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*Cotton seed*

# **An Economic Analysis of Hulling Undelinted Cottonseed**

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## ABSTRACT

A Generalized Processing Plant Cost Simulation System was used to estimate costs and returns for model cottonseed oil mills using two alternative technologies -- saw delinting and hulling undelinted seed. The situations modeled were a 100 tons-per-day (TPD) screwpress and a 300 TPD direct solvent mill in the South, 300 and 600 TPD direct solvent mills in the Southwest, and 300 and 600 TPD pre-press solvent mills in the West. The primary conclusion was that under the assumed conditions -- a three percent oil loss with hulling undelinted seed, 5-year average product and cottonseed prices, and no consideration of cotton dust control costs -- saw delinting provides higher plant net revenues than hulling undelinted seed in all of the mill situations modeled.

Key words: Cottonseed Oil Mills, Delinting, Hulling Undelinted Seed, Costs and Returns, Simulation.

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## AN ECONOMIC ANALYSIS OF HULLING UNDELINTERED COTTONSEED

Billy R. Hise and Don E. Ethridge<sup>1/</sup>

### Introduction

The cottonseed oil industry in the U.S. uses cottonseed to produce four products: oil, meal, hulls, and linters. Cottonseed oil is used mainly as a cooking oil and in the manufacture of margarine and shortening (15, p. 25).<sup>2/</sup> Per capita consumption of cottonseed oil in the U.S. has been declining, but export of the oil has helped to maintain its price level in relationship to other vegetable oils (15, pp. 3, 26). Approximately 75 percent of cottonseed meal is used in the livestock feeding industry with the remaining 25 percent used in the poultry feeding industry. Cottonseed hulls are used primarily as a feed in the livestock feeding industry (9, p. 7). Cottonseed linters have two types of uses. Linters are used in such materials as surgical dressings for their absorbent quality, stuffing materials in mattresses, upholstery, and automotive industries, and in paper stock, twine, and carpets. The other type of use is in chemical processes, producing such items as rayon, plastics, tire cord, camera film, and explosives (8, 11).

Of the total U.S. production of cottonseed, 90-95 percent is processed by cottonseed oil mills, with the remaining production used primarily for the next season's planting seed. Only a small amount is fed directly to livestock or exported as unprocessed cottonseed. In terms of

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<sup>2/</sup> Numbers in parentheses refer to the corresponding number in the list of references.



value of products, oil and meal each account for about 44 percent whereas hulls and linters each account for about 6 percent (9, p. 7). Thus, oil and meal are the primary products from processing cottonseed.

In recent years the number of cottonseed oil mills in the U.S. has been declining. Between 1963 and 1978, the number of mills declined from 188 to 83 (18). The reason for this decline was due partly to an increase in processing capacity of existing mills and partly to a decrease in total production of cottonseed, particularly in the Southeast region (15). Individual mill processing capacities have been increasing and at present range from 50 to 1,200 tons of seed per day.

Saw delinting has traditionally been considered by the cottonseed processing industry as the most efficient method for removing linters from cottonseed before processing into oil and meal. Other methods of removing linters from seed include abrasive and acid delinting. However, the hulling and separating processes can be performed on seed which has lint left on. In this type of process the meats (seed kernels with hulls and attached lint fibers removed) or meat fragments become entangled in the lint fibers, making it harder to separate the oil-bearing meats. The entangled meats which are not separated from hulls and oil absorbed by the lint causes a reduction in the oil yield.

The standard machine for removal of linters from seed is a saw delinter which has a series of saws to cut linters from the seed. Most mills delint to a point where approximately 3 percent of the total weight of linters remains on the seed. This is typically accomplished by making at least two separate cuts of linters. Because each delinter has a small ton-per-day (TPD) capacity, a large number of these machines is necessary.

With a substantial cost per machine and a large number of machines needed, the fixed cost of machinery in the linter room is high. The saws within the machines must be sharpened frequently (most mills sharpen saws once every 24 hours of operation) requiring a substantial amount of labor, and replacement parts at an additional cost to the mill. Also, the linter room is a large user of electricity within a mill. After linters are removed from seed, they must be pressed into bales for handling, grading, and marketing. The baling area also requires an investment for bale presses and storage.

With linters being a secondary product in the milling operation, low linters prices in some years, and costs of removing and baling linters, delinting is not a major profit generating operation for cottonseed oil mills. Therefore, development of technologies which would eliminate the delinting and baling processes would affect processing costs and revenues and would be profitable under some set of economic conditions. In addition, since the delinting and baling processes are major sources of dust within mills, development of technologies to eliminate these processes may substantially lower dust levels within mills. With pending imposition of government regulations on the cottonseed processing industry, many mills are faced with developing some method to reduce dust levels (12).

### Objectives

The major objective of this study was to evaluate costs and returns of conventional saw delinting and an alternative technology of hulling undelinted seed. More specifically the objectives were:

- (1) to construct selected cottonseed oil mill situations to represent typical capacities and extration methods within separate regions of

the U.S.;

(2) to reconstruct those representative mill situations introducing the alternative technology of hulling undelinted seed; and

(3) to evaluate the above two methods of cottonseed processing -- saw delinting and hulling undelinted seed -- by comparing costs and returns.

### Geographical Regions

The major cotton producing areas of the U.S. are the areas of major concentration of cottonseed oil mills. For reporting purposes, the U.S. is divided into four geographical areas of cotton production (15). These are:

Southeast: Alabama, Georgia, North Carolina, and South Carolina

Mid-South: Arkansas, Louisiana, Mississippi, Missouri, and Tennessee

Southwest: Texas and Oklahoma

West: Arizona, California, and New Mexico

In the 1977 harvest period, sales of cottonseed by producers within these regions were: Southeast, 183,000 tons; Mid-South, 1,380,000 tons; Southwest, 2,010,000 tons; and West, 1,490,000 tons (15, p. 2). These figures give general indications of amount of cottonseed processed by region.

Similarities exist in mill design and cost structures in the Southeastern and Mid-South regions. Because of these similarities and the low level of cottonseed processing in the Southeastern region, the Mid-South and Southeastern regions are combined and referred to as the South for this analysis. In addition, mill design, prices paid and received, and costs and returns for mill operations in the Western region are representative of conditions in California.

## Mill Design

Each individual mill within the cottonseed processing industry is somewhat unique in equipment configuration and design. However, the basic design in terms of production stages of mills with comparable extraction technologies is similar. The conventional mill design used in the analysis encompassed the following production stages:

- (1) Unloading and storage of unprocessed seed
- (2) Seed cleaning
- (3) Delinting
- (4) Baling and baled lint storage
- (5) Hulling and separating
- (6) Meats conditioning
- (7) Extraction
- (8) Product storage (oil, meal, and hulls storage)

The methods of accomplishing these production steps vary among regions and among mills within a region. The method of unloading unprocessed seed varies among regions because of the type of truck used to haul seed to the mills. Storage facilities used for unprocessed seed are determined primarily by rainfall. Areas with higher precipitation (the South) must use some method to protect seed from moisture. The standard building is a cottonseed warehouse designed especially for storing cottonseed. In the arid regions of the Southwest and West, open storage of cottonseed is often possible with little effect on seed quality. In some cases, cottonseed in open storage is covered with water resistant material or the seed is packed to deter the penetration of moisture.

