production efficiency, especially for farmers who want to lease or rent quota. This would result from greater competition for the lower supply of quota. Leasing and renting were important in the 1976 production of burley tobacco. Twenty-four percent of the producers leased 10

percent of the burley tobacco quota produced that year, and 44 percent of the farmers rented 47 percent of the acreage used to produce burley tobacco.

More efficient producers would bid the price of quota up to the point where the marginal cost of quota is equal to the marginal return. Less efficient producers would find it more profitable to lease their quota out than to grow it themselves.

Predicting which farmers would produce a smaller quota is very difficult. Farmers' costs give some clue about which farmers are more likely to continue production and those most likely to find it more profitable to lease or rent out quota. Variable and machinery ownership costs are examined by study area and acres of tobacco (table 22). 13/

Clearly, small growers' (2 acres of tobacco or less) costs average higher than those of larger growers. Consequently, larger producers may tend to bid quota away from smaller ones. But a shortcoming of the cost estimates lies in the costs attached to family and operator labor. For some farmers, it may be less than the prevailing hired wage rate. For others, it may be higher. The true cost or value of this input is impossible to determine, making the measurement of various farmers' competitive position complicated.

Several other factors influence the competitive position of tobacco producers. With reduced quota, control through ownership becomes very important, especially since most small growers own some or all their quota. Owners of land and quota, particularly those who have owned the latter for several years, may have advantages lessors and renters do not. The quota owner can plan for a longer time period. Established owners' barns may also be fully depreciated, thus lowering their cost of production compared with a renter who directly or indirectly pays for use of these facilities. Furthermore, some owners can take more risk because the cost of quota is an opportunity cost compared with the out of pocket cost the renter or lessor incurs.

Current tobacco producers with off-farm jobs may find that the profit margin with increased quota costs is not worth the effort required. This may be especially true of those who lease in or rent quota. Because of their off-farm income, however, some may accept a relatively low return from tobacco to supplement family income.

Reduced demand for tobacco (smaller quota) would lower the profit per acre (after quota costs are subtracted) for all producers. Some less efficient producers would be forced out of the business. Some small producers (2 acres of tobacco or less) who because of age and lack of other skills have little if any income-producing alternatives would likely produce tobacco as long as returns exceed out of pocket variable costs. Their incomes would be very low, however.

A lower burley tobacco quota would affect all producers. The less efficient producers, those with large outstanding debts, non-quota owners, and producers who rely heavily on tobacco as a source of family income would have the greatest adjustment problems with lower quotas.

Increased Burley Production Potential and Limitations

Some evidence points to a decline in demand for burley tobacco but disappearance over the last 15 years has been close to 600 million pounds (table 23).

13/ Variable costs include hired and family labor valued at hired wage rates, hired custom work, fertilizer, pesticide, fuel, and other variable costs. For more detail on procedures used to estimate costs, see (3).

Table 22--Burley tobacco producers with variable and machinery ownership costs at specified cost levels, by acres grown, study area, 1976

Acres of tobacco grown and cost per pound 1/	Study area				
	1	2	3	4	5
	Percentage of farms				
Less than 2.1 acres:					
Less than 40¢	0	0	0	2	0
40¢-54¢	0	0	0	4	5
55¢-69¢	9	9	26	12	25
70¢-84¢	21	26	14	31	20
85¢-99¢	8	32	47	18	18
$1.00-$1.14	7	10	11	19	12
$1.15 and over	56	24	2	15	21
2.1-5.9 acres:					
Less than 40¢	4	0	5	2	0
40¢-54¢	27	16	8	16	13
55¢-69¢	19	25	42	29	47
70¢-84¢	28	13	29	30	14
85¢-99¢	12	27	11	14	19
$1.00-$1.14	10	8	0	8	3
$1.15 and over	0	10	7	2	5
6.0-14.9 acres:					
Less than 40¢	0	0	3	0	8
40¢-54¢	53	23	35	19	14
55¢-69¢	23	44	43	22	28
70¢-84¢	8	17	8	35	10
85¢-99¢	7	13	6	11	30
$1.00-$1.14	3	4	6	6	0
$1.15 and over	7	0	0	6	11
15.0 acres and over:					
Less than 40¢	0	0	0	2/	2/
40¢-54¢	40	10	84	2/	2/
55¢-69¢	26	37	16	2/	2/
70¢-84¢	21	26	0	2/	2/
85¢-99¢	14	20	0	2/	2/
$1.00-$1.14	0	0	0	2/	2/
$1.15 and over	0	6	0	2/	2/

Note: For study area divisions, see table 1.

1/ Costs include variable and machinery ownership costs. Variable costs include family and exchange labor valued at the prevailing wage rates for various jobs in the area. For further details on the cost estimates see (3).
2/ Less than 1 percent.

