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**Operational and Cost Characteristics of the
Cotton Ginning Industry
In the Southern High Plains of Texas**

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Operational and Cost Characteristics of the Cotton Ginning Industry In the Southern High Plains of Texas

Texas has been the leading producer of cotton in the U.S. since 1880. The cotton industry in Texas is a key contributor to the state's economy with the farm value of cotton production currently estimated at approximately \$1.5 billion (USDA, 1996). A sixteen county region of the Southern High Plains of Texas (SHPT) is the major cotton producing region in the state (shaded area in Figure 1) in terms of both acreage and crop value. Approximately 2.6 million acres of cotton were harvested in this 16 county region in 1995, yielding in excess of 2.05 million bales (USDA-NASS, 1996), or almost one-half of the state's total production.

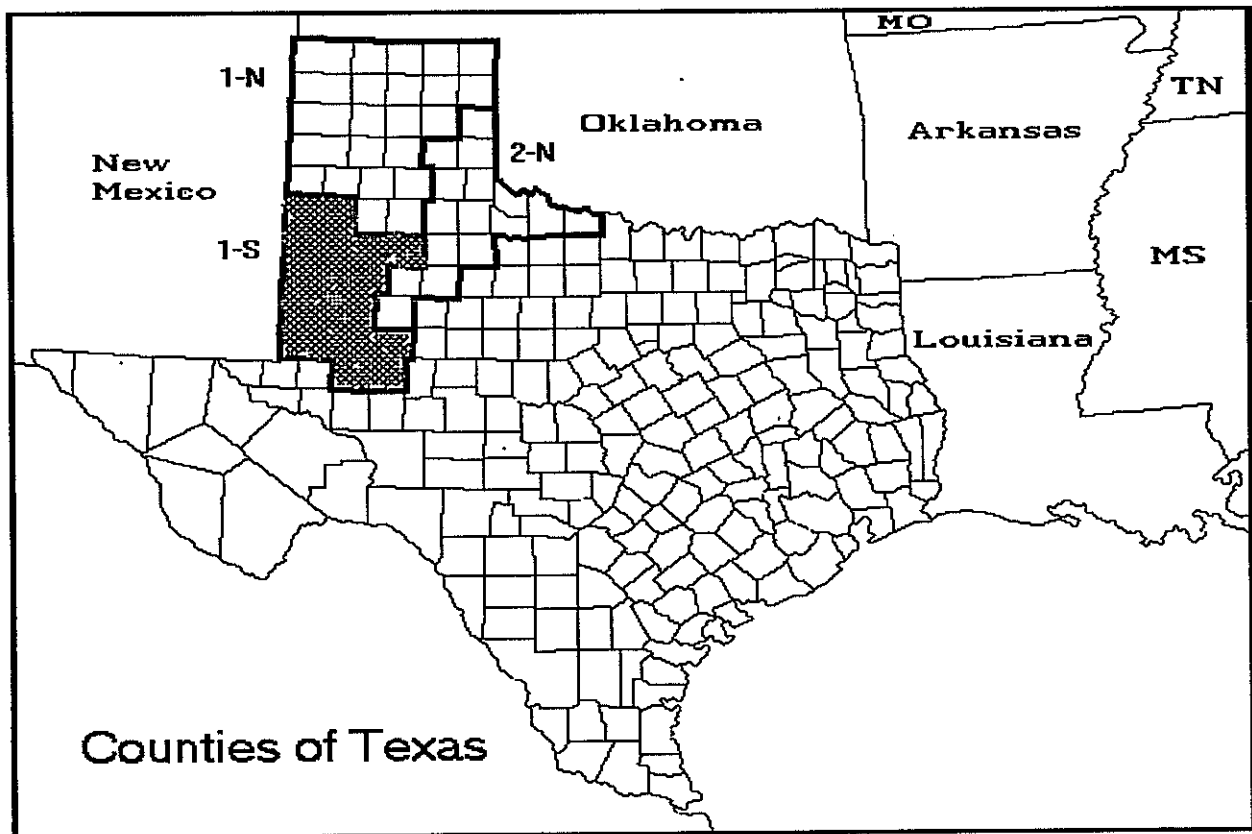


Figure 1. Map Indicating the 16 County region of Southern High Plains of Texas.