The method of extracting oil from meats has tended to change over time

from hydraulic extraction to mechanical screwpress extraction to solvent (hexane) extraction. Even though hydraulic extraction has disappeared, the mechanical screwpress is still in use. Many mills use solvent extraction to directly extract oil from meats. Some mills, particularly large mills in the West, use a combination of mechanical screwpresses to extract a portion of the oil, with the remaining oil extracted by the solvent method. This extraction technology is referred to as pre-press solvent extraction; this extraction process is used to produce meal for feeding to poultry.

The technology of removing hulls and linters in one production stage is termed hulling undelinted seed. When hulling and separating hulls from meats is performed on undelinted cottonseed, linter fibers tend to trap meat fragments, making separation more difficult. For this reason, hulling and separating machinery capacity is lower for undelinted cottonseed. To achieve the same level of capacity in a mill hulling undelinted seed as a mill using saw delinting, about 50 percent more hulling and separating machinery is necessary.

The mix of products from hulling undelinted seed is also different from that of a mill using saw delinting. The lint remains with the hulls to form a new product. While this product also has a use as a livestock feed, its unit value may be different from standard hulls because of the differences in composition and nutrient content.

#### Method of Analysis

The cottonseed processing industry in the U.S. is characterized by plants in various cotton producing regions with varying levels of processing capacities and different extraction technologies. Six selected mill

situations with various levels of capacity, alternative extraction technologies, and located in different regions of the U.S. were chosen for analysis. The mill situations selected to represent the industry in terms of location, size, and extraction technology were:

<u>South</u>	<u>Southwest</u>	<u>West</u>
100 TPD Screwpress	300 TPD Direct Solvent	300 TPD Pre-press Solvent
300 TPD Direct Solvent	600 TPD Direct Solvent	600 TPD Pre-press Solvent

The above mill situations represent an attempt to portray representative cottonseed oil mill operations. They do not represent "average" mills or an aggregate of the industry. Data on which to base average or aggregate industry characteristics are not available. However, all mill specifications were developed using information provided by knowledgeable individuals in the cottonseed oil mill industry. These simulated model mills represent an objective attempt to portray realistic operations. Of critical importance in the analysis is the difference in costs and returns between the two technologies, not the absolute level of costs and/or returns of either one. Thus, efforts were made to be consistent in assumptions between technologies.

#### The Simulation Approach

The method of analyzing the effects of a change in technology was to construct plant simulation models using first the original technology, then reconstructing the models to simulate costs and returns of the new technology mill situations. These simulated costs and returns were then used for economic comparisons of mill situations.

The simulation tool used in developing the costs and returns of the selected mill situations was a generalized processing plant cost estimation

system.<sup>3/</sup> This computerized simulation model is based on economic principles for developing costs and revenues for any type of processing plant. The engineering coefficients, costs for machinery, buildings, and equipment, and prices for production inputs and products for the processing plant being modeled are entered in a data set used by the computer model. The machinery, buildings, and other equipment must be determined for each selected mill situation and the information required for each of these items includes:

- (1) number of units of depreciable fixed-cost items (machinery, buildings) required
- (2) cost of each depreciable fixed cost item
- (3) years of useful life for each item
- (4) salvage value at the end of useful life for each item
- (5) fixed repair costs (repairs needed irrespective of the amount of use for each item)
- (6) variable repair costs (repairs needed depending on use)
- (7) amount of labor required
- (8) wage and salary rates
- (9) connected horsepower of all electric motors
- (10) technical information on use of water, natural gas, fuel oil, hexane, bagging and ties, and other input costs associated with processing
- (11) unit costs for electricity, water, natural gas, and other variable inputs
- (12) unit values for products produced

These items and how they are used in the model are discussed in more detail in the following sections.

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<sup>3/</sup> A detailed description and documentation of the model is given in (7).

## Assumptions

Some assumptions were made to place mills on a comparable basis for analysis. The first major assumption was that the fixed costs of machinery and equipment in all mill situations would be based on the cost of constructing a new mill. This places all mills on similar depreciation schedules for the analysis. However, this assumption does not reflect the actual industry situation because many operating mills within the industry have buildings, machinery, and equipment partially depreciated. This assumption of a new mill also reflects a lower repair cost than most industry mills actually have. This lower repair cost will partially offset the increased depreciation costs.

The next major assumption deals with maximum capacity utilization of the selected mill situations. In the situations constructed for the analysis, the daily (24-hour) processing capacity of each plant was defined as the average daily processing rate in tons-per-day (TPD). Based on information provided by industry representatives, the processing year at 100 percent capacity was assumed to be 330 days. The remaining 35 days were considered necessary for major repairs and cleaning the processing plant prior to the start of the next processing year. Reductions in capacity utilization were achieved by reducing the number of days the mill operates. Also, as the capacity utilization decreased, the number of days needed for cleaning and repairs to the mill between processing years decreased, but not in the same proportion.

Individual mills within the industry operate under different types of ownership. Mills with private, cooperative, or corporate ownership have different cost structures. Thus, only processing costs and direct



mill management costs were included in the analysis. Corporate, cooperative, and individual tax rates also affect mill profitability. Thus, the total net revenue generated for each mill situation is net income before taxes.

The products for sale by individual mills differ due to the level of integration within the firm. Some firms operate plants which include mixed feed mills while other firms own oil refining plants. For this analysis, all mills are assumed to produce only bulk meal, bulk hulls, baled linters, and crude or once-refined oil, depending on the extraction technology. The only changes in products for mills hulling undelinted seed were the loss of bulk hulls and baled linters and the addition of a new product of hulls and linters combined.

#### Cost Structure

All costs of the selected mill situations can be divided into two types: (1) those costs which will remain at the same annual level regardless of the amount of seed processed (fixed costs); and (2) those costs which vary with the amount of seed processed (variable costs). Fixed costs can further be divided into depreciable and non-depreciable items.

The depreciable items include buildings, machinery, and equipment. The cost of ownership of these items on a yearly basis (one year equals a production period) is composed of a depreciation cost and an interest expense. The depreciation cost compensates for a loss of value due to wear and/or obsolescence while interest cost represents opportunity cost of the investment. These costs are explained in more detail in Appendix I.

Non-depreciable items which represent a fixed cost to the mill are fixed labor, taxes, and insurance. Employee salaries which do not change

with the amount of seed processed are considered fixed. A list of these employees with associated salary ranges for each area and the rates for ad valorem taxes and insurance are shown in Appendix I.

