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OPERATING COSTS FOR U. S. COTTON GINS BY LOCATION, PLANT SIZE, AND UTILIZATION RATES: IMPACT OF AN AUTOMATIC FEEDING SYSTEM

TEXAS AGRICULTURAL MARKET
RESEARCH & DEVELOPMENT CENTER

in cooperation with the
Department of Agricultural Economics

TEXAS A&M UNIVERSITY • TEXAS AGRICULTURAL EXPERIMENT STATION • TEXAS AGRICULTURAL EXTENSION SERVICE • College Station, Texas

OPERATING COSTS FOR U. S. COTTON GINS BY LOCATION, PLANT SIZE, AND UTILIZATION RATES: IMPACT OF AN AUTOMATIC FEEDING SYSTEM

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and
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in cooperation with
Department of Agricultural Economics
The Texas Agricultural Experiment Station
Texas A&M University
College Station, Texas

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Robert E. Branson
Coordinator

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OPERATING COSTS FOR U. S. COTTON GINS BY LOCATION, PLANT SIZE, AND UTILIZATION RATES: IMPACT OF AN AUTOMATIC FEEDING SYSTEM

SUMMARY AND CONCLUSIONS

The U. S. cotton ginning industry is confronted with conditions of rising input costs, chronic excess ginning capacity, and large fluctuations in annual cotton production. Gin firms are being compelled to examine organizational and technological changes that will aid in adjusting to current economic realities.

New technology in handling and ginning harvested cotton involves packing seed cotton into "modules". This has resulted in the development of new machinery systems to break the modules apart and feed the cotton into gins. These automatic module feeders provide an alternative to the conventional air suction feeders used to unload cotton trailers.

Purposes of this report are to examine the structure of the U. S. ginning industry, estimate the level and behavior of per bale ginning costs, and assess the impact of automatic module feeders on per bale costs in order to develop general guidelines for determining whether a gin firm can afford to invest in such a feeding system.

Industry Structure

** There were 3,262 active gin plants throughout the Cotton Belt of the United States in the 1974-75 season. Over 70 percent of these were located in the Southwest and South Central regions. The State of Texas alone accounts for about 30 percent of the U. S. total.

** Of all active gin plants in the U. S., 51 percent have capacities of 8 bales/hour or less, 30 percent have capacities of 9-13 bales/hour, 11 percent have capacities of 14-18 bales/hour, and 8 percent have capacities of 19 bales/hour or larger. Gin sizes tend to get smaller as one moves from West to East across the Cotton Belt.

** Excess capacity prevails in the U. S. cotton ginning industry. During the last three years, the ginning industry has utilized only 40 percent of its seasonal capacity. The exception was the West region, which had a utilization level of 85 percent.

Ginning Costs

** Ginning cost data were gathered from three major cotton production areas: the California San Joaquin Valley, the Texas High Plains, and the Mississippi Delta. Ginning cost per bale is lower in the Delta than in the San Joaquin Valley due to lower wage and salary levels. Per bale cost of ginning the stripper harvested cotton in the High Plains is $8 - $10 higher than in the picker harvested regions.

** Per bale cost declines dramatically until about 50-60 percent of a gin plant's seasonal capacity is utilized, continues to decline until it levels off at outputs somewhat greater than 100 percent of the plant's formulated seasonal capacity, then increases as still larger volumes are ginned. Increasing cost could be largely avoided by lengthening the ginning season rather than trying to process all cotton as soon as possible after harvest.

** When ginning capacity is fully utilized, per bale ginning costs decrease as plant size increases. However, unless a larger plant is operated at near capacity levels, per bale costs may well be above those for a smaller plant processing the same number of bales.

Cost Effects of an Automatic Feeder

** Cotton may be fed into the gin more smoothly and at a steadier rate with an automatic module feeder than with a conventional air suction feeder. Two documented results of this are reduced down-time and increased output per unit of operating time. Possibilities also exist for less energy usage and fewer laborers required to operate an automatic feeder.

** The net effect of an automatic module feeder on ginning cost is determined by comparing cost reductions due to increased ginning efficiency with the additional annual costs associated with capital investment in the feeder.

** Based on test results, a 15 percent increase in processing efficiency should be easily attainable with an automatic feeder.

** Gin firms utilizing 80-85 percent of seasonal capacity can break even on the investment in an automatic module feeder. A 12 bales/hour gin needs to process 7,500 bales, a 15 bales/hour gin needs 9,500 bales, a 18 bales/hour gin needs 11,500 bales, a 21 bales/hour gin needs 13,500 bales, and a 24 bales/hour gin needs 15,500 bales.

** As seasonal ginning volumes increase above break-even levels, per bale costs are lowered significantly by the automatic feeder. At 100 percent utilization of normal seasonal capacity, per bale cost is

$1.00 - $1.20 lower with the feeder - which amounts to a net return on the additional capital investment of 10-15 percent. At 110 percent utilization, cost is $1.50 - $2.00 per bale lower with the feeder, for a net return on the additional capital investment of 20-25 percent.

** The above conclusions on cost effects are based on the same number of bales being ginned before and after a module feeder is installed. But adding a feeder may be considered as a means of increasing seasonal ginning volume, in which case all the fixed costs of ginning may be spread over the larger number of bales. This spreading of fixed costs would make per bale cost drop significantly, even at low ginning volumes. For example, if 1,000 additional bales may be attributed to availability of a feeder, then the investment will result in lower per bale cost regardless of previous ginning volume.

OPERATING COSTS FOR U. S. COTTON GINS BY LOCATION, PLANT SIZE, AND UTILIZATION RATES: IMPACT OF AN AUTOMATIC FEEDING SYSTEM

M. Dean Ethridge and Robert E. Branson *

INTRODUCTION

Dynamic change and uncertainty dominate the current economic environment of the cotton sector in U. S. agriculture, and this is particularly true in the cotton ginning industry. Combined conditions of rapidly rising input costs, chronic excess ginning capacity, and large fluctuations in both planted acreage and per acre yields have forced many gin firms out of business. Current survivors are seeking organizational and technological changes to improve their competitive positions.

During recent years, producers in major cotton regions have begun to invest in module systems as an improved means of handling cotton between harvesting and ginning. A companion technological innovation has been the development of automatic feeders to use in breaking the modules apart and feeding the cotton into gins [16, 19, 21]. But cotton in modules can also be fed by a conventional air suction system designed for unloading trailers. Therefore, U. S. ginning firms need to assess the cost efficiencies afforded by investing in automatic module feeders.

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Objectives

There were three major objectives of the research reported here:

(1) To estimate numbers of active gins in each cotton producing state during the 1974-75 ginning season, describe the existing size distribution of these gins, and compare regional ginning capacities with volumes ginned;

(2) To estimate average ginning cost schedules in three major production areas - the San Joaquin Valley in California, the High Plains in Texas and the Mississippi Delta - identifing effects of plant size and utilization of plant capacities;

(3) To combine results on average cost behavior with experimental results on efficiency effects of a prototype automatic module feeder, thereby estimating cost effects of incorporating this new technology.

Literature Review

Publications on structure of the U. S. ginning industry have come predominately from the U.S.D.A. [29]. One structural study was done relating specifically to the state of New Mexico [10].

There have been numerous studies of cotton ginning costs during the last twenty-five years. The various approaches to estimating plant costs and efficiency relationships may be grouped into three broad categories: (1) descriptive analysis of the accounting data, which mainly involves combining point estimates of average cost into various classes for comparative purposes, (2) statistical analysis of accounting data, which attempts to estimate functional relationships by econometric methods, and (3) economic-engineering analysis, which "synthesizes" production and cost relationships from engineering data or other estimates of production function components [9].

Previous ginning cost studies fit predominantly into either the descriptive category [3, 4, 5, 6, 8, 12, 14, 20, 23, 24, 25, 28, 31] or the economic-engineering category [1, 2, 7, 11, 13, 15, 17, 18, 22, 26, 27, 32, 33]. The analysis in this paper relies on careful sample design and econometric techniques for statistical estimation of major cost parameters. Results obtained are useful for predicting behavior of ginning costs under a variety of circumstances.

PROCEDURE

Numbers, Sizes and Utilization of Gin Plants

Data on numbers of gins and equipment contained within each gin in the United States were computed from "gin equipment schedules" collected and maintained by the Agricultural Marketing Service of the U.S.D.A. Information on these schedules was coded and placed on computer tapes to facilitate handling of the large amount of information.

The size of a gin plant is typically expressed in terms of bales per hour that the plant is engineered to process. If a gin is properly engineered, supporting machinery is sufficient to accommodate the output rate of its gin stands. Assuming this to be generally true, formulas were derived to compute rated capacities of all existing gin stands.[1] Then, using gin stand information from the equipment schedules, a rated hourly capacity was computed for all gins across the Cotton Belt.

To compute seasonal gin capacity estimates from rated hourly capacities the method developed by personnel in the Economic Research Service of the U.S.D.A. was used [17, pp. 14-17]. It assumes a "typical" ginning season: gins operate fourteen weeks with gin crews on duty a total of 1,320 hours and with actual pro-

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[1] Formulas to compute rated capacities of gins stands were developed in consultation with Calvin B. Parnell, Agricultural Engineer specializing in cotton ginning and mechanization at Texas A&M University.

cessing taking place 906 hours. The average hourly processing rate is taken to be 85 percent of the rated hourly capacity of a plant. Actual hours processing multiplied by the average hourly processing rate produces the seasonal capacity estimate for a gin. For example, a gin plant with a rated hourly capacity of 12 bales/hour has a seasonal capacity estimate of 9,241 bales (9,241 = 906 × 0.85 × 12).

Utilization of seasonal capacity is determined by the ratio of actual bales ginned in a season to computed seasonal capacity. Thus, if a 12 bales/hour gin processed 7,000 bales then utilization of seasonal capacity is 7,000 ÷ 9,241 = 0.76, or 76 percent.

Average Ginning Costs

The three cotton production areas selected for analysis on ginning costs were the California San Joaquin Valley, the Texas High Plains and the Mississippi Delta (Figure 1). The San Joaquin Valley and the Mississippi Delta areas, while differing in many aspects, are both major cotton producing areas that grow longer staple cotton harvested mainly with pickers. The Texas High Plains is a major area that grows quicker maturing, shorter staple cotton that is harvested with strippers. All three of these areas represent homogenous production areas that make an aggregation of of gins within them useful.

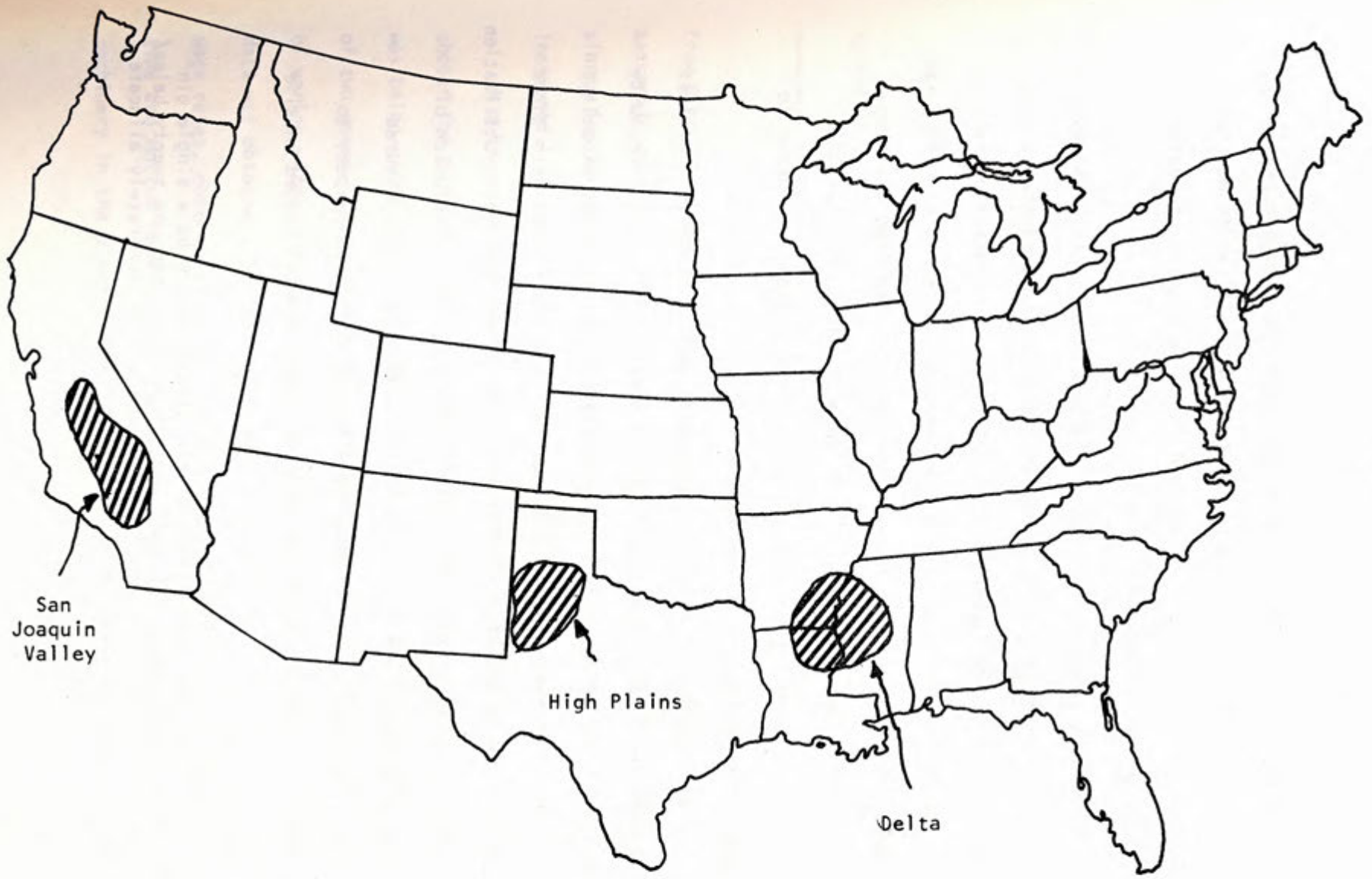

Figure 1. Three Regions Sampled for Ginning Cost Data.

A stratified random sample was drawn from the gin populations in each of the three production areas. Stratification was based on three plant size categories and three categories of seasonal capacity utilization.

Plant size categories were 9-13 bales/hour, 14-18 bales/hour and 19 or more bales/hour. These categories assured that a wide spectrum of technological and organizational characterics related to plant size would be represented in the sample. Gins with rated capacities of 8 or less bales/hour were excluded from the sample in order to focus the analysis on more modern commercial gin firms. Also multiple plant gin firms were excluded in order to obtain technological homogeneity within size categories.[2]

Utilization of capacity categories were: 59 percent or less of seasonal capacity utilized, 60-84 percent of seasonal capacity utilized and 85 percent or more utilization of seasonal capacity.

Each of the three size categories were associated with three utilization categories resulting in a total of nine "size-utilization cells" sampled within each region. The systematic inclusion of sample observations within each size-utilization cell assured that there would not be large gaps in the data with respect to either of these critical parameters. Gins sampled ranged in size

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[2] Thus, two ten bales/hour gin plants making up a single gin firm are engineered with different technology than one twenty bales/hour plant. Also, it was deemed impossible to accurately allocate firm accounting costs among two or more plants.

Table 1. Average Number of Bales Ginned in 1974-75 for Each Size-Utilization Cell in the Gin Sample.

Size of Gin (Rated Capacity in Bales/Hour)	Percent Utilization of Seasonal Capacity		
	59 or less	60-84	85 or more
	-----average number of bales ginned-----		
9-13	3,243	5,665	9,716
14-18	4,230	9,159	11,693
19 and larger	5,485	13,281	20,294

from 9 to 37 bales/hour and from 9 to 137 percent utilization of seasonal capacity. Table 1 shows how the average number of bales ginned increased as either capacity or utilization of capacity increased.

A sub-sample containing one or more gins in each cell was chosen for personal visitation while the 1975-76 cotton crop was being ginned. On-site observations were made over a period of two weeks. Various operation procedures were studied for gins of varing sizes and consultation on interpreting accounting cost data was obtained. These visits were also used to collect current wage rates, observe sizes and organization of labor crews, make time and motion observations, catalog sizes and configurations of machinery in the plants, etc.

Mailed questionnaires were used for all gins not personally visited. Telephone contact was maintained (a) to answer inquiries by gin managers about the questionnaire and (b) to seek help with interpreting the cost data after it was obtained. A total of 88 useable sample observations were obtained. Eighteen of these came from the California San Joaquin Valley, thirty-six from the Texas High Plains and thirty-four from the Mississippi Delta.

Cost data collected were divided into fixed and variable cost categories, then sub-classed into major components making up each category (Table 2). Fixed costs are sub-classed into six specific components plus miscellaneous fixed cost. Variable costs are sub-classed into four specific components plus miscellaneous variable costs.

Due to widespread variation in accounting methods for interest and depreciation costs, "standardized" figures were used for these two components (Table 2). Interest expense was obtained by charging 8 percent on the estimated value of land comprising the gin site and 8 percent on one-half the cost of buildings, machinery and equipment. Depreciation was set at 7 percent of the initial cost of capital items carried on the depreciation schedule regardless of age or former method of depreciation (see [23]).

Multiple linear regression techniques were used to measure the association of per bale ginning costs with (a) utilization

Table 2. Classification of Gin Cost Data

Cost Category	Cost Components Included
Average Fixed Cost (AFC)	Management Office Labor Property Insurance Property Taxes Interest Depreciation Miscellaneous[a]
Average Variable Cost (AVC)	Ginning Labor Bagging and Ties Energy Repair Labor and Materials Miscellaneous[b]
Average Total Cost (ATC)	Sum of AFC and AVC

[a] Includes advertising and promotion, legal and audit fees, expenditures for licensing, dues, memberships and subscriptions, expenses for annual meetings, directors' fees and expense, travel and convention expense, and donations or contributions.