Table 23--Burley tobacco disappearance, 1964-78

Marketing year	Disappearance		
	Total	Domestic	Exports
	Million pounds		
1964	616.3	560.6	55.7
1965	606.7	549.6	57.1
1966	600.5	544.1	56.4
1967	598.0	544.6	53.4
1968	571.0	516.1	54.9
1969	565.2	507.1	58.1
1970	557.4	503.0	54.4
1971	569.9	515.2	54.7
1972	609.6	534.5	75.1
1973	619.0	533.1	86.8
1974	586.7	518.8	67.9
1975	602.5	510.1	92.4
1976	617.4	500.6	116.8
1977	609.5	493.0	116.5
1978	1/615.0	1/496.0	1/125.0

1/ Estimated, projected crop.

Source: Tobacco Situation TS-144, June 1973 and TS-169, October 1979, U.S. Dept. of Agr.

A higher ratio of burley to other tobaccos in cigarette production may cause a shift in demand. When, if, or how much U.S. burley tobacco production might increase is purely conjectural, but depends on the availability of curing facilities, credit, and labor. The availability of curing facilities is most important. New conventional facilities require an investment of around $5,000 per acre. At least two types of uncertainties are associated with this investment--whether the additional facilities will continue to be needed for a period of time sufficient to recover the cost of investment and whether the facilities might become obsolete.

With the high cost and uncertainty of investment in conventional air curing facilities, available curing facilities seem a fairly accurate gauge of the maximum tobacco production that might be expected, at least in the intermediate run. 14/ Based on 1976 survey results, about a third more tobacco could have been housed in the study area than was produced. However, almost 60 percent of the barns are over 20 years old, compared with only 7 percent which are less than 5 years old. The number of usable barns may be declining faster than they are being replaced, thus lowering the availability of tobacco housing facilities. Without assurance that a new barn or additional barn space can be used for at least 10 years, most farmers would be hard pressed to recoup their investment (table 24).

Credit constraints would not likely limit production in the aggregate. Sufficient credit might be available even though some growers would be constrained in their borrowing. The key constraint other than barn space is likely labor. Certainly the wage differential for harvest work in the Bluegrass area compared with other tobacco jobs and harvest work in other areas indicates a short labor supply during the harvest season. Higher wages in the Bluegrass area would likely attract

14/ Intermediate run is defined as a time period less than sufficient to recover the costs of new barns.

Table 24--Estimated annual fixed costs per acre of new burley tobacco barns with different years of life 1/

Years of life	Investment	Depreciation	Interest on investment	Taxes and insurance	Repairs	Total annual fixed cost
			Dollars			
5	5,000	1,000	200	50	50	1,300
10	5,000	500	200	50	50	800
15	5,000	375	200	50	50	675
20	5,000	250	200	50	50	550
25	5,000	200	200	50	50	500
30	5,000	167	200	50	50	467

1/ Straight-line depreciation, 8-percent interest rate and taxes and insurance together and repairs each assumed as 1 percent of the investment. Includes barn and stripping room.

more labor but even this is uncertain. The Bluegrass area appears to have a competitive advantage over areas 4 and 5, although when only out of pocket costs are considered, costs are similar to those in other areas. Again, as with lower quotas, the opportunity cost of operator and family labor are important determinants of adjustments to changes in quota levels.

Other Potential Changes

Although this report has examined four potential changes in burley tobacco production--harvest mechanization, a change in marketing regulations, reduced demand for burley tobacco, and increased demand for burley tobacco--other possible changes have not been addressed. These include a modified lease and transfer program to allow movement of tobacco quotas across county lines, and elimination or modification of the current tobacco price support-supply control program. However, the data presented provide at least a partial basis for evaluating or updating evaluations of the effects of these changes.

BIBLIOGRAPHY

(1) Duncan, George A., J. H. Smiley, and Jim Calvert. "Summary Report on Experimental Burley Loose Leaf Packaging Project." Unpublished report, Univ. of Kentucky, College of Agr., June 1977.

(2) Grise, Verner N., and Owen K. Shugars. "Baled Burley Tobacco Sales Experiment--1978/79." Report released by the USDA press service, June 1979.

(3) Grise, Verner N. "Costs of Producing Burley Tobacco--1976." Tobacco Situation. TS-163, ESCS, USDA, March 1978.

(4) Halloran, Jay, D. Milton Shuffett, Garnett Bradford, and Robert W. Rudd. "Status of Family and Hired Labor Use in Stripping Tobacco Leaf in Kentucky." Staff Paper 80, Dept. of Agr. Econ., Univ. of Kentucky, January 1979.

(5) Kentucky Farm Bureau Federation. "Loose Leaf Marketing of Burley Tobacco." Tobacco Reporter. June 1977.