The variable costs associated with cottonseed processing include production labor, electricity, boiler fuel, repairs, maintenance, hexane, bagging and ties, lab analysis, and brokers fees. Cottonseed purchased was also treated as a variable cost. Selected variable cost assumptions and calculations are explained in Appendix I. These costs were determined for each production stage of the mill, including a stage called miscellaneous for those variable costs not directly resulting from a specific process, such as brokers fees, lab analysis, and product insurance. Variable costs were developed for each mill using saw delimiting and again for each mill hulling undelimited seed. The capacity utilization levels used were from 30 to 100 percent of capacity, changing by increments of 10 percent.. This gives eight levels of capacity utilization to indicate the plants' abilities to recover fixed costs and provides a basis for developing average cost curves.

The conventional basis for average cost analysis is the associated cost (fixed cost, variable cost, or total cost) per unit of product produced. When multiple products are produced from one major input, as with oil mills, the cost curves can be more readily used for comparison of two or more separate mills when the average costs are on a per unit of input basis. The amount of each of the multiple products produced from a ton of cottonseed can be defined on the average over a season as a percent of one ton of cottonseed. The average cost curves developed therefore reflect costs per ton of cottonseed processed.

## Revenue

The mix of products in each mill situation was determined using historical average oil, meal, hull and linter production for each region (table 1). Adjustments were then made for different extraction technologies used in the South; i.e., screwpress extraction was assumed to leave 3 percent more oil in meal than direct solvent extraction. The change in product output associated with the change from conventional technology to hulling undelinted seed, also shown in table 1, included a new hull

Table 1. Yields of cottonseed oil, meal, hulls, linters, and waste from processing a ton of cottonseed in the U.S., by region, average for the period 1962-1976.

Region	<u>Yield of Products per Ton of Seed Processed</u>				
	Oil	Meal	Hulls	Linters	Waste
-----Pounds-----					
<u>Conventional Processing</u>					
South	329	922	449	185	115
Southwest	322	925	518	158	77
West	347	923	449	190	91
<u>Hulling Undelinted Seed</u>					
South	319	922	644		115
Southwest	312	925	686		77
West	337	923	649		91

Source: M. Dean Ethridge, "A Regional Economic Assessment of Cottonseed: Wholesale Values, Farm Prices and Impact on Producer Incomes", Proceedings of the Beltwide Cotton Production Research Conferences, National Cotton Council, Jan., 1978. The data were compiled from U.S. Fats and Oil Statistics 1950-71, USDA, ERS, 1972 and information provided directly from the Commodity Economics Division, ERS, USDA.

product which contains hulls, linters, and some additional oil. The additional oil in the hulls was assumed to cause a 3 percent decrease in oil produced for sale. No adjustment was made in the amount of meal produced.

Price levels for cottonseed and the products produced were based on a 5-year simple average price for each region. These regional prices, used in the simulation of the selected mill situations under both technologies, are shown in table 2. Even though evidence indicates that the new product of hulls and linters combined may have an increase in feed value, market data indicating its dollar value do not exist. Therefore, the new product was assumed to have the same value per ton as hulls produced in conventional saw delinting mills.

### Findings

#### Investment Costs

Investment costs required for new mills are reported in this section. These costs were generated with the processing plant computer model discussed previously. The specific items included and the costs associated with each are shown on the computer printouts for each of the mills in Appendix II.

Conventional Mill Situations. The regional effects on investment costs can be seen in the higher cost of constructing a 300 TPD mill in the South over the same capacity mill in the Southwest or West (table 3). This increase is due to storage facilities for unprocessed cottonseed. The Southern region must use inside storage whereas outside storage requiring much less initial investment is used in the Southwestern and Western regions.

Table 2. Average prices received for oil, meal, hulls and linters, and prices paid for cottonseed by region, 1974-1978

Calendar Year	Oil <sup>1/</sup>			Meal <sup>2/</sup>				Hulls <sup>3/</sup>			Linters <sup>4/</sup>			Cottonseed <sup>5/</sup>		
	South	Southwest	West	South (Press)	South (Solv.)	Southwest (Solv.)	West (Solv.)	South	Southwest	West	South	Southwest	West	South	Southwest	West
	c/lb.			\$/ton				\$/ton			c/lb.			\$/ton		
1974	38.1	37.7	43.7	124.44	123.82	129.89	136.00	33.90	41.43	30.12	8.58	8.96	6/	155.12	141.72	149.94
1975	27.2	26.9	33.6	120.63	117.59	119.22	125.39	45.19	49.84	32.15	6.94	6.79	7.00	103.95	103.85	100.30
1976	23.3	23.1	22.1	158.65	155.60	156.93	155.10	41.42	46.45	35.35	8.56	8.00	7.68	122.76	108.04	105.00
1977	24.5	24.2	28.0	167.07	165.38	161.46	146.72	24.47	24.85	20.08	8.25	8.54	7.93	80.65	71.65	73.38
1978	27.2	26.9	30.2	147.33	147.03	144.43	155.28	51.34	49.08	41.18	8.42	8.60	8.19	131.90	113.53	118.34
5 Year Average	28.1	27.8	31.5	143.62	141.88	142.39	143.70	39.26	42.33	31.78	8.15	8.18	7.70	118.88	107.76	109.39

1/ Average prices of crude cottonseed oil in tank cars, f.o.b., the following points: (1) South--all Mississippi Valley points; (2) Southwest--assumed to be 98.9% of Mississippi Valley prices; and (3) West--estimated to be 117.52% of crude soybean oil prices in Decatur (5, p. 197).

2/ Calendar year average price for bulk cottonseed meal, 41% protein at the following points: (1) South--Memphis; (2) Southwest--Lubbock; and (3) West--Los Angeles. Source: (16).

3/ Calendar year average price for hulls as reported in Cottonseed Review, (13).

4/ Calendar year average price for grade 4, staple 4 linters, at the following points: (1) South--Memphis; (2) Southwest--Dallas; and (4) West--Los Angeles. Source: (17).

5/ Calendar year average prices for cottonseed as reported in Cottonseed Review, grade basis = 100 (13).

6/ Data not reported. Four years used to compute average prices.

Table 3. Cost of construction of new plants, selected mill situations with alternative technologies, 1979 equipment cost basis.<sup>1/</sup>

Selected mill situation	New plant construction costs	
	Saw delimiting	Hulling undelimited seed
	-----Dollars-----	
100 TPD screwpress (South)	4,413,246	3,344,931
300 TPD direct solvent (South)	9,076,554	7,088,784
300 TPD direct solvent (Southwest)	7,608,564	5,620,794
600 TPD direct solvent (Southwest)	13,062,961	9,616,207
300 TPD pre-press solvent (West)	8,453,516	6,465,746
600 TPD pre-press solvent (West)	14,922,016	11,475,262

<sup>1/</sup> Costs included for land, buildings, equipment, machinery, and installation. Machinery and equipment data were obtained from manufacturers. Installation costs were based on FOB cost.