Cotton production involves a complex series of processes. After it is produced and harvested on farms, seed cotton is transported to gins for further processing. After pre-cleaning, cotton moves to the gin stand where fiber is removed from the seed, lint cleaned, and baled. Ginning costs comprise a major portion of the total cotton lint production and processing costs. The average charge for saw-ginning and wrapping a 480 pound bale of cotton in the Southwest, including the SHPT, was estimated at \$38.10 per bale, or 16.75% of the variable cash expenses per planted acre of cotton in 1992-93 (USDA, 1995).

Currently, there is a lack of information regarding the operational and cost characteristics of the ginning industry in the SHPT. The primary objective of this project was to collect and document information on these characteristics of the cotton ginning industry in the SHPT.

Methods and Procedure

Information regarding the location, number, and mailing addresses of gins was collected from the Texas Cotton Ginners Association. A mail survey was administered to all of the 127 active cotton gins in the SHPT during the spring of 1996. The purpose of the survey was to determine the cost structure and the processing capacity of the existing operational gins. Participants were asked a variety of questions concerning their gin operations. Specifically, participants were asked to provide hourly capacity of the gin; seasonal capacity of the gin; yearly fixed costs; average cost per bale of cotton, including stripped and picked cotton; transportation costs, including both trailer and module; percentage of stripped cotton versus picked cotton; and the percentage of module-hauled cotton versus trailer-hauled cotton.

A follow-up reminder letter succeeded the initial survey one-week after the first mailing. A second reminder letter was sent three weeks after the initial mailing and included another copy of

the survey. A final reminder letter was sent approximately one week following the second reminder.

In addition to industry averages, survey responses for some questions were classified into four different size groups based on average bales per hour (bph) processing capacity. Four categories were defined as follows:

(Size 1) Up to 14 bph

(Size 2) 15-21 bph

(Size 3) 22-28 bph

(Size 4) Greater than 28 bph

Average per bale and total ginning costs, transportation costs, and trash disposal costs were calculated for each size group and for the overall SHPT ginning industry. The distribution of the number of gins and the processing volume by size group was unavailable for the SHPT ginning industry, thus this information had to be extrapolated using the survey responses. This was accomplished by first estimating the total number of gins in each size group for the SHPT based on the gin size distribution of the survey sample. The average number of bales processed per gin for each size group (as determined from the survey) was then multiplied by the number of estimated gins in that size group to derive the industry total for the 1995 season. Average transportation cost was calculated by multiplying the average per bale transportation cost for each respective size group by the average number of bales ginned for that size. Average ginning cost per bale for each group was multiplied by the average number of bales ginned to determine total ginning cost for each group. Total trash disposal costs and revenues were calculated by multiplying average per ton disposal cost or average per ton revenue from sale of trash by the average amount of trash disposed of or sold by each size group. The net trash disposal costs for

each size group were calculated by subtracting total revenue from total costs. The total cost to the SHPT ginning industry in 1995 was calculated by adding the total ginning cost, the total transportation cost and the net trash disposal costs for each size group.

Results

Responding Gin Characteristics

The gin survey resulted in 46 acceptable returned questionnaires, representing a usable response rate of approximately 38%. Gins from 13 of the 16 counties included in the SHPT returned usable questionnaires. As evidenced from Table 1, gins from Dawson and Lubbock counties had the highest representation, with 7 and 6 returned questionnaires, respectively. Responding gins from Crosby county reported the highest average rated capacity and actual processing capacity at 33 bph and 24.75 bales per hour, respectively. Howard county responding gins averaged the lowest rated capacity at 12 bph, the lowest average processing capacity at

Table 1. Responding Gin Characteristics by County.

County	# of Gins in 1995	# of Surveys Returned	Avg. Rated Capacity (bph)	Avg. Processing Capacity Per Gin (bph)	Seasonal Capacity Per Gin (bales)
Bailey	8	2	15.00	12.5	13,500
Cochran	2	1	15.00	12.00	17,500
Crosby	8	4	33.00	24.75	39,006
Dawson	13	7	21.43	15.86	27,000
Gaines	13	3	25.33	19.33	37,333
Hockley	12	2	25.00	20.00	35,000
Howard	5	1	12.00	9.00	7,000
Lamb	12	5	21.80	16.60	29,875
Lubbock	15	6	19.33	14.33	31,500
Lynn	11	4	26.75	21.25	35,000
Martin	9	3	23.33	18.33	18,667
Terry	10	5	25.00	17.60	33,340
Yoakum	6	2	22.50	17.00	90,000

9 bales per hour and the lowest maximum seasonal capacity at 7,000 bales per gin. The highest maximum seasonal capacity per gin was reported to be 90,000 bales in Yoakum County. Several

counties were underrepresented in the survey sample. Thus, this information regarding average rated capacity, average processing capacity and maximum seasonal capacity by county should not be viewed as a reflection of the entire ginning industry of the respective counties. Table 1 provides a summary of the characteristics of the gins that participated in the surveys.

