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ECONOMICS & MARKETING

Costs Associated with Alternative Cotton Stripper-Harvesting Systems in Texas

Jeannie Nelson, Sukant K. Misra,* and Alan Brashears

INTERPRETIVE SUMMARY

Cotton has consistently ranked as a leading cash crop in Texas. In 1997, Texas led the USA in the production of upland cotton and ranked second in the nation in the production of American pima cotton.

Currently, 85% of the harvested cotton in Texas is stripper harvested. The acreage of cotton produced in Texas leaves producers with questions concerning the most cost-effective method of cotton harvesting in individual situations. The objective of this study was to determine the least costly harvesting system for strippers with and without bur extractors, by size of cotton operation in Texas.

Data regarding investment costs, maintenance costs, and performance rates for four-, six-, and eight-row cotton strippers with and without bur extractors were collected from cotton producers, harvesting equipment owners, equipment dealers, and custom cotton harvesters between June and September 1999. The fixed cost, variable cost, total cost, and average cost of owning and operating each type and size of cotton stripper were calculated using the gathered information for operations ranging from 500 to 2500 acres, increasing in increments of 100 acres. The least costly harvesting systems for strippers with and without bur extractors by size of cotton operation in Texas were determined by comparing the corresponding estimated average harvesting costs and custom harvesting charges.

Assuming an average yield of 524 lb of lint per acre and the Texas average farm size of 582 acres, results indicated that the average cost for a four-row stripper without a bur extractor was about 4.75 ¢/lb of lint. Comparable prices for larger strippers were 4.84 ¢/lb for a six-row stripper and 5.29 ¢/lb for an eight-row stripper. The average costs for the three stripper sizes with bur extractors were approximately 5.66, 5.77, and 6.12 ¢/lb of lint, respectively. Thus, a typical Texas cotton producer would minimize the cost of harvesting by investing in a four-row stripper with and without a bur extractor.

In the case of strippers without bur extractors, the four-row stripper had the lowest harvesting cost for fields smaller than about 1400 acres, and the six-row stripper beginning at 1500 acres. Among the three alternatives for strippers with bur extractors, the four-row stripper minimized harvesting costs for fields of up to 800 acres. The six-row stripper with a bur extractor had the lowest harvesting cost for farms 900 - 2200 acres. The eight-row stripper with a bur extractor became the least costly cotton harvesting alternative at 2300 acres.

Further, results indicated that, for the farm sizes examined in this study, the cost of having a crop custom-harvested was always more expensive than owning a stripper with or without a bur extractor.

It should be recognized that the average harvesting costs estimated in this study account for only single ownership of a cotton stripper. If costs associated with ancillary equipment were considered, the cost estimates would increase, thus allowing custom harvesting likely to become more competitive with stripper ownership.

ABSTRACT

Cotton growers need accurate cost information for the various harvesting methods. This study provides cost estimates of six harvesting methods; four-, six-, and eight-row strippers with and without bur extractors. The least costly harvesting systems for these methods, based on size of cotton operation in Texas, were determined by comparing the

J. Nelson and S.K. Misra, Dep. of Agric. and Applied Econ., Texas Tech Univ., Box 42132, Lubbock, TX 79409-2132; and A. Brashears, USDA-ARS, Rt. 3, Box 215, Lubbock, TX 79401. Received 13 Oct. 1999. * Corresponding author (sukant.misra@ttu.edu).

corresponding estimated average harvesting costs and custom harvesting charges. Results indicated that a typical Texas cotton producer with 235 ha (582 acres) and a lint yield of 586 kg (524 lb) would minimize the cost of harvesting by owning a four-row stripper with or without a bur extractor. When comparing stripper systems without bur extractors, the alternative with the minimum harvesting cost was the four-row stripper up to 567 ha (1400 acres) and the six-row stripper for a farm larger than 607 ha (1500 acres). The eight-row stripper was not found to minimize harvesting costs for any of the farm sizes examined. For stripper alternatives with bur extractors, the harvesting cost was minimized by the four-row stripper up to 324 ha (800 acres), the six-row stripper for farms 364 - 891 ha (900 - 2200 acres), and the eight-row stripper for farms larger than 931 ha (2300 acres). Custom harvesting costs were found to be much greater than the ownership of a stripper with or without a bur extractor for any of the farm sizes examined in this study. These results are based on the costs associated with ownership of one cotton stripper and may differ considerably if costs associated with ancillary equipment also were considered.