(6) Morrison, John E., and Elmon E. Yoder. "Labor Reductions for Stripping Stalk-Cut Tobacco." Tobacco International. Volume 176, Number 21, October 11, 1974.

APPENDIX A--TABLES

Appendix table 1--Average acres of land in various uses on burley tobacco farms, by acres grown, study area, 1976

Acres grown and type of land	Study area					
	1	2	3	4	5	All
	Acres					
Less than 2.1 acres:						
Cropland	9	8	14	15	15	14
Cropland pasture	21	1	15	8	6	8
Permanent pasture	32	39	15	12	11	14
Woodland	1	6	8	14	11	11
Other 1/	3	3	2	2	2	2
Total	66	57	54	51	45	49
2.1-5.9 acres:						
Cropland	18	32	48	45	37	40
Cropland pasture	27	23	27	20	13	23
Permanent pasture	22	67	52	29	35	43
Woodland	6	10	24	38	21	22
Other 1/	8	2	4	2	5	4
Total	81	134	155	134	111	132
6.0-14.9 acres:						
Cropland	54	70	100	82	110	81
Cropland pasture	45	72	65	37	54	57
Permanent pasture	41	107	73	52	63	68
Woodland	6	25	31	42	58	27
Other 1/	6	7	8	4	8	7
Total	152	281	277	217	293	240
15.0 acres and over:						
Cropland	124	94	189	2/	2/	121
Cropland pasture	177	88	351	2/	2/	162
Permanent pasture	83	135	151	2/	2/	109
Woodland	15	79	236	2/	2/	51
Other 1/	19	12	17	2/	2/	16
Total	418	408	944	2/	2/	459

Note: For study area divisions, see table 1.

1/ Includes house, roads, and ponds.
2/ Less than 1 percent.

Source: ERS farm survey.

Appendix table 2--Major crops and livestock reported on burley tobacco farms, by acres grown, study area, 1976

Acres of tobacco grown and crop or livestock	Farms reporting, study area						Acres or number per farm reporting, study area					
	1	2	3	4	5	All	1	2	3	4	5	All
	Percent						Acres					
Less than 2.1 acres:												
Burley tobacco	100	100	100	100	100	100	1.3	1.5	1.0	1.0	1.0	1.0
Corn-grain	2/	7	34	28	25	25	2/	9.0	16.8	13.2	8.7	11.8
Corn-silage	2/	7	2	4	3	3	2/	15.0	10.0	10.1	63.9	34.2
Soybeans	2/	2/	2/	1	2/	2/	2/	2/	2/	30.5	2/	2/
Hay	44	36	41	38	44	41	16.1	12.2	15.9	15.7	15.6	15.5
Small grains	2/	2/	2/	2	5	3	2/	2/	2/	20.8	20.0	20.2
Other field crops 1/	2/	7	2/	4	2	3	2/	2.0	2/	1.2	1.0	1.2
Beef--							Number 3/					
Cows	24	42	39	30	36	34	7.6	11.4	8.2	17.1	12.8	12.9