Another difference in investment costs is due to the effects of different extraction technologies. The pre-press solvent mill adds a production stage to the processing plant and requires the addition of screwpresses and associated buildings, machinery, and equipment in addition to direct solvent extraction facilities. Although the investment cost of the necessary solvent extraction equipment for a pre-press mill is less than for a direct solvent mill, it does not completely offset the additional investment cost associated with the screwpress portion of the mill.

There are also some investment efficiencies associated with capacity. The relatively high per unit investment cost of a 100 TPD mill as compared to a 300 TPD mill is due primarily to the efficiencies of sizing of

buildings, machinery, and equipment associated with the 300 TPD mill. However, the investment cost per ton of capacity does not change substantially from 300 to 600 TPD mills.

Hulling Undelinted Seed. The same regional, extraction technology, and efficiencies of size effects on investment costs for saw delinting apply for hulling undelinted seed as well.

The differences in investment costs between the two technologies for mills of the same TPD capacity are due to two factors. The mills hulling undelinted seed need more hulling and separating machinery to handle undelinted seed to operate at the same level of TPD capacity as mills using saw delinting. This added investment cost of hulling and separating machinery does not fully offset the decrease in investment cost of machinery, equipment, and buildings necessary for saw delinting, linters baling, and linters storage. Therefore, all mills hulling undelinted seed have a lower investment cost than mills with the same location, capacity, and extraction technology using saw delinting (table 3).

#### Cost Relationships

Simulated total and average costs and returns for each mill situation are summarized in tables 4 - 9. The computer runs from which these costs and returns were drawn are shown in Appendix II. However, only the variable cost calculations for the 100 percent capacity plant utilization levels are shown in Appendix II. Selected aspects of costs and returns are discussed below.

Fixed Costs. The total cost of fixed items for the production period (1 year) remains the same for all levels of capacity utilization for each

Table 4. Costs and returns of 100 TPD screwpress mill in the South, conventional and hulling undelinted seed technologies.<sup>1/</sup>

Capacity Utilization Percent	Tons/Year	Total Fixed Cost	Total Var- iable Cost	Total Cost	Total Revenue	Total Net Revenue	Average Fixed Cost	Average Var- iable Cost	Average Cost	Average Revenue	Average Net Revenue
Saw Delinting		----- Dollars -----					----- Dollars/ton -----				
30	9,900	812,899	1,634,403	2,447,302	1,786,526	-560,776	82.11	165.09	247.20	180.46	-65.75
40	13,200	812,899	2,174,638	2,987,537	2,382,035	-605,502	61.58	164.75	226.33	180.46	-45.87
50	16,500	812,899	2,725,521	3,538,420	2,977,544	-560,876	49.27	165.18	214.45	180.46	-33.99
60	19,800	812,899	3,258,170	4,071,069	3,573,053	-498,016	41.06	164.55	205.61	180.46	-25.15
70	23,100	812,899	3,809,053	4,621,952	4,168,562	-453,390	35.19	164.89	200.08	180.46	-19.63
80	26,400	812,899	4,349,288	5,162,187	4,764,070	-398,117	30.79	164.75	195.54	180.46	-15.08
90	29,700	812,899	4,903,234	5,716,133	5,359,579	-356,554	27.37	165.09	192.45	180.46	-12.01
100	33,000	812,899	5,435,872	6,248,771	5,955,088	-293,683	24.63	164.72	189.36	180.46	-8.90
Hulling Undelinted Seed											
30	9,900	683,427	1,555,577	2,239,004	1,647,336	-591,668	69.03	157.13	226.16	166.40	-59.76
40	13,200	683,427	2,070,471	2,753,898	2,196,448	-557,450	51.77	156.85	208.63	166.40	-42.23
50	16,500	683,427	2,593,207	3,276,634	2,745,560	-531,074	41.42	157.16	198.58	166.40	-32.18
60	19,800	683,427	3,103,323	3,786,750	3,294,672	-492,078	34.52	156.73	191.25	166.40	-24.85
70	23,100	683,427	3,626,958	4,309,485	3,843,784	-465,701	29.59	156.97	186.56	166.40	-20.15
80	26,400	683,427	4,140,953	4,824,380	4,392,896	-431,484	25.89	156.85	182.74	166.40	-16.34
90	29,700	683,427	4,666,750	5,350,177	4,942,008	-408,169	23.01	157.13	180.14	166.40	-13.74
100	33,000	683,427	5,176,858	5,860,285	5,491,120	-369,165	20.71	156.87	177.58	166.40	-11.19

<sup>1/</sup> Numbers may not add due to rounding.



Table 5. Costs and returns of 300 TPD direct solvent mill in the South, conventional and hulling undelinted seed technologies.<sup>1/</sup>

Capacity Utilization Percent	Tons/Year	Total Fixed Cost	Total Var- iable Cost	Total Cost	Total Revenue	Total Net Revenue	Average Fixed Cost	Average Var- iable Cost	Average Cost	Average Revenue	Average Net Revenue
Saw Delinting		-----Dollars-----					-----Dollars/ton-----				
30	29,700	1,551,398	4,780,988	6,332,386	5,397,882	-934,504	52.24	160.98	213.21	181.75	-31.46
40	39,600	1,551,398	6,371,276	7,922,674	7,197,177	-725,497	39.18	160.89	200.07	181.75	-18.32
50	49,500	1,551,398	7,971,701	9,523,099	8,996,472	-526,627	31.34	161.04	192.39	181.75	-10.64
60	59,400	1,551,398	9,545,728	11,097,120	10,795,760	-301,361	26.12	160.70	186.82	181.75	- 5.07
70	69,300	1,551,398	11,146,150	12,697,550	12,595,060	-102,491	22.39	160.84	183.23	181.75	- 1.48
80	79,200	1,551,398	12,736,440	14,287,830	14,394,350	106,515	19.59	160.81	180.40	181.75	1.34
90	89,100	1,551,398	14,336,860	15,888,260	16,193,640	305,384	17.41	160.91	178.32	181.75	3.43
100	99,000	1,551,398	15,911,001	17,462,384	17,992,928	530,544	15.67	160.72	176.39	181.75	5.36
Hulling Undelinted Seed											
30	29,700	1,314,433	4,610,920	5,925,353	4,980,315	-945,038	44.26	155.25	199.51	167.69	-31.82
40	39,600	1,314,433	6,146,181	7,460,614	6,640,421	-820,193	33.19	155.21	188.40	167.69	-20.71
50	49,500	1,314,433	7,686,590	9,001,023	8,300,527	-700,496	26.55	155.28	181.84	167.69	-14.15
60	59,400	1,314,433	9,210,579	10,525,010	9,960,631	-564,381	22.13	155.06	177.19	167.69	- 9.50
70	69,300	1,314,433	10,750,980	12,065,420	11,620,730	-444,684	18.97	155.14	174.10	167.69	- 6.42
80	79,200	1,314,433	12,286,240	13,600,680	13,280,840	-319,840	16.60	155.13	171.73	167.69	- 4.04
90	89,100	1,314,433	13,826,650	15,141,090	14,940,940	-200,143	14.75	155.18	169.73	167.69	- 2.24
100	99,000	1,314,433	15,350,634	16,665,067	16,601,047	- 64,020	13.28	155.06	168.33	167.69	- .65

<sup>1/</sup> Numbers may not add due to rounding.