[b] Includes gin supplies, car/pickup operating expenses, tractor operating expense, office supplies and expense, machine accounting expense, telephone and telegraph, miscellaneous rental expenses, sampling/compress expenses, and other unspecified miscellaneous expenses.

of plant capacity, (b) plant size, and (c) regional location of gin plant. Representative cost schedules are derived from these results.

Effects of Automatic Feeder

Using results from computerized monitoring of effects on physical efficiency by an automatic module feeder, along with conclusions about which cost components are affected, impact on per bale ginning costs is demonstrated. Implications are drawn for two specific cases: (a) when the automatic module feeder does not result in larger seasonal ginning volumes and (b) when investment in an automatic feeder is a means to increase seasonal ginning volumes.

U. S. COTTON GINS: NUMBERS, SIZES AND AMOUNT OF EXCESS CAPACITY

In 1974-75 there were about 3,262 active gin plants in the United States (Table 3). Of these, 51 percent (1,664 gins) were rated at 8 bales/hour or less, 30 percent were rated 9-13 bales/hour, 11 percent at 14-18 bales/hour and only 8 percent at 19 bales/hour or larger.

The Southwest and South Central regions have over 70 percent of all gins in the U. S. (Table 3). The state of Texas alone accounts for about 30 percent of the U. S. total, followed by Mississippi with about 13 percent, Arkansas with about 11 percent and California with about 8 percent.

Gin sizes tend to get smaller as one moves from west to east across the Cotton Belt; thus, there are relatively more small gin plants in the Southeast and South Central regions, and relatively more large plants in the West and Southwest regions (Table 3). The Southeast stands somewhat in contrast with the rest of the U. S., with only 12 percent of its gins rated at 14 bales/hour or larger.

Summing the rated hourly capacities for all gins within each state gives estimates of total hourly capacities (Table 4, 1st column). These estimates represent an upper limit of actual hourly capacity per state. Pegging the "effective" hourly capacity at 85 percent of the rated figure results in more realistic estimates.

Table 3. Size Distribution of Cotton Gins in the U. S., by States and Regions, 1974-75.

Regions and States	Gin Size Categories (in bales per hour)								Totals for All Sizes	
	1 - 8		9 - 13		14 - 18		19+			
	No.	%	No.	%	No.	%	No.	%	No.	%
West										
Arizona	35	29	65	54	15	12	6	5	121	100
California	40	16	146	57	25	10	43	17	254	100
Nevada	1	100	0	0	0	0	0	0	1	100
New Mexico	29	60	9	18	9	18	2	4	49	100
Regional Total	105	25	220	52	49	11	51	12	425	100
Southwest										
Oklahoma	59	57	26	25	12	11	7	7	104	100
Texas	404	41	373	38	122	13	74	8	973	100
Regional Total	463	43	399	37	134	12	81	8	1,077	100
South Central										
Arkansas	252	68	75	20	27	7	19	5	373	100
Illinois	0	--	0	--	0	--	0	--	0	---
Kentucky	1	100	0	0	0	0	0	0	1	100
Louisiana	68	50	31	23	21	15	17	12	137	100
Mississippi	235	54	74	17	71	16	58	13	438	100
Missouri	53	51	32	31	15	14	4	4	104	100
Tennessee	129	75	28	16	10	6	5	3	172	100
Regional Total	738	60	240	20	144	12	103	8	1,225	100
Southeast										
Alabama	129	67	42	22	14	7	8	4	193	100
Florida	0	0	2	100	0	0	0	0	2	100
Georgia	81	61	31	23	16	12	5	4	133	100
North Carolina	54	73	12	16	7	9	1	1	74	100
South Carolina	93	70	28	21	9	7	2	2	132	100
Virginia	1	100	0	0	0	0	0	0	1	100
Regional Total	358	67	114	21	46	9	16	3	535	100
Total U. S.	1,664	51	974	30	373	11	251	8	3,262	100

Source: Derived from data base maintained by USDA.

Using the method discussed earlier in the procedure section, the rated hourly capacities were used to estimate seasonal capacity of the ginning industries in each state (Table 4, 2nd column). Estimated seasonal capacity within each state may be compared with cotton production in 1974-75, 1975-76, and 1976-77 in order to provide an indication of how well ginning capacity is being utilized (Table 4).

Results show that substantial excess capacity exists in the U. S. cotton ginning industry, since it has the capacity to gin over 25 million bales but can generally expect to obtain less than 12 million bales (Table 4). For the entire Cotton Belt, the three year average for utilization of seasonal capacity is less than 40 percent. Only in the West Region, with an average capacity of 85 percent, is total ginning capacity in pretty good balance with cotton production. With the 1974-75 production level, there were about 3,500 bales of cotton available per gin if U. S. production were allocated evenly among all active gin plants. In 1975-76 this figure declines to about 2,500 bales, then rises to about 3,200 bales in 1976-77. Effects of these kinds of ginning volumes on per bale ginning costs will become clear in the next section of this report.

These results lead to the conclusion that total number of gins will decrease during the foreseeable future. This does not mean, however, that areas within some states may not need more ginning capacity.

Table 4. Capacity of Ginning Industry, Cotton Production and Utilization of Capacity.

States and Regions	Rated Capacity of Gins as of 1974-75[a]	Estimated Seasonal Capacity of Gins as of 1974-75[b]	Cotton Production[c]			Utilization of Seasonal Capacity[d]		
			1974-5	1975-6	1976-7	1974-5	1975-6	1976-7
	bales/hour	thous. bales	-------thous. bales-------			--------percent-------		
Arizona	1,244	958.0	995.0	573.0	810.0	104	60	85
California	3,197	2,462.0	2,595.0	1,954.0	2,530.0	105	79	103
Nevada	8	6.2	2.1	1.5	1.7	34	24	27
New Mexico	477	367.3	148.0	68.0	80.0	40	19	22
WEST	4,926	3,793.5	3,740.1	2,596.5	3,421.7	99	68	90
Oklahoma	1,021	786.3	310.0	170.0	178.0	39	22	23
Texas	10,397	8,006.7	2,462.0	2,382.0	3,250.0	31	30	41
SOUTHWEST	11,418	8,793.0	2,772.0	2,552.0	3,428.0	32	29	39
Arkansas	3,313	2,551.3	880.0	687.0	780.0	34	27	31
Illinois	0	0.0	.3	.0	.0	--	--	--
Kentucky	7	5.4	2.6	.3	.7	48	6	13
Louisiana	1,525	1,174.4	560.0	346.0	555.0	48	29	47
Mississippi	4,775	3,677.2	1,595.0	1,040.0	1,145.0	43	28	31
Missouri	1,024	788.6	230.0	196.0	165.0	29	25	21
Tennessee	1,402	1,079.7	308.0	222.0	225.0	29	21	21
SOUTH CENTRAL	12,046	9,276.6	3,575.9	2,491.3	2,870.7	39	27	31

Table 4 (continued). Capacity of Ginning Industry, Cotton Production and Utilization of Capacity.

States and Regions	Rated Capacity of Gins as of 1974-75[a]	Estimated Seasonal Capacity of Gins as of 1974-75[b]	Cotton Production[c]			Utilization of Seasonal Capacity[d]		
			1974-5	1975-6	1976-7	1974-5	1975-6	1976-6
	bales/hour	thous. bales	-------thous. bales-------			--------percent-------		
Alabama	1,687	1,299.2	522.0	312.0	350.0	40	24	27
Florida	23	17.7	12.7	2.7	7.6	72	15	43
Georgia	1,248	961.1	419.0	148.0	200.0	44	15	21
North Carolina	567	436.7	133.0	46.0	70.0	30	11	16
South Carolina	1,066	820.9	274.0	98.0	145.0	33	12	18
Virginia	3	2.3	1.2	0.6	0.5	52	26	22
SOUTHEAST	4,594	3,537.9	1,361.9	607.3	773.1	38	17	22
TOTAL U. S.	32,984	25,401.0	11,449.9	8,247.1	10,493.5	45	32	41

[a] Derived from data base maintained by USDA.

[b] Used formula applied by the USDA-ERS. Estimated seasonal capacity = (rated hourly capacity) x .85 x 906. The quantity .85 is an adjustment due to the practical impossibility for a plant to always operate at 100 percent of its possible hourly capacity, while 906 is the number of actual ginning hours in a "normal" ginning season. For further explanation, see Z. M. Looney and C. A. Wilmot, USDA-ERS, Economic Models for Cotton Ginning, Ag. Econ. Report No. 214, October 1971.

[c] Compiled from USDA-SRS, Crop Production: 1976 Annual Summary, CrPr 2-1, January 7, 1977.

[d] Equal to cotton production in each year divided by computed seasonal capacity in 1974-75.

In particular areas where cotton acreage has been greatly increased after several years with little cotton production, it may be necessary to either build additional gin plants or utilize techniques for storing harvested seed cotton until it can be ginned.

In fact, a major reason why the ginning industry operates with large excess capacity is to satisfy farmers' demand to have their cotton trailers emptied as soon as possible after they are filled. Thus, numbers and sizes of gin plants have traditionally been dictated by the criterion of matching ginning rates and harvest rates during a 2-3 week peak harvest period. The module system for handling cotton is an alternative that can allow hourly ginning rates to be much less than peak harvest rates within an area.

COSTS OF GINNING COTTON

Statistical estimation results on major cost parameters are presented in Appendix A. Cost schedules resulting from these statistical results are examined in this section. For presentation purposes, five alternative gin plant sizes will be considered: 12, 15, 18, 21, and 24 bales/hour gins. Results on other sizes could also be shown; however, these are sufficient to demonstrate relevant cost behavior.

A comparison of average total cost schedules for alternative plant sizes reveals that per bale ginning costs are generally higher for larger plants until ginning volumes become fairly large (Table 5). For further illustration, the regional average total cost schedules for alternative plant sizes are graphed in Figure 2. Inspection will confirm that unless existing larger plants are operated at near full utilization of seasonal capacities, average total cost is expected to be higher than for smaller plants processing the same number of bales.

For any given plant size and ginning volume, total per bale ginning costs are expected to be highest in the Texas High Plains and lowest in the Mississippi Delta, with costs in the California San Joaquin Valley being slightly higher than those in the Delta (Table 5 and Figure 2). The short season, stripper harvested cotton in the Texas High Plains simply requires more resources

Table 5. Schedules of Expected Average Total Cost for Alternative Sizes of Cotton Gins, by Regions, 1974-75.

SAN JOAQUIN VALLEY[a]

Seasonal Ginning Volume	Size of Gin Plant				
	12 Bales/Hr.	15 Bales/Hr.	18 Bales/Hr.	21 Bales/Hr.	24 Bales/Hr.
bales	------dollars per bale------				
1,000	91.02	101.83	112.32	122.63	132.82
2,000	57.61	63.99	69.85	75.38	80.71
3,000	44.11	49.27	53.82	57.96	61.83
4,000	36.08	40.65	44.62	48.16	51.38
5,000	30.62	34.72	38.33	41.52	44.40
6,000	26.78	30.34	33.64	36.59	39.24
7,000	24.15	27.04	29.99	32.71	35.18
8,000	22.52	24.55	27.09	29.58	31.88
9,000	21.77	22.76	24.80	27.01	29.14
10,000	21.84	21.57	23.02	24.90	26.83
11,000	22.69	20.95	21.68	23.19	24.89
12,000	24.27	20.84	20.76	21.83	23.27
13,000		21.24	20.22	20.78	21.92
14,000		22.11	20.05	20.03	20.83
15,000		23.46	20.22	19.56	19.97
16,000			20.73	19.35	19.34
17,000			21.57	19.40	18.92
18,000				19.71	18.71
19,000				20.26	18.69
20,000					18.87
21,000					19.23
22,000					19.78

[a] Summarized from schedules in Appendix C, Table C-1.

Table 5 (continued). Schedules of Expected Average Total Cost for Alternative Sizes of Cotton Gins, by Regions, 1974-75.

HIGH PLAINS[b]

Seasonal Ginning Volume	Size of Gin Plant				
	12 Bales/Hr.	15 Bales/Hr.	18 Bales/Hr.	21 Bales/Hr.	24 Bales/Hr.
bales	--------dollars per bale--------				
1,000	103.81	116.00	127.87	139.56	151.13
2,000	67.65	74.72	81.26	87.49	93.51
3,000	53.23	58.85	63.86	68.46	72.79
4,000	44.73	49.66	53.97	57.85	61.42
5,000	39.00	43.38	47.26	50.73	53.89
6,000	34.98	38.77	42.30	45.48	48.35
7,000	32.22	35.30	38.45	41.37	44.04
8,000	30.49	32.69	35.40	38.06	40.54
9,000	29.67	30.80	33.00	35.36	37.64
10,000	29.67	29.54	31.13	33.15	35.21
11,000	30.47	28.85	29.72	31.35	33.17
12,000	32.01	28.70	28.73	29.91	31.47
13,000		29.05	28.14	28.80	30.05
14,000		29.88	27.92	28.00	28.90
15,000		31.20	28.05	27.48	27.99
16,000			28.53	27.23	27.31
17,000			29.34	27.25	26.85
18,000				27.52	26.60
19,000				28.04	26.55
20,000					26.70
21,000					27.04
22,000					27.57

[b] Summarized from schedules in Appendix C, Table C-2.

Table 5 (continued). Schedules of Expected Average Total Cost for Alternative Sizes of Cotton Gins, by Regions, 1974-75.

DELTA[c]

Seasonal Ginning Volume	Size of Gin Plant				
	12 Bales/Hr.	15 Bales/Hr.	18 Bales/Hr.	21 Bales/Hr.	24 Bales/Hr.
bales	-------dollars per bale-------				
1,000	85.45	95.21	104.66	113.93	123.07
2,000	54.13	59.98	65.32	70.33	75.14
3,000	41.32	46.14	50.33	54.13	57.65
4,000	33.63	37.95	41.66	44.93	47.89
5,000	28.39	32.28	35.68	38.66	41.33
6,000	24.69	28.07	31.19	33.97	36.44
7,000	22.16	24.89	27.69	30.27	32.59
8,000	20.60	22.50	24.91	27.26	29.44
9,000	19.91	20.78	22.70	24.80	26.81
10,000	20.03	19.65	20.99	22.77	24.60
11,000	20.91	19.07	19.72	21.13	22.73
12,000	22.52	19.01	18.84	19.82	21.17
13,000		19.43	18.34	18.82	19.88
14,000		20.34	18.20	18.11	18.83
15,000		21.71	18.40	17.67	18.02
16,000			18.94	17.50	17.42
17,000			19.80	17.57	17.03
18,000				17.90	16.85
19,000				18.47	16.85
20,000					17.05
21,000					17.44
22,000					18.00

[c] Summarized from schedules in Appendix C, Table C-3.

Figure 2. Expected Average Total Cost Curves for Alternative Sizes of Cotton Gins, by Regions, 1974-75 a/

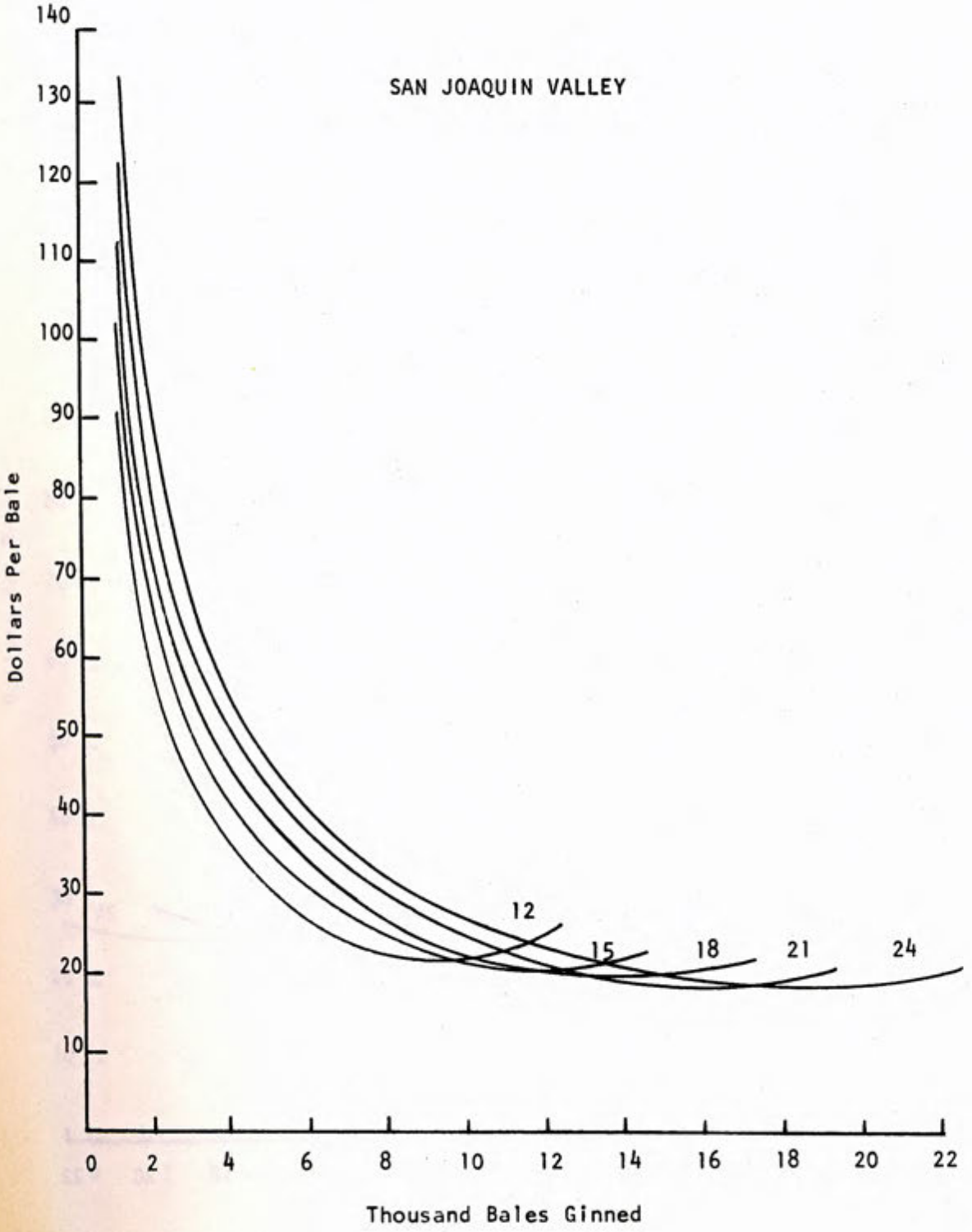


Figure 2 (continued). Expected Average Total Cost Curves for Alternative Sizes of Cotton Gins, by Regions, 1974-75 a/

