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Processing, Storage, and Selected Storage Service Costs for Flue-Cured Tobacco in Commercial Facilities, 1966/67 and Estimated 1968.

PREFACE

This report is one of a series on costs of handling, processing, and storing the major types of domestic tobaccos covered by Federal price support programs. The studies were conducted for the Agricultural Stabilization and Conservation Service to provide guidelines for setting rates for these functions. The average costs presented in these reports also provide individual firms with benchmark data for assessing their relative position within the industry.

The average middate of the various accounting periods covered in the surveys was December 1, 1966.

Processing and storage firms throughout the Southeast cooperated by providing accounting records on costs of operating processing and storage facilities. Their excellent cooperation made these studies possible.

The authors are also indebted to many individuals in the tobacco industry for their constructive advice and counsel during the planning, data collecting, and analysis phases of these studies.

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PROCESSING, STORAGE, AND SELECTED STORAGE SERVICE COSTS FOR
FLUE-CURED TOBACCO IN COMMERCIAL FACILITIES, 1966/67 AND ESTIMATED 1968

by

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FINDINGS

This report analyzes the costs of handling, processing, storage, and related services in commercial facilities handling flue-cured tobacco during 1966/67 and presents estimates for 1968.

The results are based on accounting records of 15 firms processing and 14 firms storing flue-cured tobacco. All firms processing tobacco redried bundles for a total redried weight of 66 million pounds. Loose leaves were redried by nine firms which handled about 52.5 million pounds in this manner. Tobacco was threshed by seven firms and yielded almost 59.4 million pounds. Total green weight received by all firms for processing amounted to almost 225.9 million pounds of tobacco.

Costs were developed for tobacco processing, which included receiving tobacco into the plant through packing it into hogsheads and shipping it out. These costs were for redried weight of tobacco packed as bundle, looseleaf, and strip (lamina). Strip costs included packing and shipping stems.

Costs were also developed for tobacco storage and storage services. Services included in this report are innage, outage, sampling, reweighing and restoring, and reweighing while performing other services.

The 1966/67 labor costs were updated to reflect minimum wage changes effective February 1, 1968, and changes in other variable costs as of January 1968. (See Methodology.)

Average survey period cost for redrying bundles was \$8.34. When updated to 1968, this cost increased to \$9.31. During the same period, the average cost for redrying loose leaves was \$6.54, while the 1968 estimate was \$7.25. The average cost for threshing and redrying was \$12.18 for the survey period and \$13.44 for the 1968 estimate.

Storage costs were computed on the volume stored during the survey period. Storage warehouses used an average of 87 percent of storage capacity during the survey period. At this rate of utilization, the average survey period cost was 21.63 cents per hogshead per month, while the 1968 estimate was

22.60 cents. Estimated storage costs by percent of capacity utilized are illustrated in table 4. Services necessary for storing include innage and outage of the tobacco. The innage cost per hogshead for the survey period was 68 cents, and the 1968 estimate was 76 cents. For outage, these costs were 63 cents for the survey period and 70 cents for 1968.

Costs for sampling, the most expensive service performed in the storage operation, amounted to \$6.68 per hogshead for the survey period. When estimated for 1968, this cost averaged \$7.57 per hogshead.

Other services utilized by the industry in volume include reweighing. During the survey period, the cost to reweigh and restore a hogshead of tobacco was 72 cents. This was estimated to be 87 cents for 1968. Reweighing a hogshead of tobacco while performing some other service was 25 cents in 1966/67 and an estimated 27 cents in 1968.

Costs of performing other services which made up a minor part of total services were subtracted from firm costs.

Table 1.--Tobacco processing and storage firms included in survey: Volume processed, yield, hogsheads stored, and selected services performed, 1966/67

Item	Number of firms	Unit	Volume	Yield or utilization
				Percent
Processing	15	1,000 lbs. <u>1/</u>	225,873	---
Bundle	15	1,000 lbs. <u>1/</u>	75,110	87.87
Looseleaf	9	1,000 lbs. <u>1/</u>	59,945	87.55
Strip (threshing)	7	1,000 lbs. <u>1/</u>	90,818	65.36
Storage	14	Hogshead month <u>2/</u>	7,819,736	87.00
Services:				
Innage	14	Hogshead	283,530	---
Outage	14	Hogshead	348,195	---
Sampling	14	Hogshead	65,941	---

1/ Green weight.

2/ Unit of 1 month's storage of 1 hogshead. For example: 10 hogshead months can equal 10 months' storage of 1 hogshead; 1 month's storage of 10 hogsheads; or 5 months' storage of 2 hogsheads; etc.