Cotton has consistently ranked as a leading cash crop in Texas. In 1997 Texas led the USA in the production of upland cotton and ranked second in the nation in the production of American pima cotton (National Agricultural Statistics Service, 1998). Texas has eight main regions consisting of more than 100 counties where cotton is produced. Stripper harvesting is primarily used in the High Plains, Rolling Plains, Central Blackland, Coastal Bend, and Winter Garden regions.

Of the cotton produced in these eight regions, 85% is stripper harvested; the remaining 15% is machine picked (Glade et al., 1996). The stripper-harvesting process removes foreign matter such as burs, sticks, leaves, hulls, and non-plant materials such as sand and rocks with the cotton lint and seed. Bur extractors are being adopted into the stripper-harvesting method by an increasing number of producers. Bennett et al. (1997) found that investment in bur extractors for a Texas producer was profitable for all irrigated and most dryland cotton production situations with an operation of at least 304 ha (750 acres). McPeek (1997) found that about 25% of cotton in Texas is harvested with the use of a bur extractor. The use of a bur extractor helps to remove foreign matter in cotton during stripper harvesting. According to Bennett et al. (1995), the bur extractor, when incorporated into the harvesting process, reduces burs in cotton by about 70% and sticks by about 29%.

Three types of strippers (four-, six-, and eight-row) most commonly are used to harvest cotton in Texas. Each can be equipped with a bur extractor. Due to technical advances that have increased machine-harvesting efficiency, there is a need for information on performance rates and ownership costs of alternative cotton harvesting methods. This information would help producers make informed choices among alternative harvesting systems and custom harvesting, given their individualized production situations.

The objective of this study was to determine the least costly harvesting system for strippers with and without bur extractors by size of cotton operation in Texas. This study compiled and compared cost data (including ownership costs, machine performance rates, and average costs to the producer) for the harvesting options.

PROCEDURES

Data corresponding to each size of cotton stripper were collected from cotton producers, harvesting equipment owners, equipment dealers, and custom cotton harvesters via in-person and telephone interviews between June and September 1999. Data gathered consisted of purchase costs, seasonal maintenance costs, fuel costs, fuel consumption, labor costs, performance rates, useful life, and salvage value associated with each stripper harvesting alternative. The data were averaged for each of the harvesting methods.

The collected information was categorized by the size of the harvesting machine. Data regarding stripper harvesting equipment were organized into six main categories of strippers: four-, six-, and eight-row with and without bur extractor. The fixed costs, variable costs, total costs, and average costs of owning and operating each machine were calculated using the gathered information for cotton operation sizes from 202 - 1012 ha (500 - 2500 acres), increasing in increments of 40 ha (100 acres).

The cotton harvesting costs were separated into fixed and variable costs. The fixed costs consisted of

equal amortized annual payments for the machine (accrued interest and depreciation), taxes, housing, and insurance. The variable costs included seasonal maintenance of the equipment and the cost of fuel and labor per day used by each machine.

Fixed-Cost Estimates

Investment cost was determined by assuming the machine was purchased with 100% liability, and it was calculated by amortizing the purchase cost into equal annual payments, with the salvage value used as the future value. The purchase cost was amortized using an annual real interest rate for 7 yr. The real interest rate was determined by adjusting the nominal interest rate by the inflation rate using Equation 1 (Bowlin et al., 1990):

$$k^* = [(1 + k) / (1 + i)] - 1 \qquad [1]$$

where k^* is the real interest rate, k is the average of the nominal fixed interest rates from 1996 to 1999 (Federal Reserve Bank of Dallas, 2000), and i is the inflation rate from the Producer Price Index for farm machinery and equipment for 1999 (Bureau of Labor Statistics, 2000). Survey participants indicated that the salvage value of a 7-yr-old cotton stripper was about 45% of the original purchase cost. Therefore, the annual amortized investment cost accounted for the purchase cost of the machine as well as any accrued interest and depreciation during the specified period of time.