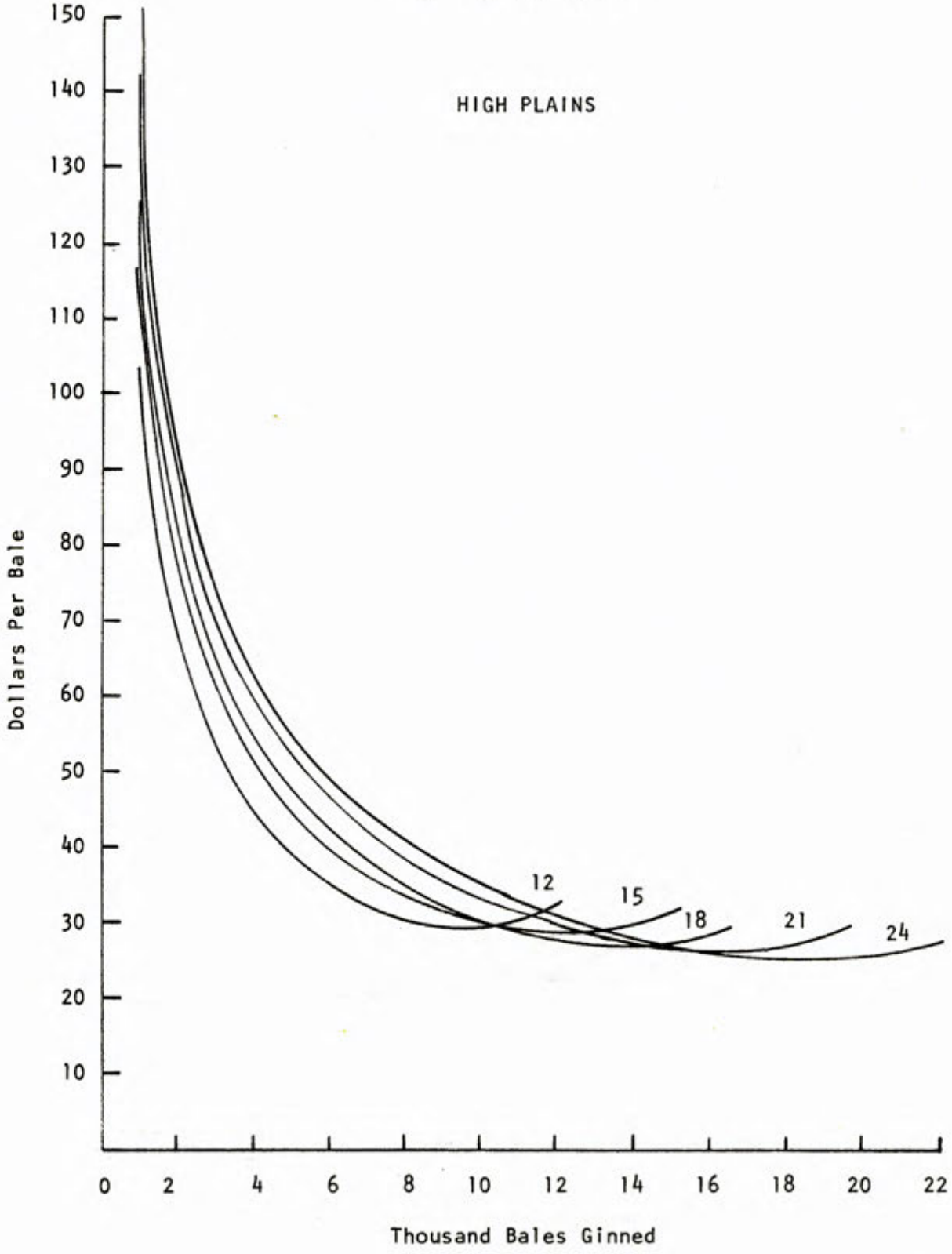
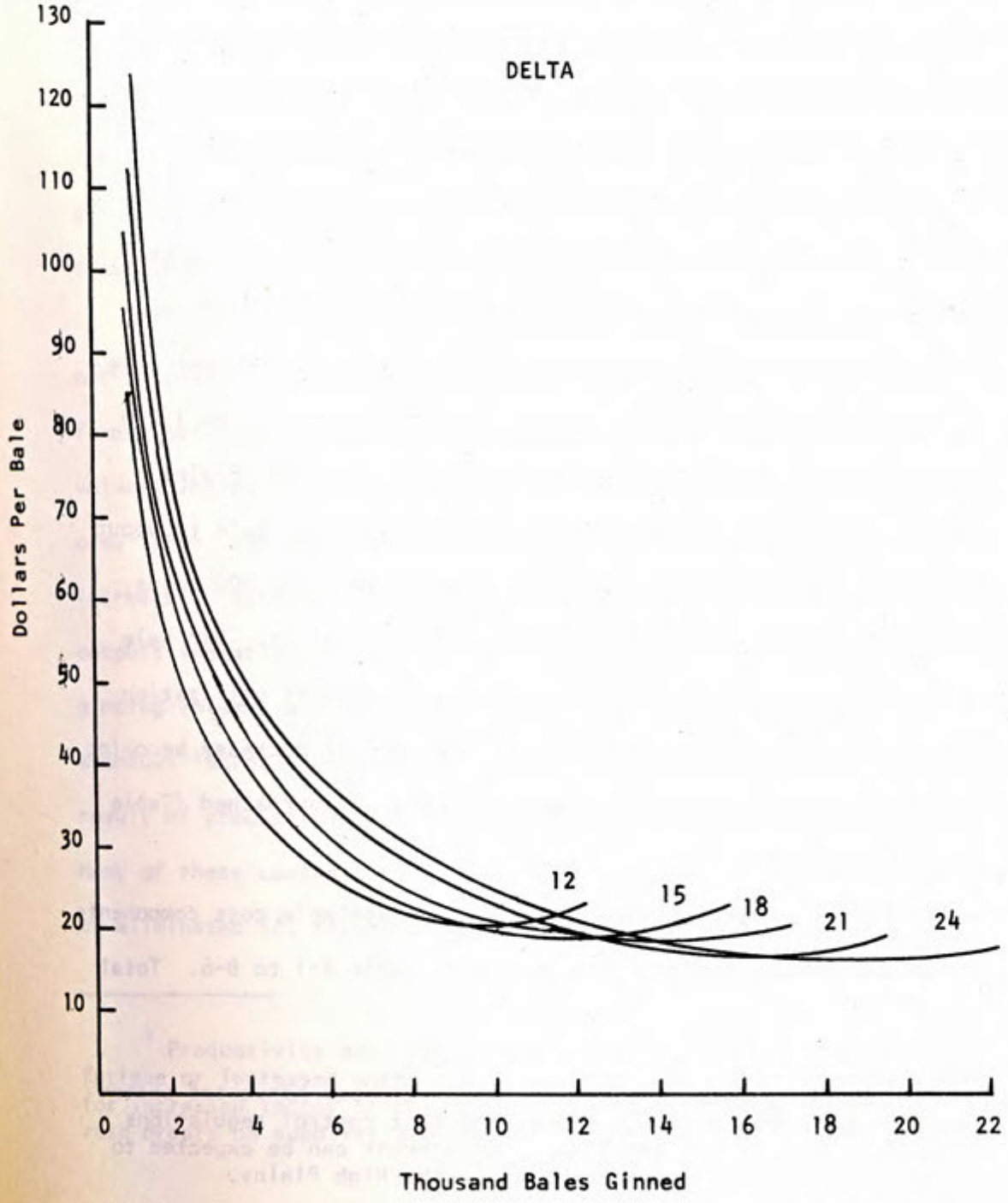


Figure 2 (continued). Expected Average Total Cost Curves for Alternative Sizes of Cotton Gins, by Regions, 1974-75 [a/]



[a/] Gin plant sizes are expressed as rated capacities in bales/hour.

to gin it; whether they are fixed resources (such as additional ginning machinery) or variable ones (such as additional gin crew laborers, greater energy requirements, or more maintainance and repair materials).[3] The fact that per bale costs are somewhat lower in the Delta than in the San Joaquin Valley is due primarily to lower salaries, wages and fringe benefits in the Delta.

These results show the importance of fully utilizing a gin plant's seasonal capacity if per bale ginning costs are to be kept down. Thus, for 12 bales/hour plants in the Texas High Plains, average total cost decreases from about $103.00 per bale to about $30.00 per bale as ginning volume increases from 1,000 to 9,000 bales. For 24 bales/hour plants in the High Plains, average total cost decreases from about $133.00 per bale to about $19.00 per bale as volume increases from 1,000 to 19,000 bales. Similar conclusions hold for gins in all three areas. Per bale costs decrease quite rapidly up to about 50 percent utilization of a plant's seasonal capacity, with the rate of decrease becoming less and less as minimum average total cost is approached (Table 5 and Figure 2).

Behavior of average fixed and average variable cost components are summarized by regions in Appendix B, Table B-1 to B-6. Total

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[3] It may be noted that, since this stripper harvested cotton tends to have more dirt and trash, any dust control regulations imposed by agencies of the Federal Government can be expected to increase average ginning costs most in the High Plains.

cost levels may be obtained by simply multiplying the average cost figures by corresponding ginning volumes. Keep in mind that these cost estimates apply to existing gin plants as of the 1974-75 ginning season. Therefore, they do not reflect increases in input prices since 1974-75. Also, they cannot be applied directly to the estimation of costs for a new gin plant, because costs of gin construction and associated capital equipment have increased drastically since most existing gins were built.

Since fixed inputs (eg., management, office labor, etc.) do not increase as output increases, all the "average" or "per bale" fixed cost components continually decline as seasonal ginning volumes increase (Tables B-1 to B-3). Variable inputs (eg., gin crew labor, gas and electricity, etc.) must be increased as output increases. Average variable cost components declined until large outputs (relative to plant size) are reached, then increased as ginning volumes are increased further (Tables B-4 to B-6). The eventual increase observed in average variable cost may be the result of productivity declines or increases in some factor prices.[4] Many of these causes for increasing average variable costs could be eliminated if, rather than cramming increased ginning volume

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[4] Productivity declines may be caused by such things as worker fatigue or increased machinery repairs and downtime. Possible causes for increased factor prices are overtime pay or shipping premiums for rush orders on supplies and parts.

into a typical 2-3 month ginning season, firms could increase the length of their ginning season well beyond that of the harvest season. This would require not only appropriate technology for storing seed cotton, but also marketing arrangements to alleviate producers' problems with cash flows and fluctuating prices for cotton lint.

The sum of average fixed cost and average variable cost gives average total cost, or total per bale cost of ginning cotton. Appendix C contains all three average cost schedules for the three production areas considered (Tables C-1 to C-3). Due to average variable cost eventually increasing at large ginning volumes, average total cost also eventually increases. However, this does not occur for any size gin plant until bales ginned exceed 100 percent of the plant's seasonal capacity. Thus, a 12 bales/hour plant is expected to have to gin around 10,000 bales in a 2-3 month ginning season before average total cost begins to increase, while a 24 bales/hour plant is expected to have to gin around 20,000 bales to get increasing average total cost.

EFFECTS OF AN AUTOMATIC MODULE FEEDER ON AVERAGE GINNING COSTS

During the 1975-76 ginning season, Cotton Incorporated conducted a computerized gin monitoring program [30]. One gin monitored was a 12 bales/hour plant in Alabama. This gin was equipped with an automatic module feeder developed by Cotton Incorporated, in addition to the existing air suction unloader. The automatic module feeder was channeled through the suction system, thereby forfeiting any cost advantages resulting from elimination of motors used in powering the air suction unloader. Also foregone was the opportunity to eliminate one worker from the yard and unloading crew.

A total of 7,900 bales were ginned at this Alabama plant during the 1975-76 season. Cotton was ginned and monitored under three situations: (a) using the suction unloader to feed cotton off trailers, (b) using the suction unloader to feed cotton off modules, and (c) using the automatic feeder to feed cotton off modules [30, p. 34].

Engineering Test Results

Cotton is fed much smoother and at a steadier rate by the automatic module feeder used at the test gin, which results in greater efficiency and lower average cost. Possible effects examined by Cotton Incorporated included the following: (a)

that less electrical power might be used per bale to process cotton that is fed automatically, (b) that less gas might be used per bale to dry the cotton, (c) that less downtime could result from automatically feeding the cotton, and (d) that plant output per unit of time might be substantially increased by use of the automatic feeder.

The first two effects above could not be proven, since electrical and gas consumption per bale were about the same with either type of feeding system. Gas consumption, which resulted from drying the seed cotton, is influenced by many conditions not apparently related to the feeding systems. It is pointed out, however, that if the existing suction system had been by-passed when using the automatic feeder, an additional 60 horsepower electric motor would have been eliminated. This would have resulted in some additional savings in electrical consumption [30, p. 39].

The third effect mentioned above was confirmed because total gin stand downtime was cut approximately in half with use of the automatic feeder [30, p. 41]. The related effect, that output per unit of time could be greatly improved, was also confirmed. Use of the air suction unloader on modules resulted in a 16.4 percent increase in bales ginned per hour compared to use of the air suction on trailers. Use of the automatic feeder on modules resulted in an additional increase in output per hour of 27.1 percent (Table 6).

Table 6. Output Per Hour in the Alabama Test Gin Using Alternative Handling and Feeding Methods

Handling Method	Feeding Method	Bales/Hour Ginned	% Change in Output/Hour
Trailers	Air Suction	7.3	
Modules	Air Suction	8.5	+16.4
Modules	Automatic Feeders	10.8	+27.1

Source: Willcutt, H. "Effects of Feeding Systems on Gin Output and Energy Consumption," Summary Proceedings of Seed Cotton Handling Seminar, Memphis, Tennessee, March 1976, Table 5.

Effects on Ginning Costs

To assess the net effect of an automatic module feeder on cost per bale of ginning cotton, the addition to fixed cost resulting from investment in a feeder must be compared against any reduction in variable cost due to gains in processing efficiency of a gin plant. This cannot be done with certainty, since this technology is quite new and product development is still proceeding at a rapid pace. Manufacturers are just now beginning to produce a range of feeder sizes and designs, and there are no research results on efficiency gains that apply specifically to any of these commerically produced systems. Therefore, limited results from tests using a prototype feeder are the best available information. Furthermore, costs involved in purchasing and installing automatic feeders can only be approximated.

Operating assumptions and approximations used to demonstrate expected cost effects of an automatic module feeder on alternative sizes of gin plants are discussed below:

(a) Increase in gin output per hour will be pegged at 15 percent and this will apply to all plant sizes. This is considerably less than the 27.1 percent increase observed at the test gin in 1975-76. Actual gains in bales ginned per hour will be influenced by many factors; such as management ability, competence and motivation of laborers, age and size of existing air suction feeders, etc. It is believed that a 15 percent increase in throughput is a reasonable expectation for most commercial gin plants rated at 9 bales/hour or larger.

(b) Of the variable components only gin crew labor costs and repair costs are spread over the additional bales ginned per unit of operating time. (Thus, while amount of gin crew labor and frequency of repairs are assumed to be unchanged, the same levels of input usage will result in 15 percent more throughput with an automatic module feeder.) The other per bale variable costs -- bagging and ties, energy, and miscellaneous variable costs -- are assumed to remain unchanged. This is no doubt a good approximation of what happens with bagging and tie cost; however, as previously noted, energy costs might well be spread over the increased output to a limited extent. Also, if the number of laborers on the yard and unloading crew were in fact reduced as a result of using an automatic feeder, labor cost per bale would be reduced further.

(c) Cost of the automatic module feeder is approximated at $75,000 for a 12 bales/hour gin, $100,000 for a 15 bales/hour gin, $125,000 for an 18 bales/hour gin, $150,000 for a 21 bales/hour gin and $175,000 for a 24 bales/hour gin.

(d) The depreciation period is set at 10 years and the straight line method is used. Resulting additions to annual depreciation costs are shown in Table 7.

(e) Interest rate on investment cost is set at 10 percent annually and amortized over the 10 year period. Resulting additions to total interest costs are given in Table 7.

Based on the foregoing operating assumptions, changes in per bale ginning costs are examined for two types of situations: (a) when adoption of an automatic module feeder results in no change in seasonal ginning volumes and (b) when adoption of a feeder results in increased seasonal ginning volumes.

With Unchanged Ginning Volumes

Revised per bale cost schedules after adoption of an automatic module feeder are given in Appendix D, Tables D-1 to D-3. Resulting

Table 7. Additions to Annual Depreciation and Interest Costs Resulting from Investment in an Automatic Module Feeder, by Plant Size[a].

Cost Component	Plant Size in Bales/Hour				
	12	15	18	21	24
	------dollars------				
Depreciation	7,500	10,000	12,500	15,000	17,500
Interest	4,125	5,500	6,875	8,250	9,625

[a] Based on assumptions and procedures specified in the text.

schedules of changes in total per bale ginning costs resulting from the automatic feeder are summarized in Table 8.

At small ginning volumes, additional fixed costs associated with investing in a feeder more than offset efficiency gains; therefore, average total cost is higher with the feeder. But when ginning volumes become large enough, a "break-even" point is reached where the additional fixed costs are just offset by efficiency gains so that average total cost is the same after investment in the feeder as it was before. At still larger ginning volumes, post-investment average total cost becomes lower than the pre-investment level (Table 8).