Table 2.--Total costs for selected services in flue-cured tobacco storage and processing, 1966/67 1/

Item	Unit	Cost		
		Variable	Fixed	Total
		Dollars	Dollars	Dollars
Processing:				
Redrying bundle	Hundredweight <u>2/</u>	6.6310	1.7073	8.3383
Redrying looseleaf	Hundredweight <u>2/</u>	5.5680	.9677	6.5357
Redrying strip (including threshing) ..	Hundredweight <u>2/</u>	8.3524	3.8251	12.1775
Storage	Hogshead per month	.0897	.1266	.2163
Storage services:				
Innage <u>3/</u>	Hogshead	.5106	.1678	.6784
Outage <u>3/</u>	Hogshead	.4672	.1595	.6267
Sampling	Hogshead	5.2462	1.4377	6.6839
Reweigh and restore	Hogshead	.4825	.2386	.7211
Reweigh with other services	Hogshead	.1342	.1195	.2537

1/ Middate for survey period was Dec. 1, 1966. 2/ Redried weight. 3/ Excludes paper transfers.

Table 3.--Total costs for selected services in flue-cured tobacco storage and processing, estimated 1968 1/

Item	Unit	Cost		
		Variable	Fixed	Total
		Dollars	Dollars	Dollars
Processing:				
Redrying bundle	Hundredweight <u>2/</u>	7.6013	1.7073	9.3086
Redrying looseleaf	Hundredweight <u>2/</u>	6.2794	.9677	7.2471
Redrying strip (including threshing)...	Hundredweight <u>2/</u>	9.6136	3.8251	13.4387
Storage	Hogshead per month	.0994	.1266	.2260
Storage services:				
Innage <u>3/</u>	Hogshead	.5926	.1678	.7604
Outage <u>3/</u>	Hogshead	.5416	.1595	.7011
Sampling	Hogshead	6.1287	1.4377	7.5664
Reweigh and restore	Hogshead	.6289	.2386	.8675
Reweigh with other services	Hogshead	.1520	.1195	.2715

1/ 1968 costs are updated for variable costs only. See breakdown of fixed and variable costs tables 6 and 9.

2/ Redried weight.

3/ Excludes paper transfers.

Table 4.--Flue-cured tobacco storage costs per hogshead per month by average percentage of capacity utilized, 1966/67 and estimated 1968

Percentage of capacity	1966/67	Estimated 1968
	Dollars	Dollars
100	0.1883	0.1968
95	.1982	.2072
90	.2092	.2186
85	.2215	.2315
80	.2354	.2460
75	.2511	.2624
70	.2690	.2811
65	.2897	.3028
60	.3138	.3280
55	.3424	.3578
50	.3766	.3936

Table 5.--Flue-cured tobacco processing costs: Standardized fixed costs per hundredweight for redrying and packing bundles, loose leaves, and strip (including threshing) 1966/67 1/

Item	Redrying		Threshing
	Bundle	Looseleaf	Strip
	Dollars	Dollars	Dollars
Depreciation:			
Redriers	0.0709	0.0586	0.0797
Receiving area	.0657	.0955	.1575
Other bldgs. and office bldg. ..	.0859	.0633	.0682
Threshing building	---	---	.0573
Threshing equipment	---	---	.6739
Boiler	.0143	.0116	.0160
Prizing press	.0107	.0165	.0269
Scales	.0028	.0031	.0061
Jacks	.0448	.0221	.0376
Sticks	.0104	---	---
Quality control	.0012	.0016	.0159
Office equipment and furniture ..	.0309	.0280	.0321
Autos	.0191	.0183	.0251
Trucks	.0580	.0599	.0877
Forklifts and pickups	.0497	.0108	.0316
Stockroom and other equipment ..	.1468	.1200	.1950
Shop equipment	.0158	.0036	.0044
Land	.0162	.0113	.0171
Interest	.2942	.2468	.6897
Insurance	.0969	.0632	.0869
Taxes	.0880	.0644	.0714
License and bond	.0159	.0100	.0457
Lease and rentals	.0470	.0588	.0873
Home office	.5221	.0003	1.3120
Total fixed costs	1.7073	.9677	3.8251

1/ Costs given for redried weight.