According to the American Society of Agricultural Engineers (1998), other fixed ownership costs (with respect to the purchase cost) can be estimated as: 1% for taxes, 0.75% for housing, and 0.25% for insurance. Therefore, 2% of the purchase cost can be used to estimate the tax, housing, and insurance costs of a machine. The annual fixed cost was calculated by adding the annual amortized investment cost and the estimated annual cost of taxes, housing, and insurance.

Variable and Total Cost Estimates

The variable costs for stripper harvesting included fuel and labor costs per day and seasonal maintenance costs. The daily fuel and labor costs were gathered from cotton stripper owners and custom harvesters. The seasonal maintenance cost estimates were obtained from cotton harvesting equipment owners and dealers. It was found that the average life of a cotton stripper is 7 yr. Therefore, the maintenance cost estimates were based on regular repairs anticipated for 7 yr. Seasonal maintenance on cotton strippers included replacing big and small brushes, bats, bearings, fuel and oil filters, oil, etc. Maintenance on bur extractors involved replacing top and bottom saws, brushes, belts, bearings, etc. The present value of the variable costs associated with operating a cotton stripper for a 7-yr period was calculated using Equation 2:

$$TPV_{VC} = \sum_{t=1}^{n} \frac{VC_t}{(1+k^*)^t} \qquad [2]$$

where TPV_{VC} is the present value of the specific variable cost of the machine for the life of the stripper, VC is the specific variable cost, t is time, k^* is the real interest rate, and n is the life of the machine in years. Equation 2 was used to calculate the present value of the fuel cost, labor cost, and maintenance cost. The results of Equation 2 were then averaged across the 7 yr to determine the average present value of the specific variable cost, APV_{VC}. It was assumed that the machine would be used each season, and involve variable costs each year. Any unforeseen repairs not included in the anticipated seasonal maintenance that might be encountered by the producer throughout the life of the machine were not accounted for in this study.

The number of hectares harvested in an hour varied according to the number of row units of each stripper. As a result, the number of days required for each machine to harvest a specific number of hectares varied. The number of days, D, was determined using the formula in Equation 3:

$$D = H / (A \times P) \qquad [3]$$

where H is the number of hectares, A is the average number of hours worked in 1 d, and P (performance rate) is the number of hectares each size of stripper could harvest in 1 h.

The total cost of each cotton harvesting machine, which combined the fixed and variable costs

corresponding to each machine, was calculated using Equation 4:

$$TC = FC + \{APV_{MC} + [(APV_{L+F}) \times D]\} \quad [4]$$

where TC is the total cost per year, FC is the fixed cost per year associated with each machine, APV_{MC} is the average present value of the annual maintenance cost for the life of the machine, APV_{L+F} is the average present value of the daily cost of labor and fuel per day for the life of the machine, and D is the number of days required for each machine to harvest a specific number of hectares.

Average Cost Estimates

Segarra et al. (1990) indicated that cotton lint yield reductions occur when harvest is delayed. The reductions in yield are expected to grow at an increasing rate as cotton harvesting is delayed. The model used to estimate the percentage of cotton lint yield (Segarra et al., 1990) is shown in Equation 5:

$$Y_W = 0.93944 - 0.005971 \times W^2 \quad [5]$$

where Y_W is the percentage of cotton lint yield for each week (1–12) and W is the week number during the harvesting season. The percentage of cotton lint yield remaining after lint loss due to delayed harvest, Y, was determined by using Equation 6:

$$Y = 1 - [Y_{W-1} - Y_W] \quad [6]$$

where Y_{W-1} is the percentage of cotton lint yield for the week prior to Y_W, and Y_W is the percentage of cotton lint yield for each week. According to Segarra et al. (1990), harvesting in the Southern High Plains usually occurs during November, December, and January. The yield remaining after lint reductions, Y_{end}, was calculated using Equation 7:

$$Y_{end} = Y_{begin} \times Y \quad [7]$$

where Y_{begin} is the yield prior to any lint loss and Y is the percentage of cotton lint yield remaining after lint loss. The 1998 Texas average lint yield of 586 kg per harvested hectare (524 lb/acre) (Texas Agricultural Statistics Service, 1998), was used for Y_{begin}. While Equation 7 accounted for lint loss due to a delay in harvest, it should be noted that costs associated with cotton quality reductions due to delayed harvest were not accounted for in this study.