Heifers	2/	39	2/	14	16	14	2/	2.5	2/	4.5	3.7	3.8
Bulls	18	36	14	23	24	22	1.5	1.3	1.2	1.3	1.3	1.3
Feeder cattle	16	32	28	17	6	14	29.5	7.4	7.5	13.5	13.9	11.8
Slaughter cattle	8	2/	2/	2	1	1	3.0	2/	2/	1.0	1.0	1.5
Dairy--												
Cows	2/	6	2	17	9	10	2/	33.0	40.0	7.1	31.0	19.1
Heifers	2/	2/	5	6	6	5	2/	2/	1.0	2.9	23.6	13.6
Other	2/	7	22	10	2	8	2/	6.0	1.0	7.4	9.4	4.7
Hogs and pigs--												
Brood sows	2/	2/	2/	15	3	6	2/	2/	2/	4.0	1.8	3.4
Boars	2/	2/	2/	7	2	3	2/	2/	2/	1.1	1.0	1.1
Feeder pigs	2/	2/	2/	10	7	6	2/	2/	2/	14.4	2.0	7.8
Market hogs	2/	2/	2/	7	2/	2	2/	2/	2/	7.8	2/	7.2
Sheep	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
Poultry	8	17	2	21	11	13	25.0	50.8	7.0	21.8	20.8	23.2
Other	2/	2/	2/	1	2	1	4/	4/	4/	4/	4/	4/
Any livestock	58	55	74	58	53	58	4/	4/	4/	4/	4/	4/
2.1-5.9 acres:							Acres					
Burley tobacco	100	100	100	100	100	100	3.7	4.0	3.7	3.3	3.2	3.6
Corn-grain	36	32	44	48	45	42	11.1	7.6	54.0	25.7	12.3	30.7
Corn-silage	4	11	18	15	19	15	10.4	9.5	20.4	18.5	23.9	19.0
Soybeans	2/	2/	1	2	6	2	2/	2/	7.0	47.1	9.8	19.5
Hay	60	68	57	64	71	63	15.8	30.4	24.9	30.0	26.9	26.2
Small grains	2/	10	7	11	13	8	2/	5.3	43.7	17.8	22.1	24.5
Other field crops 1/	2/	2/	4	6	8	4	2/	2/	2.8	2.8	5.6	3.7
Beef--							Number 3/					
Cows	62	58	43	44	54	49	24.9	14.4	26.3	26.1	18.1	22.7
Heifers	14	38	17	18	24	21	11.0	5.2	12.3	7.9	4.3	8.2
Bulls	48	42	32	33	42	37	1.4	2.2	1.4	1.6	1.9	1.7
Feeder cattle	44	36	34	25	11	30	10.7	11.4	27.2	18.0	35.3	20.1
Slaughter cattle	5	2	5	2	2	4	2.0	8.0	19.6	23.2	7.0	14.6
Dairy--												
Cows	1	27	20	27	32	22	29.0	25.3	27.3	25.0	21.3	25.1
Heifers	1	23	10	19	17	14	5.0	8.6	13.7	13.2	9.9	11.6
Others	2/	24	13	19	12	14	2/	9.3	12.7	8.7	10.0	10.4
Hogs and pigs--												
Brood sows	22	3	10	26	14	15	7.5	6.7	4.0	6.0	7.5	6.0
Boars	22	3	5	15	3	9	1.0	1.0	1.0	1.2	1.0	1.1
Feeder pigs	22	4	7	13	19	11	31.3	17.3	181.0	41.0	2.8	59.1
Market hogs	7	2/	3	11	3	5	4.0	2/	36.0	16.2	4.0	17.7
Sheep	7	2/	2/	2/	2/	1	14.0	2/	2/	2/	2/	14.0
Poultry	9	26	12	20	19	16	10.7	37.7	49.1	30.5	1,700.6	305.6
Other	2/	2/	2/	2/	2/	2/	4/	4/	4/	4/	4/	4/
Any livestock	66	76	63	78	80	71	4/	4/	4/	4/	4/	4/