Table 6. Costs and returns of 300 TPD direct solvent mill in the South, conventional and hulling undelinted seed technologies.<sup>1/</sup>

Capacity Utilization Percent	Tons/Year	Total Fixed Cost	Total Var- iable Cost	Total Cost	Total Revenue	Total Net Revenue	Average Fixed Cost	Average Var- iable Cost	Average Cost	Average Revenue	Average Net Revenue	
Saw Delinting		-----Dollars-----					-----Dollars/ton-----					
30	29,700	1,373,400	4,441,194	5,814,594	5,323,995	490,599	46.24	149.54	195.78	179.26	-16.52	
40	39,600	1,373,400	5,921,764	7,295,164	7,098,661	196,503	34.68	149.54	184.22	179.26	- 4.96	
50	49,500	1,373,400	7,405,596	8,778,996	8,873,328	94,332	27.75	149.61	177.35	179.26	1.91	
60	59,400	1,373,400	8,865,296	10,238,696	10,647,990	409,296	23.12	149.25	172.37	179.26	6.89	
70	69,300	1,373,400	10,352,090	11,725,490	12,422,650	697,160	19.82	149.38	169.20	179.26	10.06	
80	79,200	1,373,400	11,829,430	13,202,830	14,197,320	994,490	17.34	149.36	166.70	179.26	12.56	
90	89,100	1,373,400	13,316,230	14,689,630	15,971,980	1,282,350	15.41	149.45	164.87	179.26	14.39	
100	99,000	1,373,400	14,776,046	16,149,446	17,746,656	1,597,210	13.87	149.25	163.13	179.26	16.13	
Hulling Undelinted Seed												
30	29,700	1,136,436	4,266,576	5,403,011	4,963,182	- 439,829	38.26	143.66	181.92	167.11	-14.81	
40	39,600	1,136,436	5,690,689	6,827,124	6,617,577	- 209,547	28.70	143.70	172.40	167.11	- 5.29	
50	49,500	1,136,436	7,112,813	8,249,248	8,271,972	22,724	22.96	143.69	166.65	167.11	.46	
60	59,400	1,136,436	8,521,310	9,657,745	9,926,365	268,620	19.13	143.46	162.59	167.11	4.52	
70	69,300	1,136,436	9,946,400	11,082,830	11,580,760	497,930	16.40	143.53	159.93	167.11	7.18	
80	79,200	1,136,436	11,367,275	12,503,710	13,235,150	731,436	14.35	143.53	157.88	167.11	9.23	
90	89,100	1,136,436	12,792,375	13,928,810	14,889,540	960,738	12.75	143.57	156.33	167.11	10.78	
100	99,000	1,136,436	14,200,863	15,337,299	16,543,944	1,206,645	11.48	143.44	154.92	167.11	12.19	

<sup>1/</sup> Numbers may not add due to rounding.

Table 7. Costs and returns of 600 TPD direct solvent mill in the Southwest, conventional and hulling undelinted seed technologies.<sup>1/</sup>

Capacity Utilization Percent	Utilization Tons/Year	Total Fixed Cost	Total Variable Cost	Total Cost	Total Revenue	Total Net Revenue	Average Fixed Cost	Average Variable Cost	Average Cost	Average Revenue	Average Net Revenue
Saw Delinting		-----Dollars-----					-----Dollars/ton-----				
30	59,400	2,174,143	8,734,289	10,908,431	10,647,980	-206,451	36.60	147.04	183.64	179.26	-4.38
40	79,200	2,174,143	11,628,890	13,803,032	14,197,310	394,278	27.45	146.83	174.28	179.26	4.98
50	99,000	2,174,143	14,651,730	16,735,872	17,746,640	1,010,768	21.96	147.09	169.05	179.26	10.21
60	118,800	2,174,143	17,430,350	19,604,492	21,295,960	1,691,468	18.30	146.72	165.02	179.26	14.24
70	138,600	2,174,143	20,362,960	22,537,102	24,845,290	2,308,188	15.69	146.92	162.61	179.26	16.65
80	158,400	2,174,143	23,257,610	25,431,742	28,394,620	2,962,878	13.73	146.82	160.55	179.26	18.71
90	178,200	2,174,143	26,190,890	28,365,022	31,943,950	3,578,918	12.20	146.98	159.18	179.26	20.08
100	198,000	2,174,143	29,058,896	31,233,024	35,493,296	4,260,272	10.98	146.76	157.74	179.26	21.52
Hulling Undelinted Seed											
30	59,400	1,761,509	8,403,347	10,164,855	9,926,355	-238,500	29.66	141.47	171.13	167.11	-4.02
40	79,200	1,761,509	11,190,550	12,952,058	13,235,140	283,082	22.24	141.29	163.54	167.11	3.57
50	99,000	1,761,509	14,007,242	15,768,750	16,543,920	775,170	17.79	141.49	159.28	167.11	7.83
60	118,800	1,761,509	16,777,212	18,538,720	19,852,700	1,313,980	14.83	141.22	156.05	167.11	11.06
70	138,600	1,761,509	19,593,772	21,355,280	23,161,480	1,806,200	12.71	141.37	154.08	167.11	13.03
80	158,400	1,761,509	22,380,952	24,142,460	26,470,270	2,327,810	11.12	141.29	152.41	167.11	14.70
90	178,200	1,761,509	25,198,122	26,959,630	29,779,050	2,819,420	9.89	141.40	151.29	167.11	15.82
100	198,000	1,761,509	27,967,472	29,728,976	33,087,856	3,358,880	8.90	141.25	150.15	167.11	16.96

<sup>1/</sup> Numbers may not add due to rounding.