The average cost of owning and operating each machine was calculated for farms from 202 - 1012 ha (500 - 2500 acres), increasing in increments of 40 ha (100 acres). The average cost, which combined the fixed and variable costs corresponding to each machine, was calculated using Equation 8:

$$AC = TC / (Y_{end} \times H) \quad [8]$$

where AC is the average cost per kilogram of lint associated with owning and operating the machine, TC is the total cost per year, Y_{end} is the yield per hectare in kilograms remaining after lint reductions, and H is the number of hectares to be harvested. The most cost-effective harvesting methods for strippers with and without bur extractors were determined by comparing the corresponding estimated average costs and custom-harvesting charges.

RESULTS

Fixed-Cost Estimates

The annual investment costs for the strippers without bur extractors were $ 13 034 for the four-row, $ 13 527 for the six-row, and $ 14 936 for the eight-row. The addition of a bur extractor to the harvesting process increased the annual investment costs of each stripper size by approximately $1832. Therefore, the four-, six-, and eight-row strippers with bur extractors had annual investment costs of $14 866, $15 359, and $16 768, respectively (Table 1). These costs were calculated assuming that at the end of the life of the machine, the owner would either sell the stripper for salvage value or trade it in for a new one. The calculated annual investment costs account for accrued interest (using a real interest rate of 7.91% for this study) on the entire purchase value over the life of the machine, as well as depreciation.

After accounting for annual taxes, housing, and insurance, the four-, six-, and eight-row strippers without bur extractors had fixed costs per year of $13 298, $13 802, and $15 239, respectively. The fixed costs per year for the same-size machines with bur extractors were about $15 167, $15 671, and $17 108, respectively (Table 1). As the stripper size

Table 1. Costs associated with three sizes of stripper harvesters for cotton in Texas. The abbreviation BE stands for bur extractor.

	4-row stripper		6-row stripper		8-row stripper	
	Without BE	With BE	Without BE	With BE	Without BE	With BE
Purchase cost ($)	92 500	105 500	96 000	109 000	106 000	119 000
Annual investment cost † ($/yr)	13 034	14 866	13 527	15 359	14 936	16 768
Annual THI ‡ ($/yr)	264	301	274	311	303	340
Annual fixed cost ($/yr)	13 298	15 167	13 802	15 671	15 239	17 108
Annual PV_{MC} § ($/yr)	292	888	413	1009	534	1131
PV (Labor+Fuel) ($/ha)	0.61	0.61	0.61	0.61	0.61	0.61
Performance rate (ha/h)	0.65	0.48	0.82	0.66	1.06	0.94

† The annual investment cost was calculated by amortizing the purchase cost with a salvage value of 45% used as the future value and a real interest rate of 7.91% for 7 yr. This calculation assumes that the producer will receive the salvage value when the stripper is sold at the end of the life of the machine or is traded in on a new one.

‡ THI refers to annual taxes, housing, and insurance.

§ PV_{MC} refers to annual present value of the maintenance cost.

increased from a four-row to a six-row, the fixed costs increased by approximately $3528 for the life of the stripper, or $504 per year. The fixed costs increased by an additional $10 059 for the life of the stripper, or $1437 per year, as the stripper size increased from six- to eight-row, with and without a bur extractor (Table 1).

Variable Cost Estimates

The present values of annual maintenance costs for the life of the machines without bur extractors were $292 for the four-row, $413 for the six-row, and $534 for the eight-row strippers. The strippers with bur extractors had annual maintenance costs (present values) of $888 for the four-row; $1009 for the six-row; and $1131 for the eight-row. The present value of the maintenance cost increased at a constant rate of about $121 per year with each increase in stripper size (Table 1). The addition of the bur extractor to the harvesting process increased the annual maintenance cost (present value) by about $596.