Table 6.--Flue-cured tobacco processing costs: Variable costs per hundredweight for redrying and packing bundles, looseleaf, and strip (including threshing), 1966/67 and estimated 1968 ^{1/}

Item	1966/67 cost			Estimated 1968 cost ^{2/}		
	Bundle	Looseleaf	Strip	Bundle	Looseleaf	Strip
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Salaries:						
Executive	0.3133	0.2420	0.2788	0.3473	0.2694	0.3090
Superintendent	.1662	.1302	.3474	.1713	.1446	.3833
Foremen, engineers, mechanics ..	.6537	.4633	.7033	.7382	.5232	.7910
Clerical	.2844	.1204	.3259	.3182	.1342	.3541
Quality control	.0468	.0578	.1407	.0538	.0654	.1699
Wages:						
Drayage	.1080	.1253	.0741	.1317	.1487	.0896
Receiving	.4625	.3830	.5115	.5681	.4749	.6350
Redrying	1.7893	1.0222	2.3854	2.2349	1.2604	2.9962
Packing	.4206	.3791	.3737	.4929	.4422	.4573
Coopering	.1022	.0927	.1189	.1264	.1249	.1504
Shipping	.0924	.0282	.0859	.1138	.0356	.1041
Maintenance	.1976	.3288	.4438	.2217	.3709	.5036
Utilities	.2046	.2622	.3669	.2094	.2683	.3754
Office supplies	.0544	.0360	.0438	.0564	.0373	.0454
Repairs and maintenance	.1483	.2414	.3197	.1542	.2510	.3324
Hogshead materials	.9788	.9426	.8977	1.0284	.9904	.9432
Trucking cost	.3137	.4067	.5388	.3237	.4197	.5560
Other operating expenses	.1802	.2103	.2524	.1802	.2103	.2524
Interest	.1140	.0958	.1437	.1307	.1080	.1653
Total variable costs	6.6310	5.5680	8.3524	7.6013	6.2794	9.6136

^{1/} Costs given for redried weight.

^{2/} Wage costs are updated to reflect 1968 minimum wages. Salaries were updated to reflect 2 years' change from survey period. Other costs were updated to reflect price changes to January 1968.

Table 7.--Standardized fixed costs per hogshhead of facilities and equipment for selected services in
flue-cured tobacco storage, 1966/67

Item	Innage	Storage per month	Outage	Sampling	Reweigh and restore	Reweigh while performing other services
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Depreciation:						
Storage warehouse	0.0119	0.0210	0.0107	0.1328	0.0119	0.0024
Other buildings	.0011	.0019	.0010	.0121	.0011	.0002
Improvements	.0002	.0003	.0001	.0017	.0002	1/
Scales	---	---	---	---	.0210	.0210
Office equipment	.0001	.0003	.0001	.0011	.0001	1/
Fire equipment	.0002	.0003	.0001	.0018	.0002	1/
Dunnage	.0007	.0011	.0006	.0079	.0007	.0001
Misc. equipment	.0039	.0001	.0035	.0435	.0039	.0008
Autos	.0082	.0005	.0082	.0652	.0082	.0024
Trucks and trailers ..	.0238	.0008	.0215	.2653	.0238	.0048
Forklifts	.0444	.0080	.0444	.1999	.0888	.0444
Shop equipment	.0004	1/	.0003	.0040	.0004	.0001
Rent	.0384	.0555	.0345	.4267	.0384	.0077
Insurance	.0011	.0029	.0011	.0086	.0011	.0003
Taxes	.0038	.0074	.0038	.0301	.0038	.0011
Home office	---	.0007	---	---	---	---
License and bond	.0005	.0010	.0005	.0043	.0113	.0113
Interest on land	.0011	.0021	.0011	.0087	.0011	.0003
Interest on investment ..	.0280	.0227	.0280	.2240	.0226	.0226
Total fixed costs ..	.1678	.1266	.1595	1.4377	.2386	.1195

1/ Less than .00005.

Table 8.--Variable costs per hogshead of selected services in flue-cured tobacco storage, 1966/67

Item	Innage	Storage per month	Outage	Sampling	Reweigh and restore	Reweigh while performing other services
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Salaries and wages:						
Administrative	0.0211	0.0401	0.0211	0.1687	0.0211	0.0063
Office	.0064	.0088	.0064	.0013	.0064	.0019
Direct labor	.4049	.0130	.3644	4.5047	.4049	.0810
Maintenance	.0038	.0067	.0034	.0422	.0038	.0008
Machinery repairs	.0351	.0007	.0351	.1580	.0070	.0351
Hogshead materials	.0181	.0006	.0163	.2016	.0181	.0036
Repairs and maintenance ...	.0016	.0029	.0015	.0184	.0016	.0003
Utilities	.0021	.0040	.0021	.0169	.0021	.0006
Office supplies	.0032	.0002	.0032	.0006	.0032	.0010
Other cost	.0062	.0109	.0056	.0692	.0062	.0012
Interest on working capital	.0081	.0018	.0081	.0646	.0081	.0024
Total variable costs ...	.5106	.0897	.4672	5.2462	.4825	.1342