See footnotes at end of table.

Continued--

Appendix table 2--Major crops and livestock reported on burley tobacco farms, by acres grown, study area, 1976--Con.

Acres of tobacco grown and crop or livestock	Farms reporting, study area						Acres or number per farm reporting, study area					
	1	2	3	4	5	All	1	2	3	4	5	All
	Percent						Acres					
6.0-14.9 acres:												
Burley tobacco	100	100	100	100	100	100	8.4	8.7	8.3	7.6	7.1	8.2
Corn-grain	57	49	62	61	76	59	17.1	24.0	39.0	42.3	50.0	32.8
Corn-silage	16	25	33	40	41	30	44.4	18.7	27.4	11.4	36.0	27.0
Soybeans	2/	2	1	7	2/	2	2/	225.0	42.0	41.0	2/	74.3
Hay	63	86	75	67	65	72	41.5	45.3	54.5	46.8	37.8	47.7
Small grains	5	7	19	2	30	12	40.0	11.4	49.0	240.0	49.0	47.6
Other field crops 1/	2/	2/	3	10	16	4	2/	2/	47.9	6.8	16.7	22.7
							Number 3/					
Beef--												
Cows	54	59	48	44	54	52	45.7	30.4	47.3	45.8	39.5	42.5
Heifers	36	53	21	37	12	32	13.8	14.1	21.6	25.4	9.5	17.2
Bulls	46	53	42	42	43	45	2.1	1.6	2.3	2.5	3.0	2.2
Feeder cattle	18	48	40	35	18	34	55.4	25.7	42.5	39.1	111.3	42.0
Slaughter cattle	4	6	2	3	2/	3	28.9	20.5	60.0	6.0	2/	29.6
Dairy--												
Cows	11	30	34	37	38	28	81.0	37.1	46.2	14.6	65.2	44.5
Heifers	11	28	31	24	41	25	17.7	14.9	12.3	11.8	30.0	15.5
Other	4	26	23	21	11	18	12.3	14.2	8.8	6.3	31.6	11.1
Hogs and pigs--												
Brood sows	15	15	17	28	25	18	10.2	7.1	10.0	6.6	11.6	9.1
Boars	15	11	15	17	25	15	1.5	1.8	1.2	1.1	2.5	1.5
Feeder pigs	4	2	17	19	30	12	110.7	400.0	29.3	32.3	9.8	44.3
Market hogs	2/	3	7	12	11	5	2/	6.0	228.4	2.7	20.0	118.1
Sheep	1	3	2/	2	2/	1	64.0	9.8	2/	50.0	2/	32.3
Poultry	15	20	11	17	7	14	26.7	16.2	33.2	27.2	25.0	25.7
Other	4	2/	2/	2	2/	1	4/	4/	4/	4/	4/	4/
Any livestock	66	92	83	84	80	80	4/	4/	4/	4/	4/	4/
							Acres					
15.0 acres and over:												
Burley tobacco	100	100	100	2/	2/	100	23.6	20.6	18.0	2/	2/	22.3
Corn-grain	32	55	67	2/	2/	42	60.6	24.1	39.3	2/	2/	44.4
Corn-silage	38	15	84	2/	2/	35	39.5	47.9	47.2	2/	2/	43.2
Soybeans	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
Hay	72	76	100	2/	2/	75	79.9	71.8	69.0	2/	2/	76.8
Small grains	7	5	51	2/	2/	10	60.3	95.0	10.0	2/	2/	44.6
Other field crops 1/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
							Number 3/					
Beef--												
Cows	64	52	100	2/	2/	62	138.1	54.3	63.8	2/	2/	107.5
Heifers	33	51	100	2/	2/	44	40.4	10.2	38.4	2/	2/	28.6
Bulls	63	48	100	2/	2/	61	5.4	3.3	2.7	2/	2/	4.5
Feeder cattle	40	29	100	2/	2/	41	55.6	28.0	132.6	2/	2/	78.0
Slaughter cattle	6	4	2/	2/	2/	5	32.3	70.0	2/	2/	2/	43.4
Diary--												
Cows	12	21	2/	2/	2/	14	53.5	57.2	2/	2/	2/	55.3
Heifers	7	12	2/	2/	2/	8	35.7	17.2	2/	2/	2/	26.7
Other	7	17	2/	2/	2/	9	29.2	39.6	2/	2/	2/	35.2
Hogs and pigs--												
Brood sows	7	29	2/	2/	2/	9	30.4	7.2	2/	2/	2/	5.5
Boars	7	13	2/	2/	2/	5	4.9	1.6	2/	2/	2/	1.2
Feeder pigs	8	33	2/	2/	2/	8	169.7	44.6	2/	2/	2/	29.8
Market hogs	2/	5	2/	2/	2/	3	2/	30.0	2/	2/	2/	26.8
Sheep	4	5	2/	2/	2/	4	330.0	32.0	2/	2/	2/	211.7
Poultry	8	30	2/	2/	2/	14	21.9	20.8	2/	2/	2/	21.2
Other	4	2/	2/	2/	2/	2	4/	4/	4/	4/	4/	4/
Any livestock	75	65	100	2/	2/	74	4/	4/	4/	4/	4/	4/

Note: For study area divisions, see table 1.

1/ Includes crops such as vegetables, sorghum, and milo. 2/ Less than 1 percent. 3/ Number as of Jan. 1, 1977. 4/ Data not available. Source: ERS farm survey.

Appendix table 3--Age of burley tobacco farm operators, by acres grown and production area, 1976

Area and acres of tobacco grown	Age			
	Under 35	35-54	55-64	65 and over
	Percentage of operators 1/			
Area 1:				
Less than 2.1	6	73	9	12
2.1-5.9	24	65	5	6
6.0-14.9	23	55	17	6
15.0 and over	29	49	14	8
All sizes	18	64	10	8
Area 2:				
Less than 2.1	29	34	18	20
2.1-5.9	26	42	18	15
6.0-14.9	21	70	7	2
15.0 and over	47	45	7	1
All sizes	27	44	15	14
Area 3:				
Less than 2.1	45	22	23	10
2.1-5.9	20	41	34	6
6.0-14.9	28	57	13	2
15.0 and over	2/	2/	2/	2/
All sizes	34	34	25	7
Area 4:				
Less than 2.1	34	36	20	10
2.1-5.9	36	44	21	0
6.0-14.9	26	59	10	5
15.0 and over	2/	2/	2/	2/
All sizes	34	38	20	8
Area 5:				
Less than 2.1	28	33	20	19
2.1-5.9	23	44	25	9
6.0-14.9	22	54	10	14
15.0 and over	2/	2/	2/	2/
All sizes	28	34	10	18

Note: For study area divisions, see table 1.

1/ Data may not total 100 percent due to rounding.
2/ Less than 1 percent of total.

Source: ERS farm survey.