The other variable costs per day associated with stripper harvesting were constant across the stripper sizes. The two variable costs accounted for in this study were fuel and labor. Data gathered from the industry indicated that each size of stripper operates an average of 10 h d^{-1} and uses about 189 L (50 gal) of diesel fuel per day. Therefore, the costs for fuel and labor for each stripper were about $30 and $51.50 d^{-1}, respectively. The average present value of the daily fuel and labor costs was $60.50.

The variable costs varied according to the number of days required to harvest a given number of hectares. Survey results indicated that the number of hectares each stripper size could harvest in 1 h increased as stripper size did, from four-row to eight-row (Table 1), directly affecting the number of days required to harvest a given number of hectares. However, the stripper without a bur extractor was capable of harvesting approximately 0.405 ha (1 acre) per hour more than a stripper with a bur extractor (Table 1).

Average Cost Estimates

The average cost analysis was separated into two categories: strippers with and without bur extractors. Figures 1 and 2 present the average cost estimates for the four-, six-, and eight-row strippers with and without a bur extractor, respectively, by the size of the operation.

Stripper Alternatives without Bur Extractors

The four-row stripper without a bur extractor exhibited the minimum average cost among the three stripper alternatives, up to 567 ha (1400 acres) (Table 2). At this point, the average cost was about 5.00 ¢/kg of lint (2.26 ¢/lb of lint). The six-row stripper without a bur extractor became the least expensive of the alternatives, starting at about 607 ha (1500 acres), where the average cost was 4.76 ¢/kg of lint (2.16 ¢/lb of lint) (Table 2, Fig. 1). The eight-row stripper did not minimize harvesting costs for any of the sizes of operations examined in this study.

Assessing average costs of strippers individually, it was observed that the harvesting costs of the four-, six-, and eight-row strippers continually decreased for the farm sizes examined in this study (Table 2).

Table 2. Average cotton-harvesting cost estimates, by size of operation in Texas, for four-, six-, and eight-row strippers without bur extractors.

	Size of stripper		
Farm size	**4-row**	**6-row**	**8-row**
ha	**---------- cents / kg lint ----------**		
202	**12.32**	**12.73**	**13.95**
243	**10.50**	**10.69**	**11.69**
283	**9.10**	**9.24**	**10.08**
324	**8.04**	**8.25**	**8.87**
364	**7.31**	**7.39**	**7.93**
405	**6.65**	**6.71**	**7.26**
445	**6.10**	**6.22**	**6.64**
486	**5.72**	**5.75**	**6.12**
526	**5.33**	**5.35**	**5.68**
567	**5.00**	**5.01**	**5.36**
607	**4.77**	**4.76**	**5.04**
648	**4.52**	**4.50**	**4.75**
688	**4.35**	**4.27**	**4.49**
729	**4.14**	**4.11**	**4.27**
769	**3.96**	**3.92**	**4.11**
810	**3.85**	**3.75**	**3.88**
850	**3.70**	**3.60**	**3.76**
891	**3.56**	**3.51**	**3.61**
931	**3.48**	**3.38**	**3.47**
972	**3.37**	**3.26**	**3.39**
1012	**3.21**	**3.12**	**3.17**

Table 3. Average cotton-harvesting cost estimates, by size of operation in Texas, for four-, six-, and eight-row strippers with bur extractors.

	Size of stripper		
Farm size	**4-row**	**6-row**	**8-row**
ha	**---------- cents / kg lint ----------**		
202	**14.84**	**14.98**	**16.14**
243	**12.51**	**12.74**	**13.53**
283	**10.98**	**11.02**	**11.66**
324	**9.72**	**9.72**	**10.39**
364	**8.85**	**8.82**	**9.29**
405	**8.05**	**8.01**	**8.41**
445	**7.50**	**7.34**	**7.69**
486	**6.95**	**6.87**	**7.17**
526	**6.57**	**6.39**	**6.66**
567	**6.17**	**5.98**	**6.22**
607	**5.89**	**5.70**	**5.84**
648	**5.58**	**5.39**	**5.57**
688	**5.38**	**5.18**	**5.27**
729	**5.13**	**4.93**	**5.01**
769	**4.91**	**4.71**	**4.77**
810	**4.78**	**4.56**	**4.61**
850	**4.66**	**4.38**	**4.42**
891	**4.49**	**4.21**	**4.24**
931	**4.34**	**4.11**	**4.08**
972	**4.26**	**3.97**	**3.98**
1012	**3.95**	**3.65**	**3.63**