Table 9.--Estimated 1968 variable costs per hogshead of selected services in flue-cured tobacco storage 1/

Item	Innage	Storage per month	Outage	Sampling	Reweight and restore	Reweight while performing other services
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Salaries and wages:						
Administrative	0.0236	0.0449	0.0236	0.1887	0.0236	0.0071
Office	.0072	.0098	.0072	.0014	.0072	.0022
Direct labor	.4793	.0153	.4314	5.3320	.4793	.0959
Maintenance	.0045	.0079	.0041	.0502	.0045	.0009
Machinery repairs	.0362	.0007	.0362	.1630	.0725	.0362
Hogshead materials	.0190	.0006	.0171	.2119	.0190	.0038
Repairs and maintenance ...	.0017	.0030	.0015	.0191	.0017	.0003
Utilities	.0022	.0041	.0022	.0173	.0022	.0006
Office supplies	.0033	.0002	.0033	.0007	.0033	.0010
Other cost	.0062	.0109	.0056	.0692	.0062	.0012
Interest on working capital	.0094	.0020	.0094	.0752	.0094	.0028
Total variable costs ...	.5926	.0994	.5416	6.1287	.6289	.1520

1/ Wage costs were updated to reflect 1968 minimum wages. Salaries were updated to reflect 2 years' change from survey period. Other costs were updated to reflect price changes to January 1968.

METHODOLOGY

Firms Surveyed

All firms contracting with the Commodity Credit Corporation to handle, process, and/or store loan tobacco were contacted in this study. This procedure was developed in consultation with the Statistical Reporting Service, U. S. Department of Agriculture.

Cost and other data were obtained from each plant by an economist or an auditor assigned to the Economic Research Service from other USDA agencies. The cost data and related volumes for each service performed were summarized and tabulated by plant, type of facility, and area, according to the plan outlined below.

Depreciation and Interest

To minimize the effects on cost of variations among plants in depreciation allowances and interest on investment, data were summarized using standardized rates.

The following depreciation allowances were used for buildings and equipment:

Item	Rate	Years	Salvage value
	Percent	Number	Percent
Tobacco storage warehouse	4	25	--
Buildings	5	20	--
Redryers	6-2/3	15	--
Threshing equipment	10	10	--
Boiler	5	20	--
Prizing press	5	20	--
Scales	5	20	--
Jacks	20	5	--
Sticks	20	5	--
Office equipment and furniture ..	10	10	--
Autos	25	4	20
Forklifts	25	4	20
Trucks	25	4	20
Stockroom	10	10	--
Shop equipment	10	10	--
Fire equipment	5	20	--

Interest was allowed at 7 percent on the average investment in buildings and equipment.

$$\text{Buildings, I} = \frac{\text{Building acquisition cost}}{2} \times .07$$

Equipment, I = $\frac{\text{Equipment acquisition cost}}{2} \times .07$

Motorized equipment, I = $\frac{\text{Equipment acquisition cost} + \text{salvage value}}{2} \times .07$

Land acquisition cost $\times .06$

Variable cost, interest at $.07 \times 1/4$ year usage

Estimated 1968 Costs

Costs of operating during 1968 were computed as follows:

Wages.--Increased to \$1.60 per hour if \$1.40 or less;

Increased 20 cents per hour if the average was more than \$1.40 for a particular job;

All overtime computed at $1\frac{1}{2}$ times the above rates.

Salaries.--Executive and management salaries were increased 11.1 percent to reflect the average rise in management wages from the average date of the survey period, December 1, 1966, to December 1, 1968.

Office workers' salaries were increased 12.5 percent to reflect average salary increases of office workers during the same period.

Other company costs.--FICA. These costs to the company were computed on the new rates and maximums effective in 1968--4.4 percent on \$7,800 per employee.

Unemployment compensation--Usual 1968 rates for each State involved were used for the tobacco processing and storing firms.

Workmen's compensation--Rates were obtained from the board setting or approving the rates in each State involved.

Supplies, utilities, etc., were updated to reflect costs in effect during January 1968 as reported in the Survey of Current Business, U. S. Department of Commerce, Office of Business Economics.

Method of Allocation

Tobacco Processing

Tobacco processing costs were divided into costs for bundle, looseleaf, and strip tobacco. For firms processing tobacco in more than one form, all costs that were directly attributable to that process were assigned to it by accounting and managing personnel within the firm. Those costs that were joint were assigned according to breakout by individual firms and weights learned in other studies of industry capacities.