Appendix table 4--Nonfarm income of burley tobacco operator households, by tobacco grown and production area, 1976

Area and acres of tobacco grown	Nonfarm income class				
	Less than $100	$100-$2,499	$2,500-$4,999	$5,000-$9,999	$10,000 and over
	Percent 1/				
Area 1:					
Less than 2.1	15	12	0	27	46
2.1-5.9	40	13	17	20	11
6.0-14.9	58	12	6	12	12
15.0 and over	32	13	6	10	38
All sizes	35	12	7	20	26
Area 2:					
Less than 2.1	0	7	26	21	46
2.1-5.9	31	10	2	19	37
6.0-14.9	44	22	4	14	17
15.0 and over	36	16	4	19	25
All sizes	20	11	13	19	37
Area 3:					
Less than 2.1	2	18	5	19	56
2.1-5.9	39	14	12	26	10
6.0-14.9	34	16	18	18	14
15.0 and over	33	0	0	51	16
All sizes	20	16	10	21	33
Area 4:					
Less than 2.1	11	30	27	16	16
2.1-5.9	24	22	12	25	18
6.0-14.9	20	17	15	24	24
15.0 and over	2/	2/	2/	2/	2/
All sizes	14	28	24	18	17
Area 5:					
Less than 2.1	20	7	19	32	23
2.1-5.9	23	19	5	17	34
6.0-14.9	34	9	3	31	24
15.0 and over	2/	2/	2/	2/	2/
All sizes	20	8	17	31	24

Note: For study area divisions, see table 1.

1/ Data may not total 100 percent due to rounding.
2/ Less than 1 percent of total.

Source: ERS farm survey.

Appendix table 5--Gross receipts from the sale of various agricultural products on burley tobacco farms, by acres grown and area, 1976

Area and acres of tobacco grown	Commodity					
	Tobacco		Other crops		Livestock 1/	
	Dollars	Percent 2/	Dollars	Percent	Dollars	Percent
Area 1:						
Less than 2.1	3,063	55	1,136	21	1,338	24
2.1-5.9	9,509	73	1,997	15	1,566	12
6.0-14.9	21,556	63	7,252	21	5,669	17
15.0 and over	58,945	67	15,783	18	13,829	15
All sizes	13,844	65	3,996	19	3,395	16
Area 2:						
Less than 2.1	3,646	70	543	11	989	19
2.1-5.9	9,673	60	2,379	15	3,960	25
6.0-14.9	23,500	60	7,246	19	8,428	21
15.0 and over	47,578	63	10,732	14	16,772	23
All sizes	10,934	62	2,762	16	3,957	22
Area 3:						
Less than 2.1	2,186	46	1,930	41	611	13
2.1-5.9	8,489	38	8,703	39	5,196	23
6.0-14.9	21,882	46	13,256	28	12,538	26
15.0 and over	45,846	47	25,164	26	26,746	27
All sizes	7,372	42	6,056	35	4,031	23
Area 4:						
Less than 2.1	2,189	50	1,407	32	796	18
2.1-5.9	7,937	42	5,207	28	5,726	30
6.0-14.9	17,937	53	10,484	31	5,445	16
15.0 and over	--	--	--	--	--	--
All sizes	3,868	47	2,473	30	1,918	23
Area 5:						
Less than 2.1	1,997	29	1,883	27	3,018	44
2.1-5.9	7,504	46	3,871	24	4,915	30
6.0-14.9	15,226	27	14,980	27	25,895	46
15.0 and over	--	--	--	--	--	--
All sizes	2,673	32	2,259	26	3,542	42

Note: For study area divisions, see table 1.

1/ Reflects all livestock sales from January 1, 1976, to December 31, 1976.
2/ Totals may not add to 100 percent due to rounding.

Source: ERS farm survey.

Appendix table 6--Proportion of labor done by various types of workers on burley tobacco farms, area 1, 1976 1/

Job	Type of worker		
	Family	Exchange	Hired
	Percent		
Plant bed work:			
Preparation	69	7	24
Care	64	3	33
Field preparation:			
Applying manure	83	2	15
Subsoiling	84	0	16
Plowing	85	1	14
Disking, harrowing, dragging	82	3	15
Fertilizing	84	3	13
Transplanting:			
Pulling plants	44	10	46
Transplanting	42	8	50
Resetting	71	7	22
Field care:			
Hoeing	65	4	31
Cultivating	80	6	14
Sidedressing fertilizer	91	1	8
Applying insecticides	90	3	7
Applying sucker control	91	1	8
Topping and suckering	57	7	36
Harvesting and curing:			
Loading, hauling, dropping sticks	55	12	33
Cutting and spearing	27	4	69
Hauling and housing	24	4	72
Opening vents	98	1	1
Market preparation:			
Taking down and bulking	45	4	51
Stripping and bulking	40	5	55
Hauling to market	64	9	27
Total	44	6	50

1/ Area 1 represents the inner Bluegrass of Kentucky.

Source: ERS farm survey.