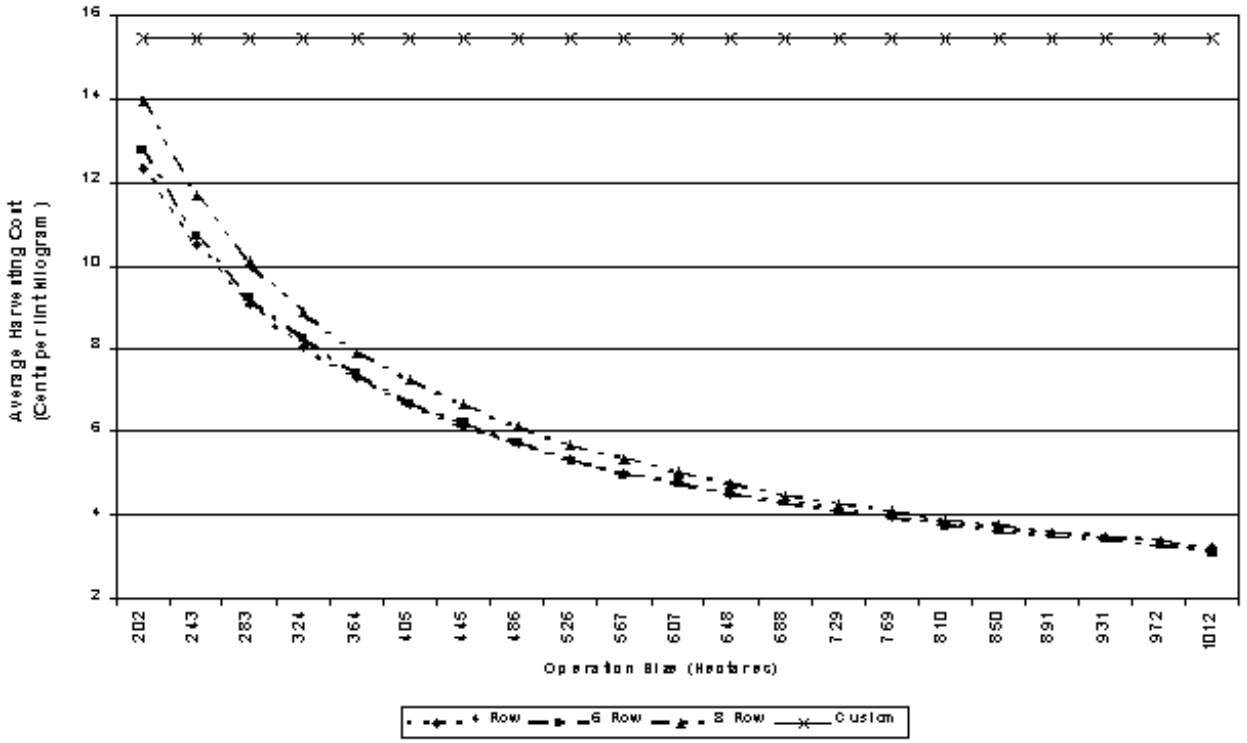

Fig. 1. Average cotton harvesting cost estimates, by size of operation in Texas, for four-, six-, and eight-row strippers without bur extractors.

Results indicated that a producer could reduce harvesting costs for a farm of 1012 ha (2500 acres) to about 3.12 ¢/kg of lint (1.41 ¢/lb of lint) by using a six-row stripper. However, harvesting a 1012-ha (2500-acre) farm with a six-row stripper would require about 50 d. It would take a four-row stripper about 63 d and an eight-row stripper about 38 d to harvest 1012 ha (2500 acres). The eight-row stripper would realize a considerably lower harvesting cost. Producers indicated that once a cotton crop is mature, harvesting it as quickly as possible is a priority. When harvest is delayed, the crop may experience weather damage that could reduce cotton quality considerably, a factor not accounted for in this study. Therefore, a producer might choose to spend more to harvest the crop faster.