Examination of Table 8 shows that approximate "break-even" ginning volumes for alternative plant sizes are the following:

Table 8. Schedules of Expected Changes in Average Total Cost of Ginning Cotton Resulting from Investment in an Automatic Module Feeder, by Plant Sizes.[a]

Seasonal Ginning Volume	Size of Gin Plant				
	12 Bales/Hr.	15 Bales/Hr.	18 Bales/Hr.	21 Bales/Hr.	24 Bales/Hr.
bales	------dollars per bale------				
1,000	+11.60	+15.48	+19.36	+23.26	+27.12
2,000	+ 5.70	+ 7.68	+ 9.63	+11.60	+13.54
3,000	+ 3.62	+ 5.01	+ 6.34	+ 7.67	+ 8.98
4,000	+ 2.44	+ 3.58	+ 4.64	+ 5.66	+ 6.67
5,000	+ 1.61	+ 2.64	+ 3.56	+ 4.42	+ 5.25
6,000	+ .91	+ 1.93	+ 2.77	+ 3.54	+ 4.26
7,000	+ .26	+ 1.31	+ 2.14	+ 2.86	+ 3.52
8,000	- .38	+ .76	+ 1.61	+ 2.31	+ 2.93
9,000	- 1.03	+ .23	+ 1.12	+ 1.83	+ 2.43
10,000	- 1.70	- .28	+ .66	+ 1.39	+ 2.00
11,000	- 2.42	- .82	+ .22	+ .98	+ 1.60
12,000	- 3.16	- 1.35	- .22	+ .59	+ 1.22
13,000		- 1.91	- .66	+ .21	+ .87
14,000		- 2.49	- 1.12	- .18	+ .53
15,000		- 3.10	- 1.58	- .56	+ .20
16,000			- 2.05	- .94	- .14
17,000			- 2.54	- 1.33	- .47
18,000				- 1.74	- .82
19,000				- 2.16	- 1.16
20,000					- 1.51
21,000					- 1.87
22,000					- 2.23

[a] Derived by subtracting average total cost before investment (Tables C-1 to C-3) from average total cost after investment (Tables D-1 to D-3). A positive sign means that, at the ginning volume indicated, average cost is higher after investing in the feeder; while a negative sign indicates that the post-investment average cost is lower. These per bale cost differences are the same for all three production areas; any apparent variations among areas would be only one cent per bale and would be due to rounding error.

12 bales/hour plants- - - - - - - - - 7,500 bales

15 bales/hour plants- - - - - - - - - 9,500 bales

18 bales/hour plants- - - - - - - - -11,500 bales

21 bales/hour plants- - - - - - - - -13,500 bales

24 bales/hour plants- - - - - - - - -15,500 bales

While these may be larger-than-average ginning volumes by current standards, they are all less than seasonal capacities for the various sizes of plants. In fact, these ginning volumes represent 80-85 percent utilization of seasonal capacity for each plant size. An exemplary conclusion from these results is that a 12 bales/hour gin processing 7,500 bales can invest in an automatic module feeder, if it is needed to serve (and keep patronage of) existing customers, without suffering any increase in per bale ginning costs as a result of the investment. At seasonal ginning volumes larger than 7,500 bales, the firm can expect lower average costs as a result of investing in a feeder.

These results on cost changes may be expressed as "net returns on additional capital investment". To do this, average cost changes in Table 8 are multiplied by corresponding ginning volumes to give total cost changes, then expressed as a percentage of the purchase price for an automatic module feeder. An increase in average cost produces a negative net return on investment, while a decrease produces a positive return (Table 9). Since the average cost figures include allowances for interest as well as depreciation

Table 9. Schedules of Net Returns on Additional Capital Investment in an Automatic Module Feeder, by Plant Sizes[a]

Seasonal Ginning Volume	Size of Gin Plant				
	12 Bales/Hr.	15 Bales/Hr.	18 Bales/Hr.	21 Bales/Hr.	24 Bales/Hr.
bales	------dollars per bale------				
1,000	-15.5	-15.5	-15.5	-15.5	-15.5
2,000	-15.2	-15.4	-15.4	-15.5	-15.5
3,000	-14.5	-15.0	-15.2	-15.3	-15.4
4,000	-13.0	-14.3	-14.8	-15.1	-15.2
5,000	-10.7	-13.2	-14.2	-14.7	-15.0
6,000	- 7.3	-11.6	-13.3	-14.2	-14.6
7,000	- 2.4	- 9.2	-12.0	-13.3	-14.1
8,000	+ 4.1	- 6.1	-10.3	-12.3	-13.4
9,000	+12.4	- 2.1	- 8.1	-11.0	-12.5
10,000	+22.7	+ 2.8	- 5.3	- 9.3	-11.4
11,000	+35.5	+ 9.0	- 1.9	- 7.2	-10.1
12,000	+50.6	+16.2	+ 2.1	- 4.7	- 8.4
13,000		+24.8	+ 6.7	- 1.8	- 6.5
14,000		+34.9	+12.5	- 1.7	- 4.2
15,000		+46.5	+19.0	+ 5.6	- 1.7
16,000			+26.2	+10.0	- 1.3
17,000			+34.5	+15.1	+ 4.6
18,000				+20.9	+ 8.4
19,000				+27.4	+12.6
20,000					+17.3
21,000					+22.4
22,000					+28.0

[a] Derived by converting per bale cost changes in Table 8 to total cost changes, then expressing these changes as a percentage of the purchase price of an automatic module feeder. A positive number in Table 8 implies a negative return on investment, while a negative number in Table 8 implies a positive return.

expenses, these are "net" rather than "gross" returns to the additional capital investment. The corresponding gross returns would be larger by about 5 percent.

Results show that, once break-even ginning volumes are reached, net returns on additional capital investment may quickly reach 10-15 percent, with a 25 percent return being quite feasible at ginning volumes that exceed formulated seasonal capacities for each plant size (Table 9).

For further illustration, expected changes in average cost levels are shown for gins operating at 60, 80 and 100 percent utilization of seasonal capacity both before and after adoption of an automatic module feeder (Table 10). At 60 percent utilization, addition of a feeder increases per bale cost by more than a dollar. At 80 percent utilization, the feeder still increases per bale cost but generally less than 25¢/bale; which indicates that the gins are operating at near break-even volumes. Finally, at 100 percent utilization of capacity, the feeder results in a cost decrease of generally more than a dollar per bale.

With Increased Ginning Volumes

If adding an automatic feeder is considered as a means of increasing seasonal ginning volumes, then justification of the investment becomes easier. This is due to the fact that all of the fixed costs of ginning (including the new feeder) may then be spread over the larger number of bales ginned. For example, if

Table 10. Changes in Average Total Cost (ATC) with Adoption of an Automatic Module Feeder, for Gins Operating at 60, 80 and 100 Percent Utilization of Seasonal Capacity Before and After Adoption, by Regions and Plant Sizes

Percent Utilization of Seasonal Capacity	Rated Capacity of Gin Plant	Seasonal Capacity[a]	Seasonal Ginning Volume[b]	San Joaquin Valley			High Plains			Delta		
				ATC Without Feeder	ATC With Feeder	Change in ATC	ATC Without Feeder	ATC With Feeder	Change in ATC	ATC Without Feeder	ATC With Feeder	Change in ATC
	bales/hr.	bales	bales	---dollars per bale---			---dollars per bale---			---dollars per bale---		
60% BEFORE AND AFTER ADOPTION	12	9,241	5,545	28.36	29.58	+1.22	36.64	37.86	+1.22	26.21	27.43	+1.22
	15	11,551	6,931	27.23	28.59	+1.36	35.51	36.87	+1.36	25.08	26.44	+1.36
	18	13,862	8,317	26.30	27.75	+1.45	34.58	36.03	+1.45	24.15	25.60	+1.45
	21	16,172	9,703	25.48	27.00	+1.52	33.76	35.28	+1.52	23.33	24.85	+1.52
	24	18,482	11,089	24.73	26.30	+1.57	33.01	34.58	+1.57	22.58	24.15	+1.57
80% BEFORE AND AFTER ADOPTION	12	9,241	7,393	23.40	23.41	+ .01	31.42	31.43	+ .01	21.43	21.44	+ .01
	15	11,551	9,241	22.42	22.53	+ .11	30.44	30.55	+ .11	20.45	20.56	+ .11
	18	13,862	11,090	21.59	21.77	+ .18	29.61	29.79	+ .18	19.62	19.80	+ .18
	21	16,172	12,938	20.84	21.07	+ .23	28.86	29.09	+ .23	18.87	19.10	+ .23
	24	18,482	14,786	20.14	20.41	+ .27	28.16	28.43	+ .27	18.17	18.44	+ .27
100% BEFORE AND AFTER ADOPTION	12	9,241	9,241	21.71	20.53	-1.18	29.59	28.41	-1.18	19.86	18.68	-1.18
	15	11,551	11,551	20.82	19.72	-1.10	28.70	27.60	-1.10	18.97	17.87	-1.10
	18	13,862	13,862	20.05	19.00	-1.05	27.93	26.88	-1.05	18.20	17.15	-1.05
	21	16,172	16,172	19.34	18.33	-1.01	27.22	26.21	-1.01	17.49	16.48	-1.01
	24	18,482	18,482	18.67	17.69	- .98	26.55	25.57	- .98	16.82	15.84	- .98

[a] Computed by method developed by the Economic Research Service of the U. S. Department of Agriculture (see [17, pp. 14-17]).

[b] Equal to seasonal capacity multiplied by appropriate utilization factor (either 0.6, 0.8 or 1.0).

investing in a feeder would enable an increase in seasonal ginning volume of 1,000 bales, then average total cost would be lowered even if pre-investment volume was only 1,000 bales. (To see this, compare average total costs at 1,000 bales in Tables C-1 to C-3 with respective average total costs at 2,000 bales in Tables D-1 to D-3.) It should be noted, however, that 2,000 bales may still not be an economic ginning volume. If a gin firm has no hopes of attaining a typical seasonal ginning volume larger than this, the best way to minimize monetary losses over the long-run may be to cease operation.

To further illustrate cost effects with volume increases, expected changes in average cost levels are shown for gins operating at 60, 80 and 100 percent utilization before adoption of an automatic feeder but at 70, 90 and 110 percent, respectively, after adoption (Table 11). The 10 percent increase in capacity utilization causes per bale cost reductions to be large for gins operating at all three levels illustrated. Furthermore, it causes cost decreases to be larger when initial utilization was lower (which is opposite to the result in Table 10, with ginning volumes held constant). This is because the smaller the ginning volume, the less that fixed costs are initially spread; therefore, the greater are average fixed cost reductions which result from additional bales ginned. Any of the cost reductions shown in Table 11 would result in handsome net returns on additional capital investment.

Table 11. Changes in Average Total Cost (ATC) with Adoption of an Automatic Module Feeder, for Gins Operating at 60, 80 and 100 Percent Utilization of Seasonal Capacity Before Adoption but 10 Percent Greater Utilization After Adoption, by Regions and Plant Sizes

Percent Utilization of Seasonal Capacity	Rated Capacity of Gin Plant	Seasonal Capacity[a]	Ginning Volume Before Adoption[b]	Ginning Volume After Adoption[c]	San Joaquin Valley			High Plains			Delta		
					ATC Without Feeder	ATC With Feeder	Change in ATC	ATC Without Feeder	ATC With Feeder	Change in ATC	ATC Without Feeder	ATC With Feeder	Change in ATC
	bales/hr.	bales	bales	bales	---dollars per bale---			---dollars per bale---			---dollars per bale---		
60% BEFORE ADOPTION AND 70% AFTER ADOPTION	12	9,241	5,545	6,469	28.36	26.01	-2.35	36.64	34.15	-2.49	26.21	23.97	-2.24
	15	11,551	6,931	8,086	27.23	25.08	-2.15	35.51	33.22	-2.29	25.08	23.04	-2.04
	18	13,862	8,317	9,703	26.30	24.29	-2.01	34.58	32.43	-2.15	24.15	22.25	-1.90
	21	16,172	9,703	11,320	25.48	23.57	-1.91	33.76	31.71	-2.05	23.33	21.53	-1.80
	24	18,482	11,089	12,938	24.73	22.89	-1.84	33.01	31.03	-1.98	22.58	20.85	-1.73
80% BEFORE ADOPTION AND 90% AFTER ADOPTION	12	9,241	7,393	8,317	23.40	21.61	-1.79	31.42	29.55	-1.87	21.43	19.71	-1.72
	15	11,551	9,241	10,396	22.42	20.77	-1.65	30.44	28.71	-1.73	20.45	18.87	-1.58
	18	13,862	11,090	12,476	21.59	20.03	-1.56	29.61	27.97	-1.64	19.62	18.13	-1.49
	21	16,172	12,938	14,555	20.84	19.35	-1.49	28.86	27.29	-1.57	18.87	17.45	-1.42
	24	18,482	14,786	16,634	20.14	18.70	-1.44	28.16	26.64	-1.52	18.17	16.80	-1.37
100% BEFORE ADOPTION AND 110% AFTER ADOPTION	12	9,241	9,241	10,165	21.71	20.11	-1.60	29.59	27.93	-1.66	19.86	18.30	-1.56
	15	11,551	11,551	12,707	20.82	19.33	-1.49	28.70	27.15	-1.55	18.97	17.52	-1.45
	18	13,862	13,862	15,248	20.05	18.63	-1.42	27.93	26.45	-1.48	18.20	16.82	-1.38
	21	16,172	16,172	17,789	19.34	17.97	-1.37	27.22	25.79	-1.43	17.49	16.16	-1.33
	24	18,482	18,482	20,331	18.67	17.34	-1.33	26.55	25.16	-1.39	16.82	15.53	-1.29

[a] Computed by method developed by the Economic Research Service of the U. S. Department of Agriculture (see [17, pp. 14-17]).

[b] Equal to seasonal capacity multiplied by appropriate utilization factor before adoption of feeder (either 0.6, 0.8 or 1.0).

[c] Equal to seasonal capacity multiplied by appropriate utilization factor after adoption of feeder (either 0.7, 0.9 or 1.1).

Conclusion

In summary, if a gin plant is currently achieving ginning volumes of 80-85 percent of its formulated seasonal capacity, then an automatic module feeder is justifiable from a cost-efficiency standpoint. If in addition the feeder contributes to the firm's overall effort toward increasing ginning volumes, then rate of return on the investment may become quite large.

Since the module system for handling seed cotton improves storability, technical feasibility of a lengthened ginning season is enhanced. To the extent that this increases total bales ginned by any given plant, cost per bale will decline. However, as previously mentioned, a significant time lag between harvesting and ginning will certainly be resisted by farmers unless the marketing system can achieve adequate price stability and accomodate their cash flow requirements over a period of several months. Flexibility and adaptability of the cotton marketing system will be important in determining how enthusiastic farmers will be about using module systems as an alternative to demanding a ginning industry structured with enough excess capacity to enable processing a cotton crop almost as fast as it can be harvested.

APPENDIX A

Analytical Framework and Statistical Estimation of Average Ginning Costs

Analytical Framework and Statistical Estimation of Average Ginning Costs

The material in this appendix may be too technical for those who are not professional economists. It may be omitted at the reader's choice, since results are presented throughout the remainder of the report in ways that allow direct application.

Analytical Framework

A completely general expression of functional relationships used for average fixed costs (AFC) and average variable costs (AVC) is:

$$(1) \quad AFC_i = f(Y, S, D_1, D_2, e_i), \; i = 0, 1, \ldots, 7$$

$$(2) \quad AVC_j = g(Y, S, D_1, D_2, e_j), \; j = 0, 1, \ldots, 5$$

where: AFC and AVC are both expressed as dollars per bale; $i = 0$ denotes the sum of all AFC components, while $i = 1, \ldots, 7$ denotes each of the AFC components in Table 2; $j = 0$ denotes the sum of all AVC components, while $j = 1, \ldots, 5$ denotes each of the AVC components in Table 2; Y is percent utilization of seasonal capacity; S is size of gin plant, expressed as output capacity in bales per hour; D_1 is a "shift" or "dummy" variable for gins in the San Joaquin Valley; D_2 is a shift variable for gins in the Texas High Plains; and e denotes random error.

The specific functional form used, linear in all parameters, is the following:[1]

$$(3) \quad AFC_i = \alpha_1 \, 1/Y + \alpha_2 \, 1/S \cdot Y + \alpha_3 \, D_1/Y + \alpha_4 \, D_2/Y + e_i$$

$$= (\alpha_1 + \alpha_2 \, 1/S + \alpha_3 \, D_1 + \alpha_4 \, D_2)/Y + e_i \, , \; i = 0, 1, \ldots, 7$$

$$(4) \quad AVC_j = \beta_0 + \beta_1 Y + \beta_2 Y^2 + \beta_3 S + \beta_4 D_1 + \beta_5 D_2 + e_j \, , \; j = 0, 1, \ldots, 5$$

The functional form of AFC_i in equation (3) will, if α_1 is positive, result in a rectangular hyperbola that is asymptotic to both axes when AFC_i is plotted against Y. This implies a <u>total</u> fixed cost that is invariant over alternative levels of output -- the <u>a priori</u> expectation for fixed cost behavior.

In equation (4), the presence of both first and second powers of Y allows the expected convex shape when AVC_i is plotted against Y. If average variable cost is to have the expected U-shape, then β_1

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[1] The shift variables used in this analysis are conventional zero-one dummy variables except they are both set equal to negative one whenever a gin is located in the Delta, as illustrated in the following table:

	Value of Shift Variables for Gin in:		
Shift Variable	San Joaquin Valley	High Plains	Delta
D1	1	0	-1
D2	0	1	-1

With this specification, knowing the two coefficients for D_1 and D_2 is sufficient information to compute the shift coefficient associated with the Mississippi Delta. This results because the sum of all three coefficients must be zero; therefore, the coefficient for the Delta is equal to the negative sum of the other two regional coefficients.

must be a negative number and β_2 a positive one.[2]

Since $AFC_0 = \sum_{i=1}^{7} AFC_i$ and $AVC_0 = \sum_{i=1}^{5} AVC_j$ for each gin, it follows that the summation of expected values for coefficients of each cost component will equal the expected value for coefficients of aggregated costs; thus,

$$(5) \quad \hat{\alpha}_{0m} = \sum_{i=1}^{7} \hat{\alpha}_{im} \ , \ m = 1, \ldots, 4$$

$$(6) \quad \hat{\beta}_{0n} = \sum_{j=1}^{5} \hat{\beta}_{jn} \ , \ n = 1, \ldots, 5$$

where: $\hat{\alpha}_{0m}$ and $\hat{\beta}_{0n}$ denote expected values for the m^{th} and n^{th} coefficients for the aggregated average fixed and variable costs, respectively; $\hat{\alpha}_{im}$ and $\hat{\beta}_{jn}$ denote corresponding expected values for each component cost making up the aggregated fixed and variable costs.