Gin Operation Characteristics

Operational characteristics such as capacity of gins, length of ginning season, and amount of cotton processed of responding gins are presented in Table 2 and provide a general picture of the cotton ginning industry in the SHPT.

Table 2. Gin Operation Characteristics of the SHPT Ginning Industry, 1995.

	Mean	Standard Deviation	Minimum	Maximum
Rated Capacity (bph)	23.15	10.90	8	58
Processing Rate (bph)	17.43	7.95	7	43
Season Length (days)	68.80	19.67	10	120
Hours Ginned Daily	18.78	4.70	9	24
Down-Time Hours	1.85	1.03	0	5
Max. Seasonal Capacity (bales)	30,598	20,360	5,000	90,000
Stripped with Field Cleaner (bales)	4,564	6,556	0	30,000
Stripped without Field Cleaner (bales)	13,846	13,680	800	53,585
Picked (bales)	20.5	119.5	0	697

The average rated hourly capacity of the responding gins was approximately 23 bales per hour. The average processing rate of responding gins in 1995 was, however, about 17 bales per

hour. This difference in rated capacity and realized capacity may be a result of factors such as technical inefficiency of gin machinery or down-time for shift change and cleanup.

The length of the ginning season in 1995 ranged between 10 and 120 days with an average ginning season of 69 days. The length of the ginning season was observed to increase with the size of the gin. Gins processing up to 14 bales per hour had an average ginning season of 52 days in 1995. Gins processing between 15 to 21 bph had an average ginning season of 67 days. Size 3 gins (22-28 bph) averaged a 74-day ginning season, and the largest gins with capacities greater than 28 bph had an average ginning season of 80 days. On average, gins operated 19 hours per day, with an average downtime of about five hours, which included about three hours per day for shift change and cleanup.

Processing Volume and Seasonal Capacity

During the 1995 season, 99.9% of the processed cotton in the SHPT was harvested using a stripper, while the remaining 0.1% was picker harvested. Results suggested that an average of 18,430 bales of cotton were processed per gin in 1995, of which 13,846 bales were stripper harvested without a field cleaner, 4,564 bales were stripper harvested using a field cleaner, and about 20 bales per gin were picker harvested cotton (Table 2). A breakdown of processing volume by gin sizes revealed that gins with capacities up to 14 bales per hour processed an average of 4,830 bales per gin during 1995. Gins with capacities between 15 and 22 bph processed 12,985 bales per gin, gins of capacities 22 to 28 bph processed 26,201 bales per gin, and the largest gins with capacities greater than 28 bales per hour ginned an average of 32,334 bales per gin during the 1995 ginning season (Table 3).

Table 3. Processing Volume and Seasonal Capacity of the SHPT Ginning Industry, 1995.

Size Group	# of gins	1995 Average	1995 Total	Seasonal Capacity (Bales)	
		Processing Volume (Bales/gin)		Per gin	Total
Size 1 gins (<14 bph)	25	4,830.38	120,759.50	10,875	217,875
Size 2 gins (15-21 bph)	44	12,985.11	571,344.84	24,301	1,069,244
Size 3 gins (22-28 bph)	25	26,201.83	655,045.75	37,889	947,225
Size 4 gins (>28 bph)	33	32,334.63	1,067,042.80	47,564	1,569,612
Total			2,414,192.89		3,803,956

Based on the gin size distribution of the survey sample, it was determined that there were 25 gins in size group 1 (up to 14 bph), 44 gins in size group 2 (15-21 bph), 25 gins in size group 3 (22-28 bph), and 33 gins in size group 4 (greater than 28 bph) in the SHPT in 1995. The number of gins in each size group multiplied by the average processing volume per gin for each respective group resulted in a total processing volume of 2.4 million bales in the 1995 season for the SHPT (Table 3). The smallest gins, with processing capacities up to 14 bph, ginned approximately 5% of the total processing volume. Gins with capacities of 15 to 21 bph processed about 24% and gins with 22-28 bph processing capacity ginned approximately 27% of the total volume. The largest capacity gins processed the greatest amount of cotton at slightly over 1 million bales or about 44% of the total volume (Table 3).