Stripper Alternatives with Bur Extractors

The average harvesting costs of the stripper alternatives with bur extractors ranged from 0.46 to 2.51 ¢/kg of lint (0.2083–1.37 ¢/lb of lint) more than strippers without bur extractors (Table 3). Of the three alternatives, the four-row stripper with a bur extractor had the lowest average harvesting cost, about 9.72 ¢/kg of lint (4.40 ¢/lb of lint) up to 324 ha (800 acres). The six-row stripper had the minimum average harvesting cost for 364 - 891 ha (900 - 2200 acres). The average harvesting cost at 364 ha (900 acres) was 8.82 ¢/kg of lint (3.99 ¢/lb of lint) (Fig. 2). The eight-row stripper had the lowest average harvesting cost of about 4.08 ¢/kg of lint (1.84 ¢/lb of lint) for farms of 931 ha (2300 acres) or more (Table 3).

Evaluating the average costs of strippers individually revealed that the average harvesting costs continually declined for the four-, six-, and eight-row strippers with bur extractors for the farm sizes examined. A producer with a 1012-ha (2500-acre) farm could reduce harvesting costs to about 3.63 ¢/kg of lint (1.64 ¢/lb of lint) by using an eight-row stripper. It would take an eight-row stripper with a bur extractor about 45 d to harvest 1012 ha of cotton, while a four- and six-row stripper would take about 83 and 63 d, respectively. Therefore, a producer might prefer to utilize more than one stripper even if the harvesting costs increase.

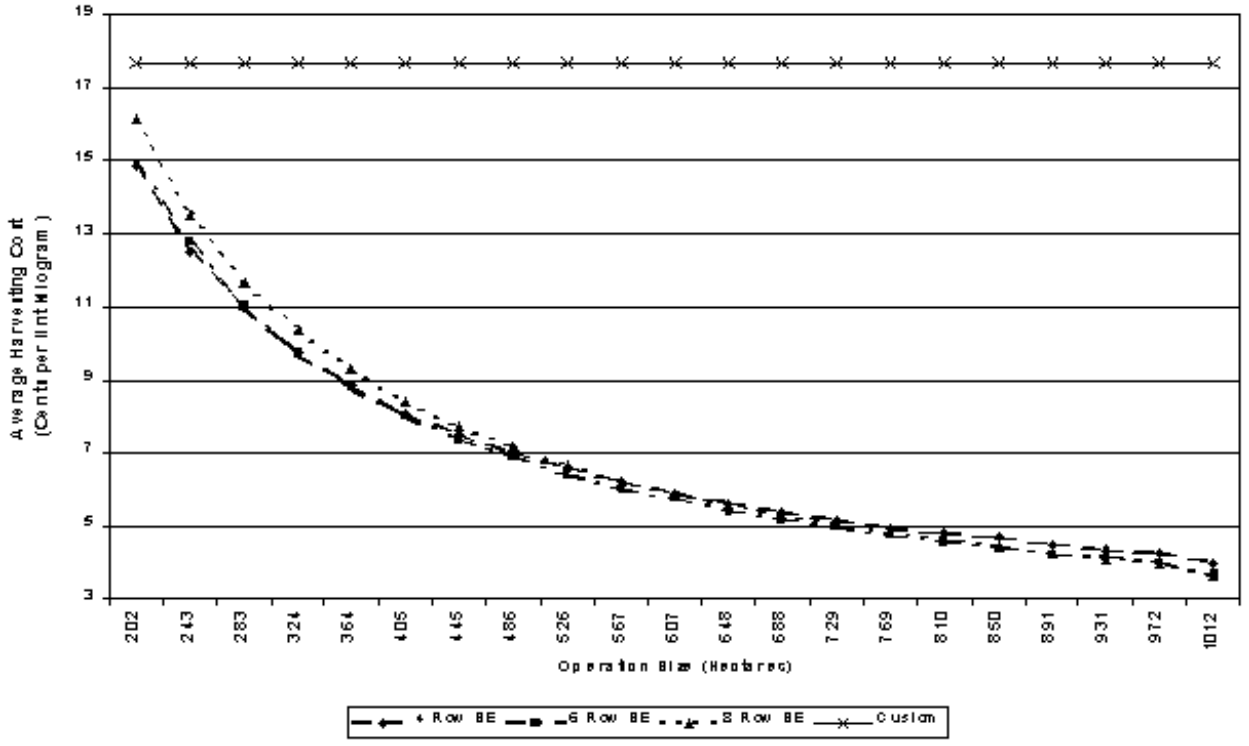

Fig. 2. Average cotton harvesting cost estimates, by size of operation in Texas, for four-, six-, and eight-row strippers with bur extractors.