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[2] These conclusions about shapes of cost curves are typically drawn with respect to volume of output (eg., total bales ginned) rather than percent utilization of plant capacity (Y). However, they apply here too, because Y is a monotonically increasing function of ginning volume; eg.,

$$Y = \frac{V}{(906 \times 0.85)S} \times 100 = \frac{100\ V}{770.1\ S} = \frac{V}{7.701S}$$

where Y is percent utilization of seasonal capacity, V is actual ginning volume, and S is rated hourly capacity of the gin plant (see Procedure section, page 5). For any given plant size, Y is equal to V divided by a positive constant.

Using the formula for Y above and letting $\alpha'_m = 7.701\ \alpha_m$ $(m = 1, \ldots, 4)$, equation (3) may be rewritten as follows

$$AFC_i = \alpha'_1\ S/V + \alpha'_2\ 1/V + \alpha'_3\ D_1S/V + \alpha'_4\ D_2S/V + e_i$$

$$= (\alpha'_1\ S + \alpha'_2 + \alpha'_3\ D_1S + \alpha'_4\ D_2S)/V + e_i$$

This structural expression reveals a linear term in S, which aids in interpreting estimation results for AFC_i.

This characteristic of additive coefficients is critical to estimation of these cost functions. There is a well recognized tendency for component costs to exhibit a large variance, due simply to arbitrary accounting classification or allocation systems [9]. Aggregating these component costs into a more inclusive category is expected to reduce the variance and facilitate statistical estimation of parameters. Therefore, the approach in this study was to use the two inclusive cost categories of average fixed cost and average variable cost in order to test significance and determine the overall effect of exogenous variables included in cost equation (3) and (4). If significance of a coefficient for a variable is established in the aggregated cost equation, then the variable is maintained in all component cost equations. Only then will the coefficients be additive -- and the system will lend itself to simulation of differential effects on aggregated cost behavior.

Estimation Results

Results of linear regression estimation of average ginning costs are summarized in Table A-1. Restricted least squares estimation was used to constrain the constant terms in all average fixed cost equations to be zero, in compliance with the model specified by equation 3. Ordinary (unrestricted) least squares techniques were used to estimate all average variable cost equations.

With regard to the aggregated AFC and AVC results, all estimated coefficients have expected or reasonable signs and all are significant at no less than the 95 percent confidence level (Table A-1). The t-values are appropriate for testing significance of all coefficients except those associated with shift variables D_1 and D_2. The contribution of shift variables toward explaining average costs must be assessed together as a unit. Appropriate F-tests confirmed their significance in both aggregated cost equations at the 95 percent confidence level.

With regard to aggregated average cost behavior, regression results in Table A-1 lead to the following general conclusions:

(1) The strong positive relationship of average fixed cost (AFC) with the inverse of percent utilization of seasonal capacity (1/Y) is apparent, both in the magnitude and t-value of the coefficient.

(2) For a given capacity utilization level (i.e., a given Y), AFC decreases as plant size S increases. It should be noted, however, that increasing S without changing Y would require increasing V, the ginning volume. For a given V, it is to be expected that AFC will increase as S increases (see footnote 2).

(3) For a given Y, AFC is expected to be about \$4.83/Y lower in the San Joaquin Valley, \$54.83/Y higher in the Texas High Plains, and \$50.00/Y lower in the Delta (\$50.00 = \$54.83 - \$4.83; re. footnote 1).

(4) The anticipated convexity of average variable cost (AVC) with respect to Y is strongly indicated by the significance levels of the negative coefficient for Y and the positive coefficient for Y^2. AVC tends to decline to a minimum at about 91 percent utilization of seasonal capacity and increase thereafter.[3]

(5) AVC tends to decrease, ceteris paribus, about 18¢ per bale as plant size increases.

(6) AVC is expected to be about $1.96 per bale lower in the San Joaquin Valley, $5.32 per bale higher in the Texas High Plains, and $3.36 per bale lower in the Delta ($3.36 = $5.32 - $1.96; re. footnote 1).

Conclusions about average cost components include the following (Table A-1):

(1) For each exogenous variable, the sum of coefficients in component equations is equal to the corresponding coefficient in the aggregated equation.[4] Therefore, exogenous effects have been "allocated" among the cost components.

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[3] The partial derivitive of the AVC function with respect to Y is

$$\frac{d\ AVC}{d\ Y} = -0.51 + 0.0056Y$$

Setting this derivitive equal to zero and solving for the Y = Y* where AVC is minimized results in Y* = 91.07.

[4] Carrying the estimated coefficients for the component equations to three decimal places in Table 3 is done solely to facilitate rounding off. It does not imply greater accuracy for these coefficients.

(2) Major contributors to overall effects on AFC and AVC may be observed. For example, management, interest and depreciation costs account for 79 percent of the aggregate coefficient for 1/Y. Also, labor and repair costs account for 67 percent of the aggregate coefficient for Y. Furthermore, repair costs are a major cause for higher AVC levels in the Texas High Plains.

(3) Coefficients in the component equations occasionally exhibit signs opposite those in the aggregated equation - which is not surprising. However, with regard to major capacity utilization variables (eg., 1/Y for fixed costs, Y and Y^2 for variable costs), the signs always agree.

(4) None of the component equations have a combination of coefficients that result in untenable average cost levels over existing ranges of capacity utilization or plant size. For instance, average cost magnitudes do not become negative in any region, even at the upper extremes of sample data on plant sizes and capacity utilizations. The only irregularities detected were in the estimated functions for repair costs and miscellaneous variable costs. When the average cost schedules for these two components are converted to total cost schedules, slight declines in total repair costs and total miscellaneous variable costs occur between about 40 percent and 70 percent utilization of a plant's formulated seasonal capacity.[1] The probable cause of such

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[1] Appreciation is expressed to Don Ethridge and Dale Shaw for pointing out this problem.

results is the aforementioned arbitrariness of accounting systems for allocating costs. But data errors associated with component costs are apparently small and will tend to balance out when data is combined for estimation of aggregated AFC and AVC functions.

Table A-1. Regression Estimation Results on Average Ginning Costs, 1974-75 Sample Data[a]

FIXED COST RESULTS

	1/Y	1/(S·Y)	D_1/Y	D_2/Y	R^2
AVERAGE FIXED COST (AFC)	453.34 (7.06)	2115.77 (2.43)	-4.83 (-0.08)	54.83 (1.75)	0.96[b]
Management	37.970 (2.75)	998.560 (5.32)	5.713 (0.47)	9.580 (1.42)	0.93[b]
Office Labor	34.670 (2.67)	455.167 (2.58)	19.492 (1.70)	1.471 (0.23)	0.84[b]
Property Insurance	25.829 (3.85)	227.330 (2.50)	6.929 (1.17)	-2.753 (-0.84)	0.88[b]
Property Taxes	22.981 (4.60)	78.452 (1.16)	20.834 (4.71)	-9.388 (-3.85)	0.79[b]
Interest	119.137 (7.17)	92.481 (0.41)	-21.608 (-1.47)	16.601 (2.04)	0.94[b]
Depreciation	199.246 (0.86)	11.236 (0.03)	-38.254 (-1.49)	29.216 (2.06)	0.93[b]
Miscellaneous	13.507 (1.50)	252.544 (2.06)	2.064 (0.26)	10.103 (2.30)	0.78[b]

VARIABLE COST RESULTS

	Constant	Y	Y^2	S	D_1	D_2	R^2
AVERAGE VARIABLE COST (AVC)	42.59 (15.79)	-0.51 (-7.43)	0.0028 (5.68)	-0.18 (-2.03)	-1.96 (-1.77)	5.32 (5.92)	0.76
Labor	14.286 (10.77)	-0.149 (-4.43)	0.00073 (3.02)	-0.110 (-2.51)	-0.576 (-1.06)	1.693 (3.83)	0.61
Bagging & Ties	5.507 (13.07)	-0.012 (-1.02)	0.00007 (0.91)	-0.039 (-2.81)	-0.009 (-0.05)	0.179 (1.27)	0.17
Energy	5.310 (8.42)	-0.068 (-4.25)	0.00039 (3.33)	0.005 (0.22)	-0.257 (-0.99)	0.278 (1.32)	0.37
Repairs	11.820 (5.65)	-0.193 (-3.64)	0.00115 (3.01)	-0.018 (-0.27)	-1.387 (-1.62)	3.078 (4.42)	0.50
Miscellaneous	5.667 (7.56)	-0.088 (-4.60)	0.00046 (3.34)	-0.018 (-0.73)	0.269 (0.88)	0.092 (0.37)	0.37

[a] Exogenous variables are as defined in the text. Numbers in parentheses below coefficients are t-values. Error degrees of freedom are 84 for the fixed cost equations and 82 for the variable cost equations.

[b] Due to restricting the constant term to be zero, the R^2 values for fixed cost results are not very useful for interpreting "goodness to fit". However, with unrestricted regression the R^2 values were high (e.g., 0.88 for the aggregated AFC equation), and the restriction caused the error sums of squares to increase an average of about 10 percent. Therefore, the restricted regression equations still fit the data quite well.

APPENDIX B

Average Cost Schedules for Components of Fixed and Variable Costs of Ginning

Average Cost Schedules for Components of Fixed and Variable Costs of Ginning

This appendix contains schedules of per bale cost estimates for each component of fixed and variable costs given in Table 2 of the report. The component fixed costs analyzed are: management, office labor, property insurance, property taxes, interest, depreciation, and other miscellaneous fixed costs. The component variable costs analyzed are: ginning labor, bagging and ties, energy, repair labor and materials, and other miscellaneous variable costs.

There are three tables of fixed costs and three tables of variable costs, respectively. Tables B-1 and B-4 are for the California San Joaquin Valley; Tables B-2 and B-5 are for the Texas High Plains; and Tables B-3 and B-6 are for the Mississippi Delta. Each table has five parts--one for each of the gin plant sizes considered (12, 15, 18, 21 and 24 bales/hour).

Table B-1. San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	11.73	8.51	4.78	4.65	9.73	14.96	3.38	57.74
2,000	5.86	4.26	2.39	2.33	4.86	7.48	1.69	28.87
3,000	3.91	2.84	1.59	1.55	3.24	4.99	1.13	19.25
4,000	2.93	2.13	1.19	1.16	2.43	3.74	.85	14.44
5,000	2.35	1.70	.96	.93	1.95	2.99	.68	11.55
6,000	1.95	1.42	.80	.78	1.62	2.49	.56	9.62
7,000	1.68	1.22	.68	.66	1.39	2.14	.48	8.25
8,000	1.47	1.06	.60	.58	1.22	1.87	.42	7.22
9,000	1.30	.95	.53	.52	1.08	1.66	.38	6.42
10,000	1.17	.85	.48	.47	.97	1.50	.34	5.77
11,000	1.07	.77	.43	.42	.88	1.36	.31	5.25
12,000	.98	.71	.40	.39	.81	1.25	.28	4.81

Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	12.74	9.76	5.53	5.67	11.98	18.68	3.74	68.10
2,000	6.37	4.88	2.77	2.83	5.99	9.34	1.87	34.05
3,000	4.25	3.25	1.84	1.89	3.99	6.23	1.25	22.70
4,000	3.18	2.44	1.38	1.42	2.99	4.67	.94	17.03
5,000	2.55	1.95	1.11	1.13	2.40	3.74	.75	13.62
6,000	2.12	1.63	.92	.94	2.00	3.11	.62	11.35
7,000	1.82	1.39	.79	.81	1.71	2.67	.53	9.73
8,000	1.59	1.22	.69	.71	1.50	2.34	.47	8.51
9,000	1.42	1.08	.61	.63	1.33	2.08	.42	7.57
10,000	1.27	.98	.55	.57	1.20	1.87	.37	6.81
11,000	1.16	.89	.50	.52	1.09	1.70	.34	6.19
12,000	1.06	.81	.46	.47	1.00	1.56	.31	5.68

(continued on next page)

Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	.98	.75	.43	.44	.92	1.44	.29	5.24
14,000	.91	.70	.40	.40	.86	1.33	.27	4.86
15,000	.85	.65	.37	.38	.80	1.25	.25	4.54

Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	13.75	11.01	6.29	6.68	14.23	22.40	4.10	78.47
2,000	6.87	5.51	3.15	3.34	7.12	11.20	2.05	39.23
3,000	4.58	3.67	2.10	2.23	4.74	7.47	1.37	26.16
4,000	3.44	2.75	1.57	1.67	3.56	5.60	1.03	19.62
5,000	2.75	2.20	1.26	1.34	2.85	4.48	.82	15.69
6,000	2.29	1.84	1.05	1.11	2.37	3.73	.68	13.08
7,000	1.96	1.57	.90	.95	2.03	3.20	.59	11.21
8,000	1.72	1.38	.79	.83	1.78	2.80	.51	9.81
9,000	1.53	1.22	.70	.74	1.58	2.49	.46	8.72
10,000	1.37	1.10	.63	.67	1.42	2.24	.41	7.85
11,000	1.25	1.00	.57	.61	1.29	2.04	.37	7.13
12,000	1.15	.92	.52	.56	1.19	1.87	.34	6.54

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Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.06	.85	.48	.51	1.09	1.72	.32	6.04
14,000	.98	.79	.45	.48	1.02	1.60	.29	5.60
15,000	.92	.73	.42	.45	.95	1.49	.27	5.23
16,000	.86	.69	.39	.42	.89	1.40	.26	4.90
17,000	.81	.65	.37	.39	.84	1.32	.24	4.62

Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	14.75	12.26	7.05	7.69	16.48	26.12	4.46	88.83
2,000	7.38	6.13	3.52	3.84	8.24	13.06	2.23	44.41
3,000	4.92	4.09	2.35	2.56	5.49	8.71	1.49	29.61
4,000	3.69	3,07	1.76	1.92	4.12	6.53	1.12	22.21
5,000	2.95	2.45	1.41	1.54	3.30	5.22	.89	17.77
6,000	2.46	2.04	1.17	1.28	2.75	4.35	.74	14.80
7,000	2.11	1.75	1.01	1.10	2.35	3.73	.64	12.69
8,000	1.84	1.53	.88	.96	2.06	3.27	.56	11.10
9,000	1.64	1.36	.78	.85	1.83	2.90	.50	9.87
10,000	1.48	1.23	.70	.77	1.65	2.61	.45	8.88
11,000	1.34	1.11	.64	.70	1.50	2.37	.41	8.08
12,000	1.23	1.02	.59	.64	1.37	2.18	.37	7.40

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Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.13	.94	.54	.59	1.27	2.01	.34	6.83
14,000	1.05	.88	.50	.55	1.18	1.87	.32	6.34
15,000	.98	.82	.47	.51	1.10	1.74	.30	5.92
16,000	.92	.77	.44	.48	1.03	1.63	.28	5.55
17,000	.87	.72	.41	.45	.97	1.54	.26	5.23
18,000	.82	.68	.39	.43	.92	1.45	.25	4.93
19,000	.78	.65	.37	.40	.87	1.37	.23	4.68

Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	15.76	13.52	7.81	8.70	18.74	29.84	4.82	99.19
2,000	7.88	6.76	3.90	4.35	9.37	14.92	2.41	49.59
3,000	5.25	4.51	2.60	2.90	6.25	9.95	1.61	33.06
4,000	3.94	3.38	1.95	2.18	4.68	7.46	1.21	24.80
5,000	3.15	2.70	1.56	1.74	3.75	5.97	.96	19.84
6,000	2.63	2.25	1.30	1.45	3.12	4.97	.80	16.53
7,000	2.25	1.93	1.12	1.24	2.68	4.26	.69	14.17
8,000	1.97	1.69	.98	1.09	2.34	3.73	.60	12.40
9,000	1.75	1.50	.87	.97	2.08	3.32	.54	11.02
10,000	1.58	1.35	.78	.87	1.87	2.98	.48	9.92
11,000	1.43	1.23	.71	.79	1.70	2.71	.44	9.02
12,000	1.31	1.13	.65	.73	1.56	2.49	.40	8.27

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Table B-1 (continued). San Joaquin Valley: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.21	1.04	.60	.67	1.44	2.30	.37	7.63
14,000	1.13	.97	.56	.62	1.34	2.13	.34	7.08
15,000	1.05	.90	.52	.58	1.25	1.99	.32	6.61
16,000	.99	.84	.49	.54	1.17	1.87	.30	6.20
17,000	.93	.80	.46	.51	1.10	1.76	.28	5.83
18,000	.88	.75	.43	.48	1.04	1.66	.27	5.51
19,000	.83	.71	.41	.46	.99	1.57	.25	5.22
20,000	.79	.68	.39	.44	.94	1.49	.24	4.96
21,000	.75	.64	.37	.41	.89	1.42	.23	4.72
22,000	.72	.61	.35	.40	.85	1.36	.22	4.51

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table B-2. High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	12.08	6.85	3.88	1.86	13.26	21.20	4.13	63.25
2,000	6.04	3.42	1.94	.93	6.63	10.60	2.06	31.63
3,000	4.03	2.28	1.29	.62	4.42	7.07	1.38	21.08
4,000	3.02	1.71	.97	.47	3.31	5.30	1.03	15.81
5,000	2.42	1.37	.78	.37	2.65	4.24	.83	12.65
6,000	2.01	1.14	.65	.31	2.21	3.53	.69	10.54
7,000	1.73	.98	.55	.27	1.89	3.03	.59	9.04
8,000	1.51	.86	.49	.23	1.66	2.65	.52	7.91
9,000	1.34	.76	.43	.21	1.47	2.36	.46	7.03
10,000	1.21	.68	.39	.19	1.33	2.12	.41	6.33
11,000	1.10	.62	.35	.17	1.21	1.93	.38	5.75
12,000	1.01	.57	.32	.16	1.10	1.77	.34	5.27

Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	13.18	7.68	4.42	2.17	16.39	26.48	4.67	74.99
2,000	6.59	3.84	2.21	1.09	8.20	13.24	2.34	37.50
3,000	4.39	2.56	1.47	.72	5.46	8.83	1.56	25.00
4,000	3.30	1.92	1.10	.54	4.10	6.62	1.17	18.75
5,000	2.64	1.54	.88	.43	3.28	5.30	.93	15.00
6,000	2.20	1.28	.74	.36	2.73	4.41	.78	12.50
7,000	1.88	1.10	.63	.31	2.34	3.78	.67	10.71
8,000	1.65	.96	.55	.27	2.05	3.31	.58	9.37
9,000	1.46	.85	.49	.24	1.82	2.94	.52	8.33
10,000	1.32	.77	.44	.22	1.64	2.65	.47	7.50
11,000	1.20	.70	.40	.20	1.49	2.41	.42	6.82
12,000	1.10	.64	.37	.18	1.37	2.21	.39	6.25

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Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.01	.59	.34	.17	1.26	2.04	.36	5.77
14,000	.94	.55	.32	.16	1.17	1.89	.33	5.36
15,000	.88	.51	.29	.14	1.09	1.77	.31	5.00

Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	14.28	8.52	4.95	2.49	19.53	31.76	5.22	86.74
2,000	7.14	4.26	2.47	1.24	9.76	15.88	2.61	43.37
3,000	4.76	2.84	1.65	.83	6.51	10.59	1.74	28.91
4,000	3.57	2.13	1.24	.62	4.88	7.94	1.30	21.68
5,000	2.86	1.70	.99	.50	3.91	6.35	1.04	17.35
6,000	2.38	1.42	.82	.41	3.25	5.29	.87	14.46
7,000	2.04	1.22	.71	.36	2.79	4.54	.75	12.39
8,000	1.79	1.06	.62	.31	2.44	3.97	.65	10.84
9,000	1.59	.95	.55	.28	2.17	3.53	.58	9.64
10,000	1.43	.85	.49	.25	1.95	3.18	.52	8.67
11,000	1.30	.77	.45	.23	1.78	2.89	.47	7.89
12,000	1.19	.71	.41	.21	1.63	2.65	.43	7.23

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Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.10	.66	.38	.19	1.50	2.44	.40	6.67
14,000	1.02	.61	.35	.18	1.39	2.27	.37	6.20
15,000	.95	.57	.33	.17	1.30	2.12	.35	5.78
16,000	.89	.53	.31	.16	1.22	1.98	.33	5.42
17,000	.84	.50	.29	.15	1.15	1.87	.31	5.10

Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	15.38	9.35	5.48	2.80	22.66	37.03	5.76	98.48
2,000	7.69	4.67	2.74	1.40	11.33	18.52	2.88	49.24
3,000	5.13	3.12	1.83	.93	7.55	12.34	1.92	32.83
4,000	3.84	2.34	1.37	.70	5.67	9.26	1.44	24.62
5,000	3.08	1.87	1.10	.56	4.53	7.41	1.15	19.70
6,000	2.56	1.56	.91	.47	3.78	6.17	.96	16.41
7,000	2.20	1.34	.78	.40	3.24	5.29	.82	14.07
8,000	1.92	1.17	.69	.35	2.83	4.63	.72	12.31
9,000	1.71	1.04	.61	.31	2.52	4.11	.64	10.94
10,000	1.54	.93	.55	.28	2.27	3.70	.58	9.85
11,000	1.40	.85	.50	.25	2.06	3.37	.52	8.95
12,000	1.28	.78	.46	.23	1.89	3.09	.48	8.21

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Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.18	.72	.42	.22	1.74	2.85	.44	7.58
14,000	1.10	.67	.39	.20	1.62	2.65	.41	7.03
15,000	1.03	.62	.37	.19	1.51	2.47	.38	6.57
16,000	.96	.58	.34	.18	1.42	2.31	.36	6.15
17,000	.90	.55	.32	.16	1.33	2.18	.34	5.79
18,000	.85	.52	.30	.16	1.26	2.06	.32	5.47
19,000	.81	.49	.29	.15	1.19	1.95	.30	5.18

Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	16.48	10.18	6.02	3.12	25.80	42.31	6.31	110.22
2,000	8.24	5.09	3.01	1.56	12.90	21.16	3.15	55.11
3,000	5.49	3.39	2.01	1.04	8.60	14.10	2.10	36.74
4,000	4.12	2.55	1.50	.78	6.45	10.58	1.58	27.55
5,000	3.30	2.04	1.20	.62	5.16	8.46	1.26	22.04
6,000	2.75	1.70	1.00	.52	4.30	7.05	1.05	18.37
7,000	2.35	1.45	.86	.45	3.69	6.04	.90	15.75
8,000	2.06	1.27	.75	.39	3.22	5.29	.79	13.78
9,000	1.83	1.13	.67	.35	2.87	4.70	.70	12.25
10,000	1.65	1.02	.60	.31	2.58	4.23	.63	11.02
11,000	1.50	.93	.55	.28	2.35	3.85	.57	10.02
12,000	1.37	.85	.50	.26	2.15	3.53	.53	9.18

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Table B-2 (continued). High Plains: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	1.27	.78	.46	.24	1.98	3.25	.49	8.48
14,000	1.18	.73	.43	.22	1.84	3.02	.45	7.87
15,000	1.10	.68	.40	.21	1.72	2.82	.42	7.35
16,000	1.03	.64	.38	.19	1.61	2.64	.39	6.89
17,000	.97	.60	.35	.18	1.52	2.49	.37	6.48
18,000	.92	.57	.33	.17	1.43	2.35	.35	6.12
19,000	.87	.54	.32	.16	1.36	2.23	.33	5.80
20,000	.82	.51	.30	.16	1.29	2.12	.32	5.51
21,000	.78	.48	.29	.15	1.23	2.01	.30	5.25
22,000	.75	.46	.27	.14	1.17	1.92	.29	5.01

[a]All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table B-3. Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	9.79	4.77	3.75	1.67	12.18	19.33	2.07	53.57
2,000	4.89	2.39	1.88	.84	6.09	9.67	1.03	26.78
3,000	3.26	1.59	1.25	.56	4.06	6.44	.69	17.86
4,000	2.45	1.19	.94	.42	3.05	4.83	.52	13.39
5,000	1.96	.95	.75	.33	2.44	3.87	.41	10.71
6,000	1.63	.80	.63	.28	2.03	3.22	.34	8.93
7,000	1.40	.68	.54	.24	1.74	2.76	.30	7.65
8,000	1.22	.60	.47	.21	1.52	2.42	.26	6.70
9,000	1.09	.53	.42	.19	1.35	2.15	.23	5.95
10,000	.98	.48	.38	.17	1.22	1.93	.21	5.36
11,000	.89	.43	.34	.15	1.11	1.76	.19	4.87
12,000	.82	.40	.31	.14	1.02	1.61	.17	4.46

Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	10.31	5.09	4.25	1.94	15.05	24.15	2.10	62.89
2,000	5.15	2.54	2.13	.97	7.53	12.07	1.05	31.44
3,000	3.44	1.70	1.42	.65	5.02	8.05	.70	20.96
4,000	2.58	1.27	1.06	.48	3.76	6.04	.52	15.72
5,000	2.06	1.02	.85	.39	3.01	4.83	.42	12.58
6,000	1.72	.85	.71	.32	2.51	4.02	.35	10.48
7,000	1.47	.73	.61	.28	2.15	3.45	.30	8.98
8,000	1.29	.64	.53	.24	1.88	3.02	.26	7.86
9,000	1.15	.57	.47	.22	1.67	2.68	.23	6.99
10,000	1.03	.51	.43	.19	1.51	2.41	.21	6.29
11,000	.94	.46	.39	.18	1.37	2.20	.19	5.72
12,000	.86	.42	.35	.16	1.25	2.01	.17	5.24

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Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	.79	.39	.33	.15	1.16	1.86	.16	4.84
14,000	.74	.36	.30	.14	1.08	1.72	.15	4.49
15,000	.69	.34	.28	.13	1.00	1.61	.14	4.19

Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	10.83	5.41	4.75	2.20	17.92	28.96	2.13	72.20
2,000	5.42	2.70	2.38	1.10	8.96	14.48	1.07	36.10
3,000	3.61	1.80	1.58	.73	5.97	9.65	.71	24.07
4,000	2.71	1.35	1.19	.55	4.48	7.24	.52	18.05
5,000	2.17	1.08	.95	.44	3.58	5.79	.43	14.44
6,000	1.81	.90	.79	.37	2.99	4.83	.36	12.03
7,000	1.55	.77	.68	.31	2.56	4.14	.30	10.31
8,000	1.35	.68	.59	.28	2.24	3.62	.27	9.03
9,000	1.20	.60	.53	.24	1.99	3.22	.24	8.02
10,000	1.08	.54	.48	.22	1.79	2.90	.21	7.22
11,000	.98	.49	.43	.20	1.63	2.63	.19	6.56
12,000	.90	.45	.40	.18	1.49	2.41	.18	6.02

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Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	.83	.42	.37	.17	1.38	2.23	.16	5.55
14,000	.77	.39	.34	.16	1.28	2.07	.15	5.16
15,000	.72	.36	.32	.15	1.19	1.93	.14	4.81
16,000	.68	.34	.30	.14	1.12	1.81	.13	4.51
17,000	.64	.32	.28	.13	1.05	1.70	.13	4.25

Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	11.36	5.72	5.25	2.47	20.79	33.77	2.16	81.52
2,000	5.68	2.86	2.63	1.23	10.39	16.89	1.08	40.76
3,000	3.79	1.91	1.75	.82	6.93	11.26	.72	27.17
4,000	2.84	1.43	1.31	.62	5.20	8.44	.54	20.38
5,000	2.27	1.14	1.05	.49	4.16	6.75	.43	16.30
6,000	1.89	.95	.88	.41	3.46	5.63	.36	13.59
7,000	1.62	.82	.75	.35	2.97	4.82	.31	11.65
8,000	1.42	.72	.66	.31	2.60	4.22	.27	10.19
9,000	1.26	.64	.58	.27	2.31	3.75	.24	9.06
10,000	1.14	.57	.53	.25	2.08	3.38	.22	8.15
11,000	1.03	.52	.48	.22	1.89	3.07	.20	7.41
12,000	.95	.48	.44	.21	1.73	2.81	.18	6.79

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Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	.87	.44	.40	.19	1.60	2.60	.17	6.27
14,000	.81	.41	.38	.18	1.48	2.41	.15	5.82
15,000	.76	.38	.35	.16	1.39	2.25	.14	5.43
16,000	.71	.36	.33	.15	1.30	2.11	.14	5.10
17,000	.67	.34	.31	.15	1.22	1.99	.13	4.80
18,000	.63	.32	.29	.14	1.15	1.88	.12	4.53
19,000	.60	.30	.28	.13	1.09	1.78	.11	4.29

Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
1,000	11.88	6.04	5.75	2.74	23.66	38.58	2.19	90.84
2,000	5.94	3.02	2.88	1.37	11.83	19.29	1.10	45.42
3,000	3.96	2.01	1.92	.91	7.89	12.86	.73	30.28
4,000	2.97	1.51	1.44	.68	5.91	9.65	.55	22.71
5,000	2.38	1.21	1.15	.55	4.73	7.72	.44	18.17
6,000	1.98	1.01	.96	.46	3.94	6.43	.37	15.14
7,000	1.70	.86	.82	.39	3.38	5.51	.31	12.98
8,000	1.49	.75	.72	.34	2.96	4.82	.27	11.36
9,000	1.32	.67	.64	.30	2.63	4.29	.24	10.09
10,000	1.19	.60	.58	.27	2.37	3.86	.22	9.08
11,000	1.08	.55	.5	.25	2.15	3.51	.20	8.26
12,000	.99	.50	.48	.23	1.97	3.22	.18	7.57

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Table B-3 (continued). Delta: Schedules of Average Fixed Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Fixed Costs							
	Management	Office Labor	Property Insurance	Property Taxes	Interest	Depreciation	Other Misc.	TOTAL[a]
bales	----------dollars per bale----------							
13,000	.91	.46	.44	.21	1.82	2.97	.17	6.99
14,000	.85	.43	.41	.20	1.69	2.76	.16	6.49
15,000	.79	.40	.38	.18	1.58	2.57	.15	6.06
16,000	.74	.38	.36	.17	1.48	2.41	.14	5.68
17,000	.70	.36	.34	.16	1.39	2.27	.13	5.34
18,000	.66	.34	.32	.15	1.31	2.14	.12	5.05
19,000	.63	.32	.30	.14	1.25	2.03	.12	4.78
20,000	.59	.30	.29	.14	1.18	1.93	.11	4.54
21,000	.57	.29	.27	.13	1.13	1.84	.10	4.33
22,000	.54	.27	.26	.12	1.08	1.75	.10	4.13

[a]All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table B-4. San Joaquin Valley: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.86	4.91	4.42	8.26	4.82	33.28
2,000	9.51	4.80	3.82	6.58	4.03	28.74
3,000	8.32	4.71	3.32	5.16	3.35	24.86
4,000	7.31	4.64	2.90	4.02	2.77	21.64
5,000	6.47	4.59	2.58	3.14	2.31	19.07
6,000	5.79	4.55	2.34	2.53	1.95	17.16
7,000	5.29	4.52	2.20	2.20	1.69	15.90
8,000	4.96	4.52	2.15	2.13	1.55	15.30
9,000	4.80	4.53	2.19	2.33	1.51	15.36
10,000	4.81	4.55	2.32	2.80	1.58	16.07
11,000	5.00	4.59	2.54	3.54	1.76	17.44
12,000	5.35	4.65	2.86	4.55	2.05	19.46

Table B-4 (continued). San Joaquin Valley: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.82	4.81	4.57	8.58	4.94	33.72
2,000	9.70	4.73	4.07	7.17	4.28	29.94
3,000	8.68	4.65	3.63	5.93	3.69	26.57
4,000	7.78	4.58	3.24	4.86	3.17	23.63
5,000	6.98	4.52	2.92	3.96	2.72	21.10
6,000	6.29	4.48	2.65	3.24	2.34	18.99
7,000	5.71	4.44	2.44	2.69	2.02	17.31
8,000	5.24	4.42	2.29	2.31	1.78	16.04
9,000	4.88	4.40	2.20	2.11	1.60	15.19
10,000	4.63	4.40	2.16	2.07	1.50	14.76
11,000	4.49	4.41	2.19	2.21	1.46	14.76
12,000	4.46	4.42	2.27	2.52	1.49	15.17
13,000	4.54	4.45	2.41	3.01	1.59	16.00
14,000	4.72	4.49	2.62	3.66	1.76	17.25
15,000	5.02	4.54	2.87	4.49	2.00	18.92

Table B-4 (continued). San Joaquin Valley: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.69	4.71	4.67	8.78	5.00	33.86
2,000	9.73	4.64	4.24	7.56	4.44	30.61
3,000	8.85	4.57	3.85	6.47	3.92	27.66
4,000	8.04	4.51	3.51	5.50	3.46	25.00
5,000	7.31	4.45	3.20	4.64	3.04	22.64
6,000	6.65	4.41	2.93	3.91	2.66	20.56
7,000	6.07	4.37	2.70	3.30	2.34	18.78
8,000	5.56	4.34	2.52	2.80	2.07	17.28
9,000	5.13	4.31	2.37	2.43	1.84	16.08
10,000	4.78	4.29	2.27	2.17	1.66	15.17
11,000	4.50	4.28	2.20	2.04	1.53	14.55
12,000	4.30	4.28	2.18	2.02	1.44	14.22
13,000	4.18	4.29	2.20	2.12	1.40	14.19
14,000	4.13	4.30	2.25	2.35	1.42	14.44
15,000	4.15	4.32	2.35	2.69	1.48	14.99
16,000	4.26	4.34	2.49	3.15	1.58	15.83
17,000	4.44	4.38	2.67	3.74	1.74	16.96

Table B-4 (continued). San Joaquin Valley: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.51	4.61	4.75	8.91	5.03	33.80
2,000	9.67	4.54	4.38	7.84	4.54	30.97
3,000	8.89	4.48	4.03	6.87	4.08	28.35
4,000	8.16	4.43	3.71	5.98	3.66	25.95
5,000	7.49	4.37	3.43	5.19	3.28	23.76
6,000	6.88	4.33	3.17	4.48	2.93	21.78
7,000	6.32	4.29	2.95	3.86	2.61	20.02
8,000	5.82	4.26	2.75	3.32	2.33	18.47
9,000	5.37	4.23	2.58	2.88	2.09	17.14
10,000	4.98	4.20	2.44	2.52	1.88	16.02
11,000	4.64	4.19	2.34	2.25	1.70	15.11
12,000	4.36	4.17	2.26	2.07	1.56	14.42
13,000	4.14	4.17	2.21	1.97	1.46	13.95
14,000	3.97	4.16	2.19	1.97	1.39	13.68
15,000	3.86	4.17	2.21	2.05	1.35	13.63
16,000	3.80	4.18	2.25	2.22	1.35	13.80
17,000	3.80	4.19	2.32	2.47	1.39	14.18
18,000	3.86	4.21	2.42	2.82	1.46	14.77
19,000	3.97	4.24	2.55	3.25	1.57	15.58

Table B-4 (continued). San Joaquin Valley: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.29	4.50	4.82	8.99	5.04	33.63
2,000	9.54	4.44	4.48	8.05	4.61	31.12
3,000	8.84	4.39	4.17	7.17	4.20	28.77
4,000	8.19	4.34	3.88	6.36	3.81	26.58
5,000	7.57	4.29	3.62	5.62	3.46	24.56
6,000	7.00	4.25	3.38	4.95	3.13	22.70
7,000	6.47	4.21	3.16	4.34	2.83	21.01
8,000	5.99	4.17	2.96	3.80	2.56	19.48
9,000	5.55	4.14	2.79	3.33	2.31	18.11
10,000	5.15	4.12	2.64	2.93	2.09	16.91
11,000	4.79	4.10	2.51	2.59	1.90	15.87
12,000	4.47	4.08	2.40	2.32	1.73	15.00
13,000	4.20	4.06	2.32	2.12	1.59	14.29
14,000	3.97	4.05	2.26	1.98	1.48	13.74
15,000	3.79	4.05	2.22	1.91	1.39	13.36
16,000	3.64	4.05	2.21	1.91	1.33	13.14
17,000	3.54	4.05	2.22	1.98	1.30	13.09
18,000	3.48	4.06	2.25	2.11	1.30	13.20
19,000	3.47	4.07	2.30	2.31	1.32	13.47