In another question, survey respondents were asked to report what they perceived to be their maximum seasonal capacity. Gins processing less than 14 bph reported a perceived average maximum seasonal capacity of 10,875 bales per gin (Table 3). Size 2 gins (15-21 bph) reported an average maximum seasonal capacity of 24,301 bales per gin and the maximum reported

seasonal capacity for size 3 gins (22-28 bph) was 37,889 per gin. The largest gins with hourly capacities greater than 28 bph reported an average maximum seasonal capacity of 47,564 bales per gin. Extrapolation of the reported total maximum seasonal capacities per gin by size group for the ginning industry showed a total maximum seasonal capacity of about 3.8 million bales for the SHPT in 1995 (Table 3).

An examination of the total bales processed by the industry and the maximum seasonal capacity indicate that the ginning industry in the SHPT had an excess capacity of close to 1.4 million bales in 1995. This suggests that the excess capacity for the SHPT ginning industry was about 36.5% of the maximum seasonal capacity in the 1995 season. Further, it was observed that while the smaller gins (size 1 and 2 gins) operated with an excess capacity of 45 to 47%, the larger gins had a much lower excess capacity of about 31 to 32%.

Transportation Cost Characteristics

All responding gins indicated that they transported seed cotton from the producers' field and about 96% of them incurred the cost of transportation. Approximately 92% of cotton coming to the gins was transported by module at a cost to the gins. A small percentage of cotton was transported to gins using trailers, but producers rather than the gins incurred the transportation cost. Generally, trailer hauled cotton was transported to smaller gins and for only a short distance.

The average transportation cost of cotton from the farmer's field to gin in 1995 was \$42.00 per module and the average distance of transportation was approximately 14 miles (Table 4). Responding gins further indicated that an average of 8.8 bales of cotton was transported in one module (Table 4). These results translate to a module transportation cost of \$4.77 per bale or \$0.34 per bale per mile. Gins utilizing trailers to transport cotton from the field estimated an

average transportation cost of \$0.88 per mile per trailer. The average number of bales per trailer was 3.5 bales and the average distance of hauling was 6.3 miles (Table 4). These results imply a cost of \$0.25 per bale per mile for trailer transported cotton.

Table 4. Transportation Costs and Characteristics of the SHPT Ginning Industry, 1995.

	Mean	Standard Deviation	Minimum	Maximum
Avg. Distance Hauled by Module (miles)	13.80	5.76	5	25
Avg. # of Bales per Module	8.80	1.02	7	12
Transportation Cost per Module (\$)	42.00	18.24	12	80
Avg. Distance Hauled by Trailer (miles)	6.25	3.72	1	15
Avg. # of Bales per Trailer	3.50	0.80	2	5
Transportation Cost per Mile Trailer (\$)	0.88	0.83	0	2

Module transportation cost per bale varied with gin size, but showed no definable trend. Size 2 gins (15-21 bph) experienced the highest transportation cost at \$5.11 per bale, while Size 1 gins (up to 14 bph) had the lowest cost at \$4.20 per bale. Size 3 and 4 (22-28 bph and greater than 28 bph, respectively) incurred costs of \$4.62 and \$5.04 per bale, respectively (Table 5). Total module transportation costs for each gin size and for the SHPT ginning industry for the 1995 season are presented in Table 5. The total module transportation cost for the ginning industry in the SHPT in 1995 was estimated at approximately \$11.8 million (Table 5).

Table 5. Module Transportation Costs for the SHPT Ginning Industry, 1995.

Gin Size	Bales Ginned	Transportation Cost per Bale (\$)	Total Transportation Cost (\$)
Size 1 gins (<14 bph)	120,759.5	4.20	507,189.90
Size 2 gins (15-21 bph)	571,344.84	5.11	2,919,572.13
Size 3 gins (22-28 bph)	655,045.75	4.62	3,026,311.37
Size 4 gins (>28 bph)	1,067,042.8	5.04	5,377,895.71
Total			11,830,969.11

Ginning Cost Characteristics

Average ginning cost (variable and fixed) in the 1995 season for the responding gins was calculated at \$48.49 per bale. Average ginning cost per bale was observed to decrease as the size of gins increased (Table 6). Small gins with capacities below 14 bph had a ginning cost of \$49.50 per bale, while gins of capacities 15 to 21 bph reported an average cost of \$47.50 per bale. Cost for the two larger size gins decreased as well, with size 3 (21-28 bph) gins having an average ginning cost of \$46.57 per bale and the largest size gins (greater than 28 bph) experiencing costs of \$45.80 per bale (Table 6). Larger gins achieved a lower per bale ginning cost, probably by spreading fixed costs across a larger number of bales.