Table 8. Costs and returns of 300 TPD pre-press solvent mill in the West, conventional and hulling undelinted seed technologies.<sup>1/</sup>

Capacity Utilization Percent	Utilization Tons/Year	Total Fixed Cost	Total Variable Cost	Total Cost	Total Revenue	Total Net Revenue	Average Fixed Cost	Average Variable Cost	Average Cost	Average Revenue	Average Net Revenue	
Saw Delinting		Dollars					Dollars/ton					
30	29,700	1,607,601	4,804,819	6,412,420	5,862,392	- 550,028	54.13	161.78	215.91	197.39	-18.52	
40	39,600	1,607,601	6,389,991	7,997,592	7,816,524	- 181,068	40.60	161.36	201.96	197.39	- 4.57	
50	49,500	1,607,601	8,006,882	9,614,483	9,770,656	156,173	32.48	161.76	194.23	197.39	3.16	
60	59,400	1,607,601	9,577,933	11,185,534	11,724,780	539,246	27.07	161.24	188.31	197.39	9.08	
70	69,300	1,607,601	11,194,820	12,802,421	13,678,910	876,489	23.20	161.54	184.74	197.39	12.65	
80	79,200	1,607,601	12,779,990	14,387,591	15,633,040	1,245,449	20.30	161.36	181.66	197.39	15.73	
90	89,100	1,607,601	14,414,480	16,022,081	17,587,160	1,565,079	18.04	161.78	179.82	197.39	17.57	
100	99,000	1,607,601	15,967,925	17,575,520	19,541,312	1,965,792	16.24	161.29	177.53	197.39	19.86	
Hulling Undelinted Seed												
30	29,700	1,370,642	4,573,016	5,943,657	5,428,717	- 514,940	46.15	153.97	200.12	182.78	-17.33	
40	39,600	1,370,642	6,083,838	7,454,479	7,238,290	- 216,189	34.61	153.63	188.24	182.78	- 5.46	
50	49,500	1,370,642	7,617,624	8,988,265	9,047,864	59,599	27.69	153.89	181.58	182.78	1.20	
60	59,400	1,370,642	9,123,079	10,493,720	10,857,430	363,710	23.07	153.59	176.66	182.78	6.13	
70	69,300	1,370,642	10,656,859	12,027,500	12,667,000	639,500	19.78	153.78	173.56	182.78	9.23	
80	79,200	1,370,642	12,167,679	13,538,320	14,476,580	938,260	17.31	153.63	170.94	182.78	11.85	
90	89,100	1,370,642	13,745,162	15,115,803	16,286,150	1,170,347	15.38	154.27	169.65	182.78	13.14	
100	99,000	1,370,642	15,206,918	16,577,560	18,095,712	1,518,152	13.84	153.61	167.45	182.78	15.33	

<sup>1/</sup> Numbers may not add due to rounding.

Table 9. Costs and returns of 600 TPD pre-press solvent mill in the West, conventional and hulling undelinted seed technologies.<sup>1/</sup>

Capacity Utilization Percent	Capacity Utilization Tons/Year	Total Fixed Cost	Total Var- iable Cost	Total Cost	Total Revenue	Total Net Revenue	Average Fixed Cost	Average Var- iable Cost	Average Cost	Average Revenue	Average Net Revenue	
Saw Delinting		-----Dollars-----					-----Dollars/ton-----					
30	59,400	2,546,071	9,319,668	11,865,737	11,724,780	- 140,957	42.86	156.90	199.76	197.39	- 2.37	
40	79,200	2,546,071	12,409,370	14,955,439	15,633,040	677,601	32.15	156.68	188.83	197.39	8.56	
50	99,000	2,546,071	15,536,930	18,082,999	19,541,310	1,458,311	25.72	156.94	182.66	197.39	14.73	
60	118,800	2,546,071	18,591,320	21,137,389	23,449,560	2,312,169	21.43	156.49	177.92	197.39	19.46	
70	138,600	2,546,071	21,718,030	24,264,099	27,357,820	3,093,721	18.37	156.70	175.07	197.39	22.32	
80	158,400	2,546,071	24,800,810	27,346,879	31,266,090	3,919,211	16.07	156.57	172.64	197.39	24.75	
90	178,200	2,546,071	27,941,600	30,487,669	35,174,350	4,686,681	14.29	156.80	171.09	197.39	26.30	
100	198,000	2,546,071	30,978,256	33,524,320	39,082,624	5,558,304	12.86	156.46	169.31	197.39	28.07	
Hulling Undelinted Seed												
30	59,400	2,133,453	8,897,748	11,031,200	10,857,430	- 173,770	35.92	149.79	185.71	182.79	- 2.93	
40	79,200	2,133,453	11,846,488	13,979,940	14,476,570	496,630	26.94	149.58	176.51	182.79	6.27	
50	99,000	2,133,453	14,822,290	16,955,742	18,095,710	1,139,968	21.55	149.72	171.27	182.79	11.51	
60	118,800	2,133,453	17,754,400	19,887,852	21,714,840	1,827,988	17.96	149.45	167.41	182.79	15.38	
70	138,600	2,133,453	20,729,138	22,862,590	25,334,000	2,471,410	15.39	149.56	164.95	182.79	17.83	
80	158,400	2,133,453	23,675,180	25,808,632	28,953,130	3,144,498	13.47	149.46	162.93	182.79	19.84	
90	178,200	2,133,453	26,664,120	28,797,572	32,572,280	3,774,708	11.97	149.63	161.60	182.79	21.19	
100	198,000	2,133,453	29,578,512	31,711,952	36,191,440	4,479,488	10.78	149.39	160.16	182.79	22.62	

<sup>1/</sup> Numbers may not add due to rounding.

mill. When a comparison of total fixed cost is made among mills operating at the same level of capacity utilization with saw delinting technology, the regional and extraction technology effects on fixed cost can be seen. The increase in fixed cost of a mill operating in the South over a mill in the Southwest with the same extraction technology is again due to the increased cost of cottonseed storage. The increased fixed cost for a mill in the West compared to a mill of the same size in the Southwest is due to the increased cost of pre-press extraction and increased costs of fixed labor.

Total and average fixed costs of all mills hulling undelinted seed are lower than for the corresponding mills using saw delinting.

Variable Costs. To compare mill situations, the average variable cost (based on a ton of seed processed) is used to place all processing plants on the same cost basis. The variable costs reported in tables 4 through 9 include the price of cottonseed as a part of the variable cost. To compare the variable costs of processing, the cost of cottonseed has been subtracted from the average variable cost of all mill situations at 100 percent capacity utilization. The difference in the variable costs of processing between 100 and 300 TPD mills operating in the South is due in part to the difference in extraction technology (table 10). Much more electricity per ton is needed to operate screwpresses relative to direct solvent extraction. Also, labor is more efficiently utilized in the 300 TPD mill as compared to the 100 TPD mill. Moreover, some efficiency of sizing of equipment in the 300 TPD mill reduces the average variable cost of electricity and boiler fuel.

The variable cost differences between 300 and 600 TPD mills operating in the same region with the same extraction technology are due largely to

fixity in labor utilization; i.e., a certain number of men are needed in a solvent plant whether it has a capacity of 300 TPD or 600 TPD.