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Table B-4 (continued). San Joaquin Valley: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
20,000	3.49	4.08	2.38	2.58	1.37	13.91
21,000	3.56	4.10	2.48	2.92	1.44	14.51
22,000	3.68	4.13	2.60	3.32	1.55	15.28

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table B-5. High Plains: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	13.13	5.10	4.96	12.73	4.64	40.56
2,000	11.78	4.99	4.36	11.04	3.85	36.02
3,000	10.59	4.90	3.85	9.63	3.17	32.14
4,000	9.58	4.83	3.44	8.48	2.60	28.92
5,000	8.73	4.77	3.11	7.61	2.13	26.35
6,000	8.06	4.73	2.88	7.00	1.77	24.44
7,000	7.56	4.71	2.73	6.66	1.52	23.18
8,000	7.23	4.70	2.68	6.59	1.37	22.58
9,000	7.07	4.71	2.72	6.79	1.34	22.64
10,000	7.08	4.74	2.86	7.26	1.41	23.35
11,000	7.27	4.78	3.08	8.00	1.59	24.72
12,000	7.62	4.84	3.39	9.01	1.87	26.74

Table B-5 (continued). High Plains: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	13.09	5.00	5.10	13.04	4.76	41.00
2,000	11.97	4.91	4.60	11.63	4.10	37.22
3,000	10.95	4.84	4.16	10.39	3.51	33.85
4,000	10.04	4.77	3.78	9.32	2.99	30.91
5,000	9.25	4.71	3.45	8.43	2.54	28.38
6,000	8.56	4.67	3.18	7.71	2.16	26.27
7,000	7.98	4.63	2.97	7.16	1.85	24.59
8,000	7.51	4.61	2.82	6.78	1.60	23.32
9,000	7.15	4.59	2.73	6.57	1.43	22.47
10,000	6.90	4.59	2.70	6.54	1.32	22.04
11,000	6.76	4.59	2.72	6.68	1.28	22.04
12,000	6.73	4.61	2.81	6.99	1.31	22.45
13,000	6.81	4.64	2.95	7.47	1.41	23.28
14,000	6.99	4.67	3.15	8.13	1.58	24.53
15,000	7.29	4.72	3.41	8.96	1.82	26.20

Table B-5 (continued). High Plains: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	12.96	4.90	5.21	13.24	4.82	41.14
2,000	12.00	4.83	4.78	12.03	4.26	37.89
3,000	11.12	4.76	4.39	10.94	3.75	34.94
4,000	10.31	4.70	4.04	9.96	3.28	32.28
5,000	9.57	4.64	3.73	9.11	2.86	29.92
6,000	8.92	4.60	3.47	8.37	2.49	27.84
7,000	8.34	4.56	3.24	7.76	2.16	26.06
8,000	7.83	4.52	3.05	7.27	1.89	24.56
9,000	7.40	4.50	2.91	6.89	1.66	23.36
10,000	7.05	4.48	2.80	6.64	1.48	22.45
11,000	6.77	4.47	2.74	6.50	1.35	21.83
12,000	6.57	4.47	2.71	6.48	1.26	21.50
13,000	6.45	4.47	2.73	6.59	1.23	21.47
14,000	6.40	4.49	2.79	6.81	1.24	21.72
15,000	6.42	4.51	2.89	7.16	1.30	22.27
16,000	6.53	4.53	3.03	7.62	1.41	23.11
17,000	6.71	4.57	3.20	8.20	1.56	24.24

Table B-5 (continued). High Plains: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	12.78	4.80	5.29	13.37	4.85	41.08
2,000	11.94	4.73	4.91	12.31	4.36	38.25
3,000	11.16	4.67	4.57	11.34	3.91	35.63
4,000	10.43	4.61	4.25	10.45	3.49	33.23
5,000	9.76	4.56	3.96	9.65	3.10	31.04
6,000	9.15	4.52	3.71	8.94	2.75	29.06
7,000	8.59	4.48	3.48	8.32	2.43	27.30
8,000	8.08	4.44	3.28	7.79	2.15	25.75
9,000	7.64	4.42	3.12	7.34	1.91	24.42
10,000	7.25	4.39	2.98	6.98	1.70	23.30
11,000	6.91	4.37	2.87	6.71	1.52	22.39
12,000	6.63	4.36	2.79	6.53	1.38	21.70
13,000	6.41	4.35	2.75	6.44	1.28	21.23
14,000	6.24	4.35	2.73	6.43	1.21	20.96
15,000	6.13	4.36	2.74	6.51	1.18	20.91
16,000	6.07	4.36	2.78	6.68	1.18	21.08
17,000	6.07	4.38	2.85	6.94	1.21	21.46
18,000	6.13	4.40	2.96	7.29	1.28	22.05
19,000	6.24	4.42	3.09	7.72	1.39	22.86

Table B-5 (continued). High Plains: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	12.55	4.69	5.35	13.46	4.86	40.91
2,000	11.81	4.63	5.02	12.51	4.43	38.40
3,000	11.11	4.57	4.71	11.64	4.02	36.05
4,000	10.46	4.52	4.42	10.83	3.64	33.86
5,000	9.84	4.48	4.15	10.09	3.28	31.84
6,000	9.27	4.43	3.91	9.41	2.96	29.98
7,000	8.74	4.40	3.69	8.81	2.65	28.29
8,000	8.26	4.36	3.50	8.27	2.38	26.76
9,000	7.81	4.33	3.32	7.79	2.13	25.39
10,000	7.41	4.31	3.17	7.39	1.91	24.19
11,000	7.06	4.28	3.04	7.05	1.72	23.15
12,000	6.74	4.27	2.94	6.78	1.55	22.28
13,000	6.47	4.25	2.85	6.58	1.41	21.57
14,000	6.24	4.24	2.79	6.45	1.30	21.02
15,000	6.05	4.24	2.76	6.38	1.21	20.64
16,000	5.91	4.24	2.74	6.38	1.16	20.42
17,000	5.81	4.24	2.75	6.44	1.12	20.37
18,000	5.75	4.25	2.78	6.58	1.12	20.48
19,000	5.74	4.26	2.84	6.78	1.14	20.75

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Table B-5 (continued). High Plains: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
20,000	5.76	4.27	2.92	7.05	1.19	21.19
21,000	5.83	4.29	3.02	7.38	1.27	21.79
22,000	5.95	4.31	3.14	7.79	1.37	22.56

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table B-6. Delta: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.32	4.75	4.66	7.96	4.19	31.88
2,000	8.97	4.64	4.06	6.27	3.40	27.34
3,000	7.78	4.55	3.55	4.86	2.72	23.46
4,000	6.77	4.48	3.14	3.71	2.14	20.24
5,000	5.92	4.42	2.81	2.84	1.68	17.67
6,000	5.25	4.38	2.58	2.23	1.32	15.76
7,000	4.75	4.36	2.44	1.89	1.06	14.50
8,000	4.42	4.35	2.39	1.82	.92	13.90
9,000	4.26	4.36	2.43	2.02	.88	13.96
10,000	4.27	4.39	2.56	2.49	.95	14.67
11,000	4.46	4.43	2.78	3.23	1.13	16.04
12,000	4.81	4.49	3.10	4.24	1.42	18.06

Table B-6 (continued). Delta: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	10.28	4.65	4.80	8.27	4.31	32.32
2,000	9.16	4.57	4.30	6.86	3.65	28.54
3,000	8.14	4.49	3.86	5.62	3.06	25.17
4,000	7.23	4.42	3.48	4.55	2.54	22.23
5,000	6.44	4.36	3.15	3.66	2.09	19.70
6,000	5.75	4.32	2.88	2.94	1.71	17.59
7,000	5.17	4.28	2.68	2.39	1.39	15.91
8,000	4.70	4.26	2.53	2.01	1.15	14.64
9,000	4.34	4.24	2.43	1.80	.97	13.79
10,000	4.09	4.24	2.40	1.77	.87	13.36
11,000	3.95	4.24	2.43	1.91	.83	13.36
12,000	3.92	4.26	2.51	2.22	.86	13.77
13,000	4.00	4.29	2.65	2.70	.96	14.60
14,000	4.18	4.33	2.85	3.36	1.13	15.85
15,000	4.48	4.37	3.11	4.19	1.37	17.52

Table B-6 (continued). Delta: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales		--------dollars per bale--------				
1,000	10.15	4.55	4.91	8.47	4.37	32.46
2,000	9.19	4.48	4.48	7.26	3.81	29.21
3,000	8.31	4.41	4.09	6.17	3.29	26.26
4,000	7.50	4.35	3.74	5.19	2.83	23.60
5,000	6.76	4.29	3.43	4.34	2.41	21.24
6,000	6.11	4.25	3.17	3.61	2.03	19.16
7,000	5.53	4.21	2.94	2.99	1.71	17.38
8,000	5.02	4.18	2.75	2.50	1.44	15.88
9,000	4.59	4.15	2.61	2.12	1.21	14.68
10,000	4.24	4.13	2.50	1.87	1.03	13.77
11,000	3.96	4.12	2.44	1.73	.90	13.15
12,000	3.76	4.12	2.42	1.72	.81	12.82
13,000	3.64	4.13	2.43	1.82	.77	12.79
14,000	3.59	4.14	2.49	2.04	.79	13.04
15,000	3.61	4.16	2.59	2.39	.85	13.59
16,000	3.72	4.18	2.73	2.85	.95	14.43
17,000	3.90	4.22	2.91	3.43	1.11	15.56

Table B-6 (continued). Delta: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
1,000	9.97	4.45	4.99	8.60	4.40	32.40
2,000	9.13	4.38	4.61	7.54	3.91	29.57
3,000	8.35	4.32	4.27	6.57	3.45	26.95
4,000	7.62	4.26	3.95	5.68	3.03	24.55
5,000	6.95	4.21	3.66	4.88	2.65	22.36
6,000	6.34	4.17	3.41	4.17	2.30	20.38
7,000	5.78	4.13	3.18	3.55	1.98	18.62
8,000	5.27	4.10	2.98	3.02	1.70	17.07
9,000	4.83	4.07	2.82	2.57	1.46	15.74
10,000	4.44	4.04	2.68	2.21	1.25	14.62
11,000	4.10	4.03	2.57	1.94	1.07	13.71
12,000	3.82	4.01	2.50	1.76	.93	13.02
13,000	3.60	4.01	2.45	1.67	.83	12.55
14,000	3.43	4.00	2.43	1.66	.76	12.28
15,000	3.32	4.01	2.44	1.74	.72	12.23
16,000	3.26	4.02	2.48	1.91	.72	12.40
17,000	3.26	4.03	2.56	2.17	.76	12.78
18,000	3.32	4.05	2.66	2.52	.83	13.37
19,000	3.43	4.07	2.79	2.95	.94	14.18

Table B-6 (continued). Delta: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales		--------dollars per bale--------				
1,000	9.74	4.34	5.05	8.69	4.41	32.23
2,000	9.00	4.28	4.72	7.74	3.98	29.72
3,000	8.30	4.22	4.41	6.87	3.57	27.37
4,000	7.65	4.17	4.12	6.06	3.18	25.18
5,000	7.03	4.13	3.85	5.32	2.83	23.16
6,000	6.46	4.09	3.61	4.64	2.50	21.30
7,000	5.93	4.05	3.39	4.04	2.20	19.61
8,000	5.45	4.01	3.20	3.50	1.93	18.08
9,000	5.00	3.98	3.02	3.03	1.68	16.71
10,000	4.60	3.96	2.87	2.62	1.46	15.51
11,000	4.25	3.93	2.74	2.28	1.27	14.47
12,000	3.93	3.92	2.64	2.01	1.10	13.60
13,000	3.66	3.90	2.56	1.81	.96	12.89
14,000	3.43	3.89	2.50	1.68	.85	12.34
15,000	3.24	3.89	2.46	1.61	.76	11.96
16,000	3.10	3.89	2.45	1.61	.70	11.74
17,000	3.00	3.89	2.45	1.67	.67	11.69
18,000	2.94	3.90	2.49	1.81	.67	11.80
19,000	2.93	3.91	2.54	2.01	.69	12.07

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Table B-6 (continued). Delta: Schedules of Average Variable Costs as Ginning Volumes Increase, by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Variable Costs					
	Gin Crew Labor	Bagging & Ties	Energy	Repairs	Other Misc.	TOTAL[a]
bales	--------dollars per bale--------					
20,000	2.95	3.92	2.62	2.28	.74	12.51
21,000	3.02	3.94	2.72	2.61	.81	13.11
22,000	3.14	3.96	2.84	3.02	.92	13.88

[a]All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

APPENDIX C

Schedules of Average Fixed, Average Variable, and Average Total Costs of Ginning

Schedules of Average Fixed, Average Variable, and Average Total Costs of Ginning

This appendix contains schedules of estimated fixed, variable, and total costs per bale in ginning cotton. Total per bale cost is given by the sum of fixed and variable costs per bale.

There are three tables--one for each of the three production areas considered. Table C-1 is for the California San Joaquin Valley; Table C-2 is for the Texas High Plains; and Table C-3 is for the Mississippi Delta. Each table has five parts--one for each of the gin plant sizes considered (12, 15, 18, 21 and 24 bales/hour).

Table C-1. San Joaquin Valley: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	57.74	33.28	91.02
2,000	28.87	28.74	57.61
3,000	19.25	24.86	44.11
4,000	14.44	21.64	36.08
5,000	11.55	19.07	30.62
6,000	9.62	17.16	26.78
7,000	8.25	15.90	24.15
8,000	7.22	15.30	22.52
9,000	6.42	15.36	21.77
10,000	5.77	16.07	21.84
11,000	5.25	17.44	22.69
12,000	4.81	19.46	24.27

Table C-1 (continued). San Joaquin Valley: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	68.10	33.72	101.83
2,000	34.05	29.94	63.99
3,000	22.70	26.57	49.27
4,000	17.03	23.63	40.65
5,000	13.62	21.10	34.72
6,000	11.35	18.99	30.34
7,000	9.73	17.31	27.04
8,000	8.51	16.04	24.55
9,000	7.57	15.19	22.76
10,000	6.81	14.76	21.57
11,000	6.19	14.76	20.95
12,000	5.68	15.17	20.84
13,000	5.24	16.00	21.24
14,000	4.86	17.25	22.11
15,000	4.54	18.92	23.46

Table C-1 (continued). San Joaquin Valley: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	78.47	33.86	112.32
2,000	39.23	30.61	69.85
3,000	26.16	27.66	53.82
4,000	19.62	25.00	44.62
5,000	15.69	22.64	38.33
6,000	13.08	20.56	33.64
7,000	11.21	18.78	29.99
8,000	9.81	17.28	27.09
9,000	8.72	16.08	24.80
10,000	7.85	15.17	23.02
11,000	7.13	14.55	21.68
12,000	6.54	14.22	20.76
13,000	6.04	14.19	20.22
14,000	5.60	14.44	20.05
15,000	5.23	14.99	20.22
16,000	4.90	15.83	20.73
17,000	4.62	16.96	21.57

Table C-1 (continued). San Joaquin Valley: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	88.83	33.80	122.63
2,000	44.41	30.97	75.38
3,000	29.61	28.35	57.96
4,000	22.21	25.95	48.16
5,000	17.77	23.76	41.52
6,000	14.80	21.78	36.59
7,000	12.69	20.02	32.71
8,000	11.10	18.47	29.58
9,000	9.87	17.14	27.01
10,000	8.88	16.02	24.90
11,000	8.08	15.11	23.19
12,000	7.40	14.42	21.83
13,000	6.83	13.95	20.78
14,000	6.34	13.68	20.03
15,000	5.92	13.63	19.56
16,000	5.55	13.80	19.35
17,000	5.23	14.18	19.40
18,000	4.93	14.77	19.71
19,000	4.68	15.58	20.26

Table C-1 (continued). San Joaquin Valley: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	99.19	33.63	132.82
2,000	49.59	31.12	80.71
3,000	33.06	28.77	61.83
4,000	24.80	26.58	51.38
5,000	19.84	24.56	44.40
6,000	16.53	22.70	39.24
7,000	14.17	21.01	35.18
8,000	12.40	19.48	31.88
9,000	11.02	18.11	29.14
10,000	9.92	16.91	26.83
11,000	9.02	15.87	24.89
12,000	8.27	15.00	23.27
13,000	7.63	14.29	21.92
14,000	7.08	13.74	20.83
15,000	6.61	13.36	19.97
16,000	6.20	13.14	19.34
17,000	5.83	13.09	18.92
18,000	5.51	13.20	18.71
19,000	5.22	13.47	18.69

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Table C-1 (continued). San Joaquin Valley: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
20,000	4.96	13.91	18.87
21,000	4.72	14.51	19.23
22,000	4.51	15.28	19.78

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table C-2. High Plains: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	63.25	40.56	103.81
2,000	31.63	36.02	67.65
3,000	21.08	32.14	53.23
4,000	15.81	28.92	44.73
5,000	12.65	26.35	39.00
6,000	10.54	24.44	34.98
7,000	9.04	23.18	32.22
8,000	7.91	22.58	30.49
9,000	7.03	22.64	29.67
10,000	6.33	23.35	29.67
11,000	5.75	24.72	30.47
12,000	5.27	26.74	32.01