The total cost of ginning in 1995 for the SHPT ginning industry was calculated at about \$112.5 million (Table 6). The smallest gins with processing rates less than 14 bph constituted about 5% of the total industry ginning cost. The gins processing between 15 to 21 bph accounted for about 24% of the total industry ginning cost. The third group of gins, with processing rates between 22 and 28 bph, comprised about 27% of the total industry ginning cost. Gins with processing rates greater than 28 bph accounted for about 44% of the total industry ginning cost.

Table 6. Ginning Costs for the SHPT Ginning Industry, 1995.

Gin Size	Bales Ginned	Ginning Cost Per Bale (\$)	Total Ginning Cost (\$)
Size 1 gins (<14 bph)	120,759.50	49.50	5,977,595.25
Size 2 gins (15-21 bph)	571,344.84	47.50	27,110,312.66
Size 3 gins (22-28 bph)	655,045.75	46.57	30,505,480.58
Size 4 gins (>28 bph)	1,067,042.80	45.80	48,870,560.24
Total			112,463,948.73

Gin Trash Cost and Revenue Characteristics

Some responding gins reported selling gin trash while others paid to dispose of the trash. Thus, both the cost of trash disposal and revenue generated from selling trash were calculated from survey responses. Survey results indicated that each gin, on an average, generated close to 8,000 tons of gin trash, disposed of about 6,000 tons of trash at a cost of \$4.15 per ton, and sold about 2,000 tons of gin trash at a price of \$6.87 per ton (Table 7).

Table 7. Gin Trash Disposal Methods and Costs for the SHPT Ginning Industry, 1995.

	Mean	Standard Deviation	Minimum	Maximum
Trash generated per gin (tons)	7,816.51	5,771.50	150.00	24,300.00
Trash disposed at gin's cost (tons)	5,928.46	5,558.23	0.00	24,300.00
Trash sold by gin (tons)	1,888.05	4,106.30	0.00	20,000.00
Disposal cost (\$/ton)	4.15	2.28	0.00	10.00
Price paid to gin (\$/ton)	6.87	10.68	1.00	40.00

Estimates of trash disposal costs for each size gin and the SHPT ginning industry are presented in Table 8. Results indicate that a little over 1 million tons of gin trash was generated in 1995 by the SHPT ginning industry and about 76% of it was disposed of at ginners' cost. The trash disposal cost per ton ranged between \$3.38 and \$4.60. The total trash disposal cost for the SHPT ginning industry was estimated at \$3.37 million in 1995 (Table 8). Estimates of revenues from gin trash sales (Table 9) indicate that the SHPT industry sold a little over 240 thousand tons of gin trash for a revenue of about \$1.91 million in 1995. Thus, the SHPT ginning industry incurred a net trash disposal cost of approximately \$1.46 million in 1995 (Table 10).

Two interesting observations can be made from this analysis. First, it should be noted that the smallest size gins did not sell any trash in 1995. However, no noticeable difference was observed for gins of other size groups in terms of quantity of trash sold per gin. Secondly, the largest size gins (size 4 gins) received a substantially higher price than their smaller counterparts. Gins with processing capacity of greater than 28 bph reported receiving \$19.67 per ton of gin trash, but it is not clear why such a discrepancy existed.

Total Cost to the SHPT ginning industry in 1995

Total ginning industry costs for the SHPT were calculated by adding total transportation costs, total-ginning costs, and net trash disposal cost for each size group. Results indicate that the ginning industry incurred a total cost of approximately \$125.8 million (Table 11). Smaller gins with capacities below 14 bales per hour incurred approximately \$6.7 million of the total industry costs. Medium size gins had similar cost structures in that size 2 gins (15-21 bph) experienced about \$30.4 million and Size 3 gins (22-28 bph) carried about \$33.9 million of the total industry costs. The largest gins with capacities greater than 28 bales per hour experienced the largest percentage of the total industry costs at \$54.7 million.