Comparison of Stripper Ownership with Custom Harvesting

The custom-harvesting charges were found to be 15.47 and 17.68 ¢/kg of lint (7.00 and 8.00 ¢/lb of lint) without and with a bur extractor, respectively (personal communications with current custom harvesters). Thus, custom-harvesting charges were much higher than the average harvesting cost of the three strippers, without or with bur extractors (Tables 2, 3; Fig. 1, 2). Therefore, it could be inferred that owning a stripper is less expensive than having the crop custom-harvested. However, the harvesting costs estimated in this study consider the costs associated with ownership of only one cotton stripper. The harvesting cost estimates probably would be considerably larger if costs associated with ancillary equipment were considered. Charges for custom harvesting then might compare with the average harvesting costs of stripper ownership.

However, the producer's decision to have a crop custom-harvested or to purchase a stripper may not be solely dependent on cost. From the time the crop is mature until it is harvested, the crop could experience reductions in yield and quality due to weather. Many producers choose the harvesting alternative that can harvest the crop in the least time.

CONCLUSION

This study estimated the ownership and maintenance costs associated with cotton harvesting machinery, including four-, six-, and eight-row strippers with and without bur extractors. These estimated average harvesting costs and custom-harvesting charges corresponding to strippers with and without bur extractors were compared to determine the least costly harvesting systems by size of cotton operation in Texas.

Assuming an average yield of 586 kg of lint per hectare (524 lb of lint per acre) and the Texas average farm size of 235 ha (582 acres) (Texas Agricultural Statistics Service, 1998), results indicated that the average cost of the four-, six-, and eight-row strippers without bur extractors would be about 10.50, 10.69, and 11.69 ¢/kg of lint (4.75, 4.84, and 5.29 ¢/lb of lint), respectively. The average cost of the three strippers with bur extractors would be about 12.51, 12.74, and 13.53 ¢/kg of lint (5.66, 5.77, and 6.12 ¢/lb of lint), respectively. Thus, a typical Texas cotton producer investing in a stripper would minimize the cost of harvesting by owning a four-row stripper with or without a bur extractor.

The minimum harvesting cost among the three strippers without bur extractors ranged from the four-row at 567 ha (1400 acres) to the six-row at 607 ha (1500 acres). The eight-row stripper without a bur extractor did not minimize harvesting costs for the farm sizes considered in this study. Similarly, the four-row stripper with a bur extractor was the least expensive alternative up to 324 ha (800 acres). The six-row stripper with a bur extractor became the most inexpensive alternative for 364 - 891 ha (900 - 2200 acres). The eight-row stripper with a bur extractor had the lowest harvesting cost for farms of 931 ha (2300 acres) or more.

Results indicated it is less expensive to own a stripper than to have the crop custom-harvested. However, it should be recognized that the average harvesting costs estimated in this study account for ownership of only one cotton stripper. If costs associated with ancillary equipment were considered, then custom harvesting might become more competitive with equipment ownership.

Producers do not always rely on costs as a deciding factor when considering cotton harvesting. When a delay in harvest occurs, the crop may experience weather damage that might reduce the cotton quality considerably. Therefore, the producer might choose the option that could harvest the crop in the least amount of time.

The results of this study should be used with caution because they are based on an average yield of 586 kg of lint per hectare (524 lb of lint per acre). However, this study provides a simple method that producers can employ to determine cost estimates based on several scenarios. It is recognized that this study considers only ownership of a single cotton stripper and does not account for other supplementary equipment, such as tractors, boll buggies, and module builders. Thus, further research is needed to account for ancillary equipment and the ownership of multiple machines.

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