<u>Cost item</u>	<u>Basis for allocation</u>
<u>Variable costs</u>	
Salaries	Volume of green-weight tobacco weighted by labor use
Wages:	
Drayage and receiving	Weighted on green-weight basis to reflect 30-percent cost for looseleaf over bundle tobacco
Redrying	As allocated in company records (strip includes threshing)
Packing	As allocated in company records
Coopering and shipping	Dry-weight basis
Maintenance	Company records and green-weight basis
Utilities	Weighted by time and equipment used for different processes used
Office supplies	Green-weight basis
Repairs and maintenance	Green-weight basis
Hogshead materials	Dry-weight basis
Other operating expenses	Green-weight basis
<u>Fixed costs</u>	
Redryers	Weighted to reflect 15-percent reduced capacity for redrying loose leaves
Receiving	Weighted to reflect 30-percent more space used to receive and store loose leaves
Other buildings and office buildings	Green-weight basis
Threshing buildings and equipment	All to threshing
Boiler	Same as utilities
Prizing press	Dry-weight basis
Scales	Green- and dry-weight basis
Jacks	Green-weight basis
Sticks	Bundle tobacco

Cost itemBasis for allocationFixed costs (Cont.)

Quality control	Weighted according to usage
Office furniture and equipment	Green-weight basis
Autos	Green-weight basis
Trucks and trailers	Green-weight basis
Forklifts and pickups	Green-weight basis
Stockroom and other equipment	Value of equipment and usage
Shop equipment	Green-weight basis
Fire equipment	Included in building cost
Insurance	Green-weight basis
Taxes	Green-weight basis
License and bond	Green-weight basis
Lease and rentals	Green-weight basis
Home office	Green-weight basis

Storage and Services

Fixed costs

1. Building depreciation: Based on area devoted to tobacco storage and total warehouse area as shown on warehouse records. Included as tobacco storage area were clearances and aisles as provided for in CCC storage contracts plus 2 feet of the main aisle space. The ratio of storage area and working area to total area was used as a basis for determining depreciation costs allocated directly to storage and services.

For example, assume that 90 percent of the warehouse was used for storage. In this case, 90 percent of the total depreciation was chargeable directly to the storage operation. The remaining 10 percent would then be allocated to all services including storage based on the volume handled in each function.

2. Equipment depreciation: Cost for equipment could be identified with a particular function or allocated directly. For example, scales were allocated directly to weighing. Motorized equipment (autos, trucks, forklifts) was allocated according to use. A weighting system was devised using estimates from each firm involved and checked with industry people to determine if these relative weights were realistic.

3. Insurance and taxes: Building insurance was allocated to functions in the same manner depreciation was in item 1. Insurance on machinery and equipment was allocated to functions based on use.

4. Lease and rentals: Building leases were allocated to functions in the same manner as building depreciation in item 1 and leases of equipment were allocated in the same manner as equipment depreciation in item 2.

5. Interest on capital investment: Same as lease and rentals.

Variable costs

All variable costs except direct labor, machinery repairs, office supplies, and hogshead material were allocated on the same basis as building depreciation. Direct labor and hogshead materials were allocated according to labor use. Machine repairs were allocated according to machine use. Office supplies were allocated according to clerical salaries.

DEFINITION OF TERMS

Tobacco Processing

Redrying bundle: Receiving tobacco, weighing, segregating, blending, plucking, hanging, redrying, packing into hogsheads, coopering, weighing, and loading out hogsheads.

Redrying looseleaf: Receiving tobacco, weighing, segregating, blending, picking, redrying, packing into hogsheads, coopering, weighing, and loading out hogsheads.

Redrying strip: Receiving tobacco, weighing, segregating, blending, plucking, threshing, separating, picking, redrying, packing into hogsheads, coopering, weighing, and loading out hogsheads.

Storage and Services

Innage: Receiving hogsheads of tobacco, placing in storage on dunnage, and paperwork necessary for checking bills and entering on books.

Storage: Maintenance, custodial, and accounting functions necessary during storage period.

Outage: Identifying hogsheads ordered for shipment, removing and loading onto transportation equipment, and associated office work.

Sampling: Identifying hogsheads to be sampled, removing from storage to display area, removing casks from tobacco, pulling samples and displaying, replacing casks, restoring, and associated office work.

Reweigh and restore: Identifying hogsheads to be weighed. Removing from storage, reweighing, restoring and associated office work.

Reweigh while performing other services: Reweighing while hogshead is removed from storage for another service.

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