Table 8. Gin Trash Disposal Characteristics and Costs for the SHPT industry, 1995.

Gin size	# of gins	Avg. Tons of		Industry Total		Industry Trash		Total Trash Disposal Cost (\$)
		Trash Generated per gin	Trash Generated (tons)	Trash Generated	Trash Disposed of at Ginner's Cost (tons)	Trash Disposal Cost per ton	Disposal Cost (\$)	
Size 1 (<14 bph)	25	2,430.63	60,765.75	60,765.75	60,765.75	3.38	205,388.24	
Size 2 (15-21 bph)	44	7,569.43	333,054.92	208,591.24	208,591.24	4.60	959,519.70	
Size 3 (22-28 bph)	25	7,816.63	195,415.75	143,128.25	143,128.25	3.67	525,280.68	
Size 4 (>28 bph)	33	12,988.22	428,611.26	365,178.00	365,178.00	4.60	1,679,818.80	
Total			1,017,847.68	777,663.24	777,663.24		3,370,007.42	

Table 9. Gin Trash Sales Characteristics and Revenue for the SHPT industry, 1995.

Gin size	# of gins	Avg. Tons of Trash Sold per gin	Industry Total Trash Sold (tons)	Price Paid to Gin (\$/ton)	Total Revenue Trash (\$)
Size 1 (<14 bph)	25	0.00	0.00	0.00	0.00
Size 2 (15-21 bph)	44	2,828.71	124,463.24	4.38	545,148.99
Size 3 (22-28 bph)	25	2,091.50	52,287.50	2.25	117,646.88
Size 4 (>28 bph)	33	1,922.22	63,433.26	19.67	1,247,732.20
Totals			240,184.00		1,910,528.07

Table 10. Net Trash Disposal Costs for the SHPT Ginning Industry, 1995.

Gin Size	Total Trash Disposal Cost (\$)	Total Revenue from Trash (\$)	Net Trash Disposal Cost (\$)
Size 1 gins (<14 bph)	205,388.24	0.00	205,388.24
Size 2 gins (15-21 bph)	959,519.70	545,148.99	414,370.71
Size 3 gins (22-28 bph)	525,280.68	117,646.88	407,633.80
Size 4 gins (>28 bph)	1,679,818.80	1,247,732.20	432,086.60
Total	3,370,007.42	1,910,528.10	1,459,479.35

Table 11. Total Cost to the SHPT ginning industry, 1995

	Total Transportation Cost	Total Ginning Cost	Net Trash Disposal Cost	Total Industry Cost
	-----\$-----			
Size 1 gins (<14 bph)	507,189.90	5,977,595.25	205,388.24	6,690,173.39
Size 2 gins (15-21 bph)	2,919,572.13	27,110,312.66	414,370.71	30,444,255.50
Size 3 gins (22-28 bph)	3,026,311.37	30,505,480.58	407,633.80	33,939,425.75
Size 4 gins (>28 bph)	5,377,895.71	48,870,560.24	432,086.60	54,680,542.25
Total	11,830,969.11	112,463,948.73	1,459,479.35	125,754,397.19

It should be further noted that the total ginning cost, as one would expect, accounted for about 90% of the total industry cost. About 9% of the total industry cost were incurred by the gins in providing module transportation of cotton from the farmers' field to gin plants. Gin trash net disposal cost accounted for only about 1% of the total industry cost. Given that the SHPT ginning industry processed over 2.4 million bales of cotton in 1995, results indicate that the ginning industry experienced a total cost of about \$53.85 per bale or about 10 to 11 cents per pound of cotton processed during that year.

Summary of Results

Within the last decade the cotton ginning industry has experienced major changes in processing methods and transportation, and likely will continue to change in the future. In the spring of 1996, a mail survey was administered to all of the 127 active cotton gins in the SHPT to determine the 1995 season cost and processing structure of the ginning industry. The survey resulted in 46 acceptable returned questionnaires, representing a usable response rate of

approximately 38%. Gins from 13 of the 16 counties of SHPT participated in the survey.

Synopses of the important findings are presented in Table 12.