The regional differences in costs between mills operating at the same level of capacity utilization with the same extraction technology are small. The difference in variable costs for the 300 TPD pre-press solvent mill and the 300 TPD direct solvent mill is due to an increase in electricity cost for the pre-press extraction and higher wage rates in the West. These two processing cost items also explain differences in variable cost between a 600 TPD pre-press solvent mill in the West and a 600 TPD direct solvent mill in the Southwest.

When comparing the variable cost of processing a ton of cottonseed using saw delinting versus hulling undelinted seed, the processing cost in each mill situation is lower for hulling undelinted seed. The

Table 10. Average variable cost of processing cottonseed in all selected mill situations at 100 percent capacity utilization, saw delinting and hulling undelinted seed.

Selected mill situation	Average Variable cost (less cottonseed cost)	
	Saw delinting	Hulling undelinted seed
	-----Dollars/ton-----	
100 TPD screwpress (South)	45.84	37.99
300 TPD direct solvent (South)	41.84	36.18
300 TPD direct solvent (Southwest)	41.49	35.68
600 TPD direct solvent (Southwest)	39.00	33.49
300 TPD pre-press solvent (West)	51.90	44.22
600 TPD pre-press solvent (West)	47.07	40.00

electricity usage of a mill hulling undelinted seed is much less than a comparable saw delinting mill. The mill hulling undelinted seed also requires less labor, less repair cost, and less maintenance (where saw sharpening is included for these mill situations as part of the repair cost).

Total Costs. The total cost of processing cottonseed at a specific level of capacity utilization is the summation of the total fixed and total variable costs at that level of capacity utilization. Thus, the summation of average fixed and average variable costs yields average total cost.

Average total cost curves for mills using saw delinting and hulling undelinted seed are shown in figures 1 and 2, respectively; these curves include the cost of cottonseed. Because cottonseed cost differs among regions, it was removed from the average total cost to identify processing costs in figures 3 and 4. In general, there is less difference in costs among regions when the cost of cottonseed is removed.

#### Economies of Utilization

Economies of utilization refer to the behavior of average total costs as production changes. Because cottonseed cost is constant at all levels of capacity utilization, the slopes of the average total cost curves in figures 1 and 2 and the slopes of the corresponding mill processing cost curves in figures 3 and 4 are the same. Therefore, only the curves in figures 1 and 2 will be discussed.

The slopes of the average total cost curves of the 100 TPD mill in the South are very steep for both technologies, indicating that costs per



Figure 1. Average total cost for selected mill situations using saw delimiting, 30 - 100 percent capacity utilization.

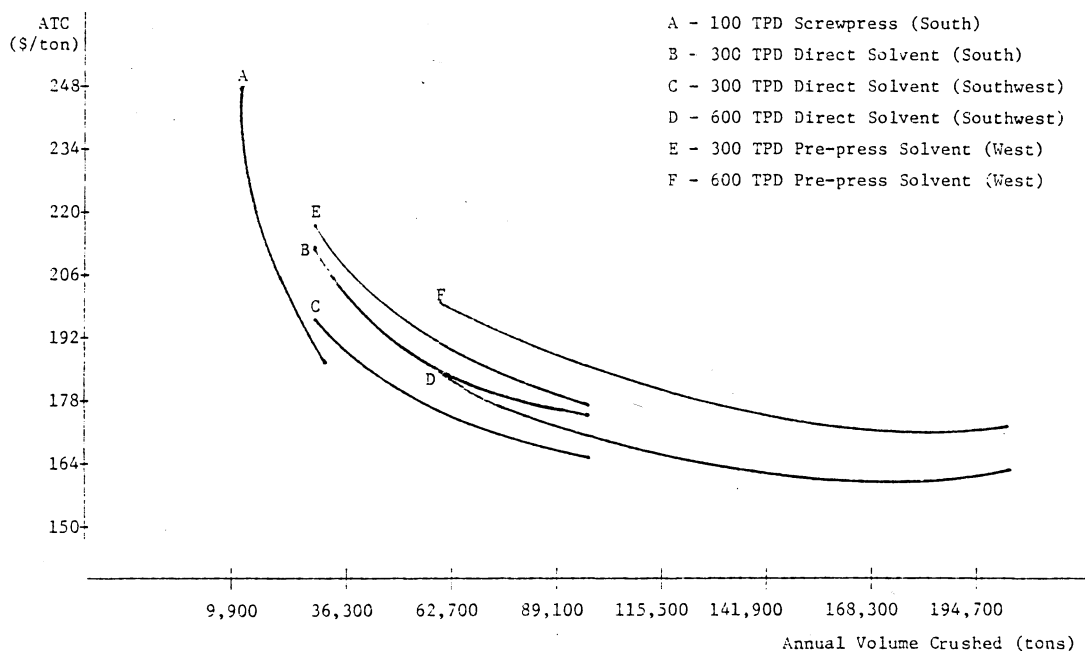


Figure 2. Average total cost for selected mill situations hulling undelinted seed, 30 - 100 percent capacity utilization

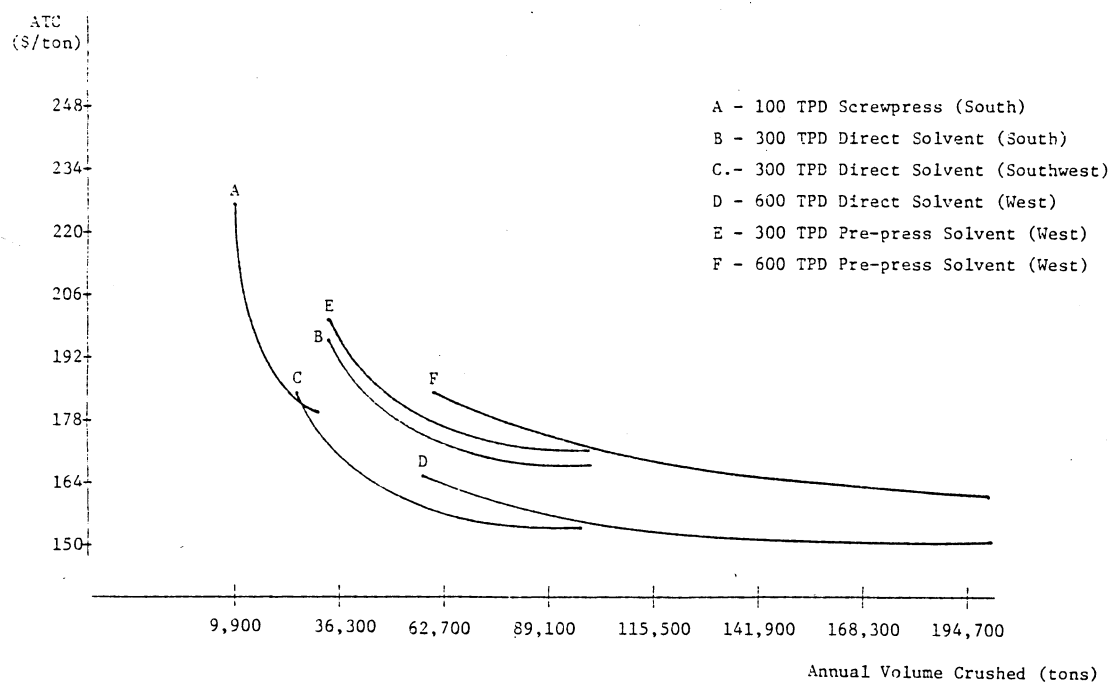


Figure 3. Average total cost (less seed cost) for selected mill situations using saw delimiting, 30 to 100 percent capacity utilization