Table C-2 (continued). High Plains: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	74.99	41.00	116.00
2,000	37.50	37.22	74.72
3,000	25.00	33.85	58.85
4,000	18.75	30.91	49.66
5,000	15.00	28.38	43.38
6,000	12.50	26.27	38.77
7,000	10.71	24.59	35.30
8,000	9.37	23.32	32.69
9,000	8.33	22.47	30.80
10,000	7.50	22.04	29.54
11,000	6.82	22.04	28.85
12,000	6.25	22.45	28.70
13,000	5.77	23.28	29.05
14,000	5.36	24.53	29.88
15,000	5.00	26.20	31.20

Table C-2 (continued). High Plains: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOURS GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	86.74	41.14	127.87
2,000	43.37	37.89	81.26
3,000	28.91	34.94	63.86
4,000	21.68	32.28	53.97
5,000	17.35	29.92	47.26
6,000	14.46	27.84	42.30
7,000	12.39	26.06	38.45
8,000	10.84	24.56	35.40
9,000	9.64	23.36	33.00
10,000	8.67	22.45	31.13
11,000	7.89	21.83	29.72
12,000	7.23	21.50	28.73
13,000	6.67	21.47	28.14
14,000	6.20	21.72	27.92
15,000	5.78	22.27	28.05
16,000	5.42	23.11	28.53
17,000	5.10	24.24	29.34

Table C-2 (continued). High Plains: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	98.48	41.08	139.56
2,000	49.24	38.25	87.49
3,000	32.83	35.63	68.46
4,000	24.62	33.23	57.85
5,000	19.70	31.04	50.73
6,000	16.41	29.06	45.48
7,000	14.07	27.30	41.37
8,000	12.31	25.75	38.06
9,000	10.94	24.42	35.36
10,000	9.85	23.30	33.15
11,000	8.95	22.39	31.35
12,000	8.21	21.70	29.91
13,000	7.58	21.23	28.80
14,000	7.03	20.96	28.00
15,000	6.57	20.91	27.48
16,000	6.15	21.08	27.23
17,000	5.79	21.46	27.25
18,000	5.47	22.05	27.52
19,000	5.18	22.86	28.04

Table C-2 (continued). High Plains: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	110.22	40.91	151.13
2,000	55.11	38.40	93.51
3,000	36.74	36.05	72.79
4,000	27.55	33.86	61.42
5,000	22.04	31.84	53.89
6,000	18.37	29.98	48.35
7,000	15.75	28.29	44.04
8,000	13.78	26.76	40.54
9,000	12.25	25.39	37.64
10,000	11.02	24.19	35.21
11,000	10.02	23.15	33.17
12,000	9.18	22.28	31.47
13,000	8.48	21.57	30.05
14,000	7.87	21.02	28.90
15,000	7.35	20.64	27.99
16,000	6.89	20.42	27.31
17,000	6.48	20.37	26.85
18,000	6.12	20.48	26.60
19,000	5.80	20.75	26.55

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Table C-2 (continued). High Plains: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
20,000	5.51	21.19	26.70
21,000	5.25	21.79	27.04
22,000	5.01	22.56	27.57

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table C-3. Delta: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	53.57	31.88	85.45
2,000	26.78	27.34	54.13
3,000	17.86	23.46	41.32
4,000	13.39	20.24	33.63
5,000	10.71	17.67	28.39
6,000	8.93	15.76	24.69
7,000	7.65	14.50	22.16
8,000	6.70	13.90	20.60
9,000	5.95	13.96	19.91
10,000	5.36	14.67	20.03
11,000	4.87	16.04	20.91
12,000	4.46	18.06	22.52

Table C-3 (continued). Delta: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	62.89	32.32	95.21
2,000	31.44	28.54	59.98
3,000	20.96	25.17	46.14
4,000	15.72	22.23	37.95
5,000	12.58	19.70	32.28
6,000	10.48	17.59	28.07
7,000	8.98	15.91	24.89
8,000	7.86	14.64	22.50
9,000	6.99	13.79	20.78
10,000	6.29	13.36	19.65
11,000	5.72	13.36	19.07
12,000	5.24	13.77	19.01
13,000	4.84	14.60	19.43
14,000	4.49	15.85	20.34
15,000	4.19	17.52	21.71

Table C-3 (continued). Delta: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	72.20	32.46	104.66
2,000	36.10	29.21	65.32
3,000	24.07	26.26	50.33
4,000	18.05	23.60	41.66
5,000	14.44	21.24	35.68
6,000	12.03	19.16	31.19
7,000	10.31	17.38	27.69
8,000	9.03	15.88	24.91
9,000	8.02	14.68	22.70
10,000	7.22	13.77	20.99
11,000	6.56	13.15	19.72
12,000	6.02	12.82	18.84
13,000	5.55	12.79	18.34
14,000	5.16	13.04	18.20
15,000	4.81	13.59	18.40
16,000	4.51	14.43	18.94
17,000	4.25	15.56	19.80

Table C-3 (continued). Delta: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	81.52	32.40	113.93
2,000	40.76	29.57	70.33
3,000	27.17	26.95	54.13
4,000	20.38	24.55	44.93
5,000	16.30	22.36	38.66
6,000	13.59	20.38	33.97
7,000	11.65	18.62	30.27
8,000	10.19	17.07	27.26
9,000	9.06	15.74	24.80
10,000	8.15	14.62	22.77
11,000	7.41	13.71	21.13
12,000	6.79	13.02	19.82
13,000	6.27	12.55	18.82
14,000	5.82	12.28	18.11
15,000	5.43	12.23	17.67
16,000	5.10	12.40	17.50
17,000	4.80	12.78	17.57
18,000	4.53	13.37	17.90
19,000	4.29	14.18	18.47

Table C-3 (continued). Delta: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	90.84	32.23	123.07
2,000	45.42	29.72	75.14
3,000	30.28	27.37	57.65
4,000	22.71	25.18	47.89
5,000	18.17	23.16	41.33
6,000	15.14	21.30	36.44
7,000	12.98	19.61	32.59
8,000	11.36	18.08	29.44
9,000	10.09	16.71	26.81
10,000	9.08	15.51	24.60
11,000	8.26	14,47	22.73
12,000	7.57	13.60	21.17
13,000	6.99	12.89	19.88
14,000	6.49	12.34	18.83
15,000	6.06	11.96	18.02
16,000	5.68	11.74	17.42
17,000	5.34	11.69	17.03
18,000	5.05	11.80	16.85
19,000	4.78	12.07	16.85

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Table C-3 (continued). Delta: Average Cost Schedules by Alternative Sizes of Gin Plants, 1974-75.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
20,000	4.54	12.51	17.05
21,000	4.33	13.11	17.44
22,000	4.13	13.88	18.00

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

APPENDIX D

Post-Investment Schedules of Average Fixed, Average Variable, and Average Total Costs of Ginning

Post-Investment Schedules of Average Fixed, Average Variable, and Average Total Costs of Ginning

This appendix contains revised schedules of estimated fixed, variable and total costs per bale in ginning cotton. Revisions are the result of estimated effects of investment in an automatic module feeder on costs per bale ginned.

There are three tables -- one for each of the three production areas considered. Table D-1 is for the California San Joaquin Valley; Table D-2 is for the Texas High Plains; and Table D-3 is for the Mississippi Delta. Each table has five parts -- one for each of the gin plant sizes considered (12, 15, 18, 21 and 24 bales/hour).

Table D-1. San Joaquin Valley: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	69.37	33.25	102.62
2,000	34.68	28.63	63.31
3,000	23.12	24.61	47.73
4,000	17.34	21.18	38.52
5,000	13.87	18.36	32.23
6,000	11.56	16.13	27.69
7,000	9.91	14.50	24.41
8,000	8.67	13.47	22.14
9,000	7.71	13.03	20.74
10,000	6.94	13.20	20.14
11,000	6.31	13.96	20.27
12,000	5.78	15.33	21.11

Table D-1 (continued). San Joaquin Valley: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	83.60	33.71	117.31
2,000	41.80	29.87	71.67
3,000	27.87	26.41	54.28
4,000	20.90	23.33	44.23
5,000	16.72	20.64	37.36
6,000	13.93	18.33	32.27
7,000	11.94	16.41	28.35
8,000	10.45	14.86	25.31
9,000	9.29	13.70	22.99
10,000	8.36	12.93	21.29
11,000	7.60	12.53	20.13
12,000	6.97	12.52	19.49
13,000	6.43	12.89	19.33
14,000	5.97	13.65	19.62
15,000	5.57	14.79	20.36

Table D-1 (continued). San Joaquin Valley: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	97.84	33.84	131.68
2,000	48.92	30.56	79.48
3,000	32.61	27.55	60.16
4,000	24.46	24.80	49.26
5,000	19.57	22.32	41.89
6,000	16.31	20.10	36.41
7,000	13.98	18.15	32.13
8,000	12.23	16.47	28.70
9,000	10.87	15.05	25.92
10,000	9.78	13.90	23.68
11,000	8.89	13.01	21.90
12,000	8.15	12.39	20.54
13,000	7.53	12.03	19.56
14,000	6.99	11.94	18.93
15,000	6.52	12.12	18.64
16,000	6.11	12.56	18.68
17,000	5.76	13.27	19.03

Table D-1 (continued). San Joaquin Valley: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	112.09	33.79	145.89
2,000	56.05	30.93	86.98
3,000	37.36	28.27	65.63
4,000	28.02	25.80	53.82
5,000	22.42	23.52	45.94
6,000	18.68	21.45	40.13
7,000	16.01	19.56	35.57
8,000	14.01	17.87	31.89
9,000	12.45	16.38	28.84
10,000	11.21	15.08	26.29
11,000	10.19	13.98	24.17
12,000	9.34	13.07	22.42
13,000	8.62	12.36	20.99
14,000	8.01	11.85	19.85
15,000	7.47	11.53	19.00
16,000	7.01	11.40	18.41
17,000	6.59	11.47	18.07
18,000	6.23	11.74	17.97
19,000	5.90	12.20	18.10

Table D-1 (continued). San Joaquin Valley: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	126.31	33.63	159.94
2,000	63.16	31.09	94.25
3,000	42.10	28.71	70.81
4,000	31.58	26.47	58.05
5,000	25.26	24.38	49.65
6,000	21.05	22.45	43.50
7,000	18.04	20.66	38.70
8,000	15.79	19.02	34.81
9,000	14.03	17.53	31.57
10,000	12.63	16.20	28.83
11,000	11.48	15.01	26.49
12,000	10.53	13.97	24.49
13,000	9.72	13.08	22.79
14,000	9.02	12.34	21.36
15,000	8.42	11.75	20.17
16,000	7.89	11.31	19.20
17,000	7.43	11.02	18.45
18,000	7.02	10.87	17.89
19,000	6.65	10.88	17.53

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Table D-1 (continued). San Joaquin Valley: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
20,000	6.32	11.04	17.36
21,000	6.01	11.35	17.36
22,000	5.74	11.80	17.55

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table D-2. High Plains: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	74.88	40.53	115.41
2,000	37.44	35.91	73.35
3,000	24.96	31.89	56.85
4,000	18.72	28.46	47.18
5,000	14.98	25.64	40.61
6,000	12.48	23.41	35.89
7,000	10.70	21.78	32.48
8,000	9.36	20.75	30.11
9,000	8.32	20.31	28.63
10,000	7.49	20.48	27.97
11,000	6.81	21.24	28.05
12,000	6.24	22.61	28.85

Table D-2 (continued). High Plains: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	90.49	40.99	131.48
2,000	45.25	37.15	82.39
3,000	30.16	33.69	63.85
4,000	22.62	30.61	53.24
5,000	18.10	27.92	46.02
6,000	15.08	25.61	40.70
7,000	12.93	23.69	36.62
8,000	11.31	22.14	33.46
9,000	10.05	20.98	31.04
10,000	9.05	20.21	29.26
11,000	8.23	19.81	28.04
12,000	7.54	19.80	27.34
13,000	6.96	20.17	27.14
14,000	6.46	20.93	27.39
15,000	6.03	22.07	28.10

Table D-2 (continued). High Plains: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	106.11	41.12	147.23
2,000	53.06	37.84	90.90
3,000	35.37	34.83	70.20
4,000	26.53	32.08	58.61
5,000	21.22	29.60	50.82
6,000	17.69	27.38	45.07
7,000	15.16	25.43	40.59
8,000	13.26	23.75	37.01
9,000	11.79	22.33	34.12
10,000	10.61	21.18	31.79
11,000	9.65	20.29	29.93
12,000	8.84	19.67	28.51
13,000	8.16	19.31	27.47
14,000	7.58	19.22	26.80
15,000	7.07	19.40	26.47
16,000	6.63	19.84	26.48
17,000	6.24	20.55	26.79

Table D-2 (continued). High Plains: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	121.74	41.07	162.81
2,000	60.87	38.21	99.08
3,000	40.58	35.55	76.13
4,000	30.43	33.08	63.51
5,000	24.35	30.80	55.15
6,000	20.29	28.73	49.02
7,000	17.39	26.84	44.23
8,000	15.22	25.15	40.37
9,000	13.53	23.66	37.19
10,000	12.17	22.36	34.54
11,000	11.07	21.26	32.33
12,000	10.14	20.35	30.50
13,000	9.36	19.64	29.01
14,000	8.70	19.13	27.82
15,000	8.12	18.81	26.92
16,000	7.61	18.68	26.29
17,000	7.16	18.75	25.91
18,000	6.76	19.02	25.78
19,000	6.41	19.48	25.89

Table D-2 (continued). High Plains: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	137.34	40.91	178.25
2,000	68.67	38.37	107.04
3,000	45.78	35.99	81.77
4,000	34.34	33.75	68.08
5,000	27.47	31.66	59.13
6,000	22.89	29.73	52.62
7,000	19.62	27.94	47.56
8,000	17.17	26.30	43.47
9,000	15.26	24.81	40.07
10,000	13.73	23.48	37.21
11,000	12.49	22.29	34.77
12,000	11.45	21.25	32.69
13,000	10.56	20.36	30.92
14,000	9.81	19.62	29.43
15,000	9.16	19.03	28.18
16,000	8.58	18.59	27.17
17,000	8.08	18.30	26.38
18,000	7.63	18.15	25.78
19,000	7.23	18.16	25.39

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Table D-2 (continued). High Plains: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
20,000	6.87	18.32	25.19
21,000	6.54	18.63	25.17
22,000	6.24	19.08	25.33

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

Table D-3. Delta: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

12 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	65.19	31.85	97.04
2,000	32.60	27.23	59.83
3,000	21.73	23.21	44.94
4,000	16.30	19.78	36.08
5,000	13.04	16.96	29.99
6,000	10.87	14.73	25.59
7,000	9.31	13.10	22.41
8,000	8.15	12.07	20.22
9,000	7.24	11.63	18.88
10,000	6.52	11.80	18.32
11,000	5.93	12.56	18.49
12,000	5.43	13.93	19.36

Table D-3 (continued). Delta: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

15 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	78.39	32.31	110.69
2,000	39.19	28.47	67.66
3,000	26.13	25.01	51.14
4,000	19.60	21.93	41.53
5,000	15.68	19.24	34.92
6,000	13.06	16.93	30.00
7,000	11.20	15.01	26.21
8,000	9.80	13.46	23.26
9,000	8.71	12.30	21.01
10,000	7.84	11.53	19.37
11,000	7.13	11.13	18.26
12,000	6.53	11.12	17.65
13,000	6.03	11.49	17.52
14,000	5.60	12.25	17.85
15,000	5.23	13.39	18.61

Table D-3 (continued). Delta: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

18 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	91.58	32.44	124.02
2,000	45.79	29.16	74.95
3,000	30.53	26.15	56.68
4,000	22.89	23.40	46.30
5,000	18.32	20.92	39.23
6,000	15.26	18.70	33.96
7,000	13.08	16.75	29.83
8,000	11.45	15.07	26.51
9,000	10.18	13.65	23.82
10,000	9.16	12.50	21.65
11,000	8.33	11.61	19.93
12,000	7.63	10.99	18.62
13,000	7.04	10.63	17.68
14,000	6.54	10.54	17.08
15,000	6.11	10.72	16.83
16,000	5.72	11.16	16.89
17,000	5.39	11.87	17.26

Table D-3 (continued). Delta: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

21 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	104.79	32.39	137.18
2,000	52.39	29.53	81.93
3,000	34.93	26.87	61.80
4,000	26.20	24.40	50.60
5,000	20.96	22.12	43.08
6,000	17.46	20.05	37.51
7,000	14.97	18.16	33.13
8,000	13.10	16.47	29.57
9,000	11.64	14.98	26.62
10,000	10.48	13.68	24.16
11,000	9.53	12.58	22.11
12,000	8.73	11.67	20.41
13,000	8.06	10.96	19.02
14,000	7.48	10.45	17.93
15,000	6.99	10.13	17.11
16,000	6.55	10.00	16.55
17,000	6.16	10.07	16.24
18,000	5.82	10.34	16.16
19,000	5.52	10.80	16.31

Table D-3 (continued). Delta: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
1,000	117.97	32.23	150.19
2,000	58.98	29.69	88.67
3,000	39.32	27.31	66.63
4,000	29.49	25.07	54.56
5,000	23.59	22.98	46.58
6,000	19.66	21.05	40.71
7,000	16.85	19.26	36.11
8,000	14.75	17.62	32.37
9,000	13.11	16.13	29.24
10,000	11.80	14.80	26.59
11,000	10.72	13.61	24.33
12,000	9.83	12.57	22.40
13,000	9.07	11.68	20.75
14,000	8.43	10.94	19.36
15,000	7.86	10.35	18.21
16,000	7.37	9.91	17.28
17,000	6.94	9.62	16.56
18,000	6.55	9.47	16.03
19,000	6.21	9.48	15.69

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Table D-3 (continued). Delta: Average Cost Schedules After Investment in an Automatic Module Feeder, by Alternative Sizes of Gin Plants, Using 1974-75 Cost Data.

24 BALES/HOUR GINS

Seasonal Ginning Volume	Average Fixed Cost	Average Variable Cost	Average Total Cost[a]
bales	------dollars per bale------		
20,000	5.90	9.64	15.54
21,000	5.62	9.95	15.57
22,000	5.36	10.40	15.77

[a] All costs are expressed to the nearest cent. Any discrepancy between the total column and the sum of component cost columns is due to rounding error.

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