Table 12. Summary Table

	Size 1 (<14 bph)	Size 2 (15-21 bph)	Size 3 (22-28 bph)	Size 4 (>28 bph)	Industry Averages
# of gins	25	44	25	33	127
Processing					
Volume/gin (bales)	4,830	12,985	26,202	32,335	18,430
Max. Seasonal Capacity/gin (bales)	10,875	24,301	37,889	47,564	30,598
Transportation					
Cost/bale	4.20	5.11	4.62	5.04	4.77
Ginning Cost/bale	49.50	47.50	46.57	45.80	48.49
Trash Generated/gin (tons)	2,431	7,569	7,817	12,988	7,817
Trash Disposed of at Ginner's Cost (tons/gin)	2,431	4,741	5,725	11,066	5,928
Trash Disposal Cost/ton	3.38	4.60	3.67	4.60	4.15
Trash Sold by Gins (tons/gin)	0	2,829	2,092	1,922	1,888
Price Paid to Gin (\$/ton)	0	4.38	2.25	19.67	6.87
Operational Cost (\$/bale)	55.40	52.34	51.94	51.24	53.85

All responding gins indicated that they transported seed cotton from the producers' field and about 96% of them incurred the cost of transportation. Approximately 92% of cotton coming to the gins were transported by module at an average cost of \$42.00 per module, or \$4.77 per bale, or \$0.34 per bale per mile. A small percentage of cotton was transported to gins using trailers, but producers rather than the gins incurred the transportation cost. The cost of transportation by trailer was about \$0.89 per mile per trailer, or about \$0.25 per bale per mile.

During the 1995 season, almost all of the processed cotton in the SHPT was harvested using a stripper. Results suggested that an average of 18,430 bales of cotton was processed per gin in

1995, of which about 75% were stripper harvested without a field cleaner, and the remainder were harvested using a field cleaner. The average rated hourly capacity of the SHPT gins was approximately 23 bales per hour in 1995. The average processing rate (realized capacity) was, however, about 17 bales per hour. The average length of the ginning season in 1995 was about 69 days. On average, gins operated 19 hours per day, with an average downtime of about 5 hours, which included about 3 hours per day for shift change and cleanup. The responding gins reported an average ginning cost (variable and fixed) of about \$48.50 per bale. Average ginning cost per bale was, however, observed to decrease as the size of gins increased.

With regard to gin trash, some responding gins reported selling gin trash while others paid to dispose of the trash. Survey results indicated that each gin, on an average, generated close to 8,000 tons of gin trash (850 pounds of gin trash per a bale of cotton); of which about 6,000 tons of trash were disposed of at a cost of \$4.15 per ton, and about 2,000 tons of gin trash were sold at a price of \$6.87 per ton. The net trash disposal cost was about \$0.60 per bale of cotton processed, but was observed to decrease as the size of gins increased.

The total operational cost (transportation cost + ginning cost + net trash disposal cost) was estimated at \$53.85 per bale of cotton processed, of which, about \$4.75 was the module transportation cost per bale, \$48.50 was the ginning cost per bale, and \$0.60 was the net trash disposal cost per bale. The total operational cost was also observed to decrease with the size of gins (Table 12).

Based on the gin size distribution of the survey sample, it was determined that there were 25 gins with processing capacity up to 14 bph, 44 gins with processing capacity between 15 and 21 bph, 25 gins with 22 to 28 bph processing capacity, and 33 gins with greater than 28 bph processing capacity in the SHPT in 1995. Based on this size distribution of gins and their

respective average processing volume, it was estimated that the SHPT ginning industry processed about 2.4 million bales of cotton in the 1995 season. The total maximum seasonal capacities for the SHPT ginning industry was, however, estimated at about 3.8 million for the same time period. Thus, results indicate that the SHPT ginning industry had an excess capacity of close to 1.4 million bales, or 36.5% of the maximum seasonal capacity. It was further observed that the smaller gins operated with a greater amount of excess capacity than their larger counterparts.

The total module transportation cost for the SHPT ginning industry in 1995 was estimated at approximately \$11.8 million. The total cost of ginning for the SHPT ginning industry was calculated at about \$112.5 million. The industry trash disposal cost was estimated at \$3.37 million and the estimate of revenues from gin trash sales was about \$1.91 million. Thus, the SHPT ginning industry incurred a net trash disposal cost of approximately \$1.46 million in 1995. Total ginning industry operational costs for the SHPT were calculated by adding total transportation costs, total-ginning costs, and net trash disposal cost for each size group. Results indicate that the SHPT ginning industry incurred a total cost of approximately \$125.8 million, or about \$53.85 per bale, in 1995.

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