Appendix table 7--Proportion of labor done by various types of workers on burley tobacco farms, area 2, 1976 1/

Job	Type of worker		
	Family	Exchange	Hired
	Percent		
Plant bed work:			
Preparation	65	20	15
Care	67	22	11
Field preparation:			
Applying manure	80	13	7
Subsoiling	96	2	2
Plowing	93	5	2
Disking, harrowing, dragging	91	7	2
Fertilizing	80	15	5
Transplanting:			
Pulling plants	42	23	35
Transplanting	56	23	21
Resetting	70	8	22
Field care:			
Hoeing	67	11	22
Cultivating	85	7	8
Sidedressing fertilizer	83	11	6
Applying insecticides	97	2	1
Applying sucker control	79	15	6
Topping and suckering	62	15	23
Harvesting and curing:			
Loading, hauling, dropping sticks	54	28	18
Cutting and spearing	32	14	54
Hauling and housing	32	15	53
Opening vents	97	2	1
Market preparation:			
Taking down and bulking	48	12	40
Stripping and bulking	47	15	38
Hauling to market	61	22	17
Total	49	15	36

1/ Area 2 represents the intermediate Bluegrass of Kentucky.

Source: ERS farm survey.

Appendix table 8--Proportion of labor done by various types of workers on burley tobacco farms, area 3, 1976 1/

Job	Type of worker		
	Family	Exchange	Hired
	Percent		
Plant bed work:			
Preparation	70	21	9
Care	85	12	3
Field preparation:			
Applying manure	89	4	7
Subsoiling	93	7	0
Plowing	96	3	1
Disking, harrowing, dragging	96	3	1
Fertilizing	89	7	4
Transplanting:			
Pulling plants	51	22	27
Transplanting	61	17	22
Resetting	88	6	6
Field care:			
Hoeing	79	5	16
Cultivating	94	5	1
Sidedressing fertilizer	93	6	1
Applying insecticides	98	0	2
Applying sucker control	92	6	2
Topping and suckering	72	11	17
Harvesting and curing:			
Loading, hauling, dropping sticks	74	8	18
Cutting and spearing	37	18	45
Hauling and housing	39	12	49
Opening vents	99	0	1
Market preparation:			
Taking down and bulking	60	11	29
Stripping and bulking	56	9	35
Hauling to market	75	12	13
Total	57	16	27

1/ Area 3 represents the outer Bluegrass of Kentucky.

Source: ERS farm survey.

Appendix table 9--Proportion of labor done by various types of workers on burley tobacco farms, area 4, 1976 1/

Job	Type of worker		
	Family	Exchange	Hired
	Percent		
Plant bed work:			
Preparation	78	13	9
Care	80	13	7
Field preparation:			
Applying manure	73	16	11
Subsoiling	100	0	0
Plowing	90	4	6
Disking, harrowing, dragging	91	3	6
Fertilizing	91	4	5
Transplanting:			
Pulling plants	52	28	20
Transplanting	53	26	21
Resetting	86	3	11
Field care:			
Hoeing	80	5	15
Cultivating	87	4	9
Sidedressing fertilizer	91	8	1
Applying insecticides	89	10	1
Applying sucker control	87	6	7
Topping and suckering	71	12	17
Harvesting and curing:			
Loading, hauling, dropping sticks	67	15	18
Cutting and spearing	44	20	36
Hauling and housing	42	20	38
Opening vents	97	3	0
Market preparation:			
Taking down and bulking	62	12	26
Stripping and bulking	54	15	31
Hauling to market	59	16	25
Total	58	16	26

1/ Area 4 represents south central Kentucky-north central Tennessee.

Source: ERS farm survey.

Appendix table 10--Proportion of labor done by various types of workers on burley tobacco farms, area 5, 1976 1/

Job	Type of worker		
	Family	Exchange	Hired
	Percent		
Plant bed work:			
Preparation	68	17	15
Care	76	10	14
Field preparation:			
Applying manure	74	12	14
Subsoiling	77	15	8
Plowing	81	9	10
Disking, harrowing, dragging	80	8	12
Fertilizing	81	10	9
Transplanting:			
Pulling plants	49	25	26
Transplanting	49	25	26
Resetting	73	16	11
Field care:			
Hoeing	65	14	21
Cultivating	78	11	11
Sidedressing fertilizer	77	9	14
Applying insecticides	93	3	4
Applying sucker control	74	12	14
Topping and suckering	60	15	25
Harvesting and curing:			
Loading, hauling, dropping sticks	62	15	23
Cutting and spearing	37	19	44
Hauling and housing	38	25	37
Opening vents	97	0	3
Market preparation:			
Taking down and bulking	65	12	23
Stripping and bulking	52	12	36
Hauling to market	61	22	17
Total	53	19	28

1/ Area 5 represents eastern Tennessee.

Source: ERS farm survey.

Appendix table 11--Burley tobacco marketing quota and marketings, 1971-78

Year	Quota		Marketings				Net carryover
	Basic	Effective	Actual	Over-quota	Under-quota	Effective under-quota	
	Million pounds						
1971	555.1	553.0	471.5	9.7	91.1	89.7	80.1
1972	531.5	611.5	588.6	30.7	45.7	44.6	13.9
1973	559.7	573.6	460.7	11.3	113.1	111.7	100.3
1974	606.5	706.8	610.4	23.0	118.9	104.0	81.0
1975	669.5	750.4	639.9	21.8	127.5	113.4	91.6
1976	634.8	726.4	663.6	33.1	96.2	82.5	49.2
1977	636.2	683.4	612.6	27.2	99.0	80.8	53.6
1978	614.2	667.8	614.2	31.5	88.2	67.6	36.1

Source: Tobacco Situation, TS-169, U.S. Dept. of Agri., October 1979.

APPENDIX B--THE CURRENT BURLEY TOBACCO PROGRAM

A national burley tobacco marketing quota is established for burley tobacco each year. Legislation requires the Secretary of Agriculture to announce the quota by February 1 for that crop year. The national marketing quota is the amount USDA estimates will be used domestically and exported during the marketing year, plus any adjustment either upward or downward to maintain an adequate supply or to bring about an orderly reduction of supplies to the reserve supply level. The reserve supply level is the amount of tobacco considered adequate for use in domestic and export markets and to maintain stocks for aging. For burley, the reserve supply level is about 2.8 years' use. Any downward adjustment in quotas cannot exceed 5 percent of the estimated amount for domestic use plus exports.

Quantity

Individual farms receive a farm marketing quota based on their share of the national marketing quota. A producer can market 110 percent of the farm quota without penalty. Growers who produce more than 110 percent of their quota can arrange to have their tobacco processed and stored after agreeing on grade and price. Payment for the tobacco can be received the following October 1. All tobacco handled this way is deducted from that farm quota the following year. Any over and under production of quota, including leased-in quota, is carried forward to the following year (app. table 11). The adjustments result in the burley tobacco effective quota.

Leasing of quota is permitted between producers within counties, but no producer can lease in more than 15,000 pounds per year per quota. Leases may be negotiated for up to 5 years. All leases must be recorded in the local ASCS office where the program is administered. Any farmer can now lease-in quota whether or not land with quota is owned. The over and under production on the leased quota counts against the following year's farm quota of the party leasing-in. Producers who do not own land with quotas are not permitted the 10-percent tolerance in overmarketing. Leasing is permitted during the marketing season so that producers who are over and under their quotas may lease-in and lease-out.

A producer is permitted to both lease-in and lease-out during the same year, but to prevent speculation, a producer who leases prior to August 1 cannot take an opposite position until after August 1.

Price

The Federal Government has operated programs to support and stabilize tobacco prices since the early thirties. The parity index, a measure of prices paid by farmers for commodities and services including interest, taxes, and farm wage rates is the basis for computing the tobacco price support level. The price support level is determined by first calculating the ratio of the average index of prices paid by farmers during the 3 most recent calendar years to the index for 1959. This ratio is then multiplied by the 1959 support level to determine the current year's support level. The average 1976 support level for burley tobacco was 109.3 cents a pound.

Under the loan program, a support price (loan rate) is established for each grade of tobacco. If the buyer's bid price on any lot of tobacco is not at least 1 cent a pound above the price support advance rate for the grade, the eligible tobacco may be received by the stabilization cooperative at the price-support advance rate. One cent per pound of the price support advance is withheld by the stabilization cooperative that obtains such an advance on behalf of the producer.

These funds are applied toward the overhead costs of the cooperative. Under an agreement with USDA's Commodity Credit Corporation, the association arranges for receiving, redrying, packing, storing, and eventual sale of the tobacco under loan. Tobacco which cooperative associations receive from farmers under the loan program is sold through regular trade channels. If net profits are realized, they go to the growers, but losses are assumed by the Commodity Credit Corporation.

Grade loan rates are based on recent trends in market prices, loan holdings, and share of particular grades that have been received under loan. The weighted average of various loan rates must equal the overall support level.

*U.S. GOVERNMENT PRINTING OFFICE : 1980 O-310-944/ESCS-184

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101
THIRD CLASS

Economics, Statistics, and Cooperatives Service

The Economics, Statistics, and Cooperatives Service (ESCS) collects data and carries out research projects related to food and nutrition, cooperatives, natural resources, and rural development. The Economics unit of ESCS researches and analyzes production and marketing of major commodities; foreign agriculture and trade; economic use, conservation, and development of natural resources; rural population, employment, and housing trends, and economic adjustment problems; and performance of the agricultural industry. The ESCS Statistics unit collects data on crops, livestock, prices, and labor, and publishes official USDA State and national estimates through the Crop Reporting Board. The ESCS Cooperatives unit provides research and technical and educational assistance to help farmer cooperatives operate efficiently. Through its information program, ESCS provides objective and timely economic and statistical information for farmers, government policymakers, consumers, agribusiness firms, cooperatives, rural residents, and other interested citizens.