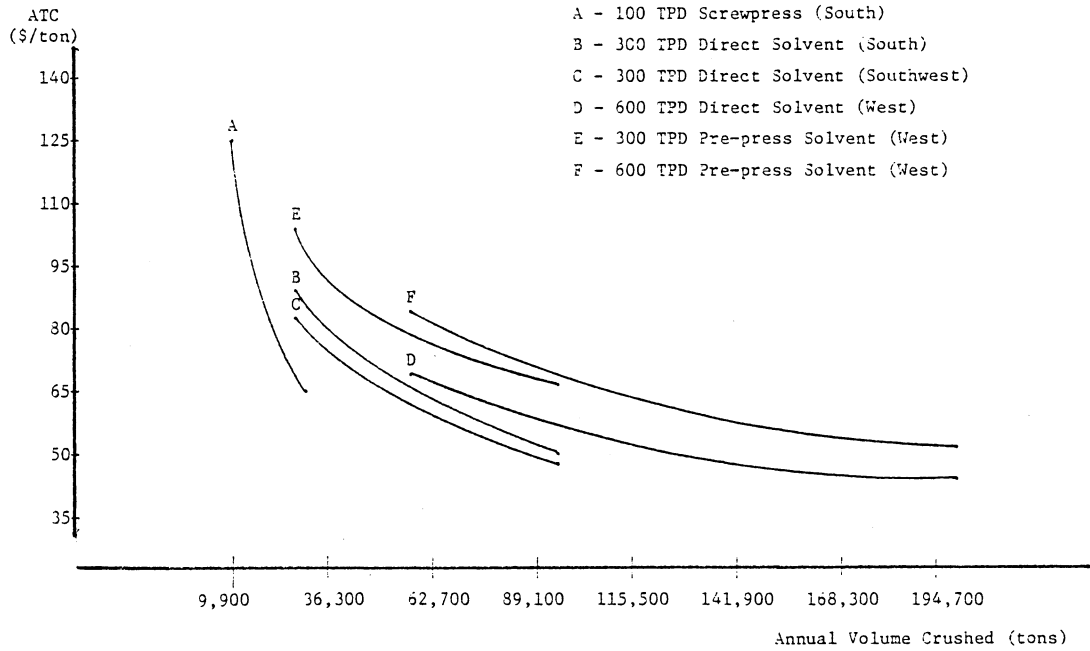
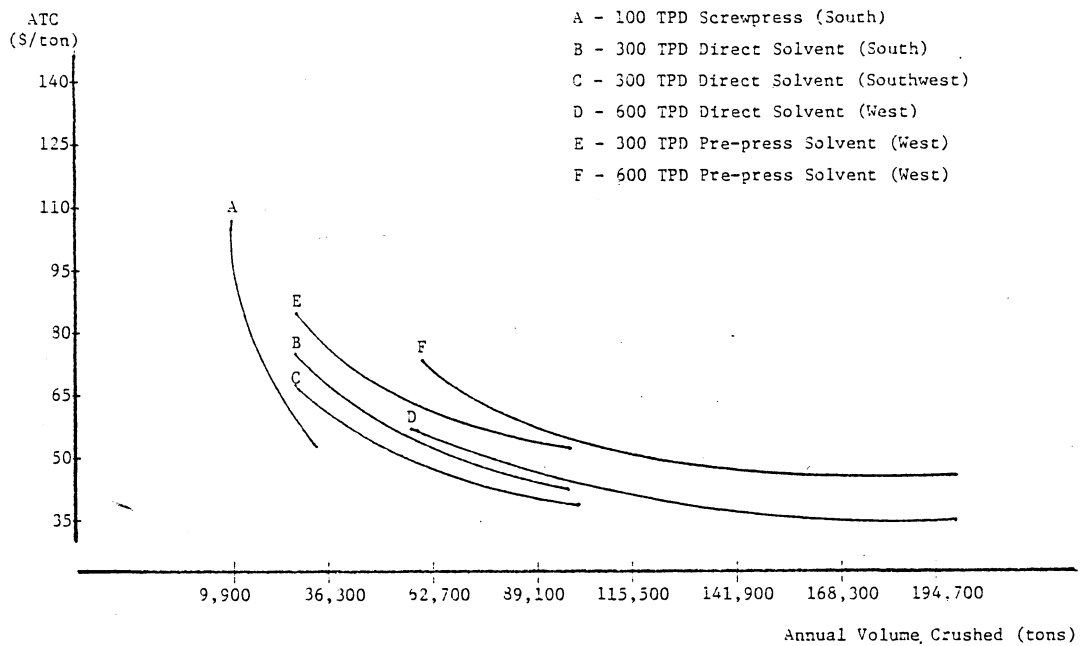


Figure 4. Average total cost (less seed cost) for selected mill situations hulling undelimited seed, 30 - 100 percent utilization.



ton of seed crushed are very sensitive to utilization of the plant's capacity. A slight increase in capacity utilization substantially decreases cost per ton of seed crushed. The slopes of the curves for the 600 TPD mills become relatively flat from about 60 percent capacity utilization to 100 percent capacity utilization. The 300 TPD mills must be operating near 100 percent capacity utilization before the slopes of the curves become very flat. The implication is that the smaller the mill, the greater the sensitivity of cost per ton of seed crushed to the rate of mill capacity utilization.

#### Economies of Size

Economies of size occur when capital investment and processing costs do not increase proportionally to increases in processing capacity. The cost efficiencies due to mill capacities can be seen by examining the pairs of curves in figures 3 and 4 for each region. For example, the processing cost for the 100 TPD plants in the South operating at 100 percent capacity is \$10-13 per ton greater than for the 300 TPD plants in the South operating at 100 percent capacity. Comparing the 300 and 600 TPD plant cost curves for the Southwest and West suggests that the economies of size are not as predominant for the 300 to 600 TPD change as for the 100 to 300 TPD change in plant size. The low point on the ATC curves from 300 to 600 TPD decreased only \$4-8 compared to the \$10-13 decrease for the 100 to 300 TPD size change.

#### Average Revenue

Average revenue was based on five year (1974-1978) average regional prices and 15-year (1962-1976) average output of each product by region

as previously discussed. The only difference in average revenue within a region is in the South. The screwpress operation will produce less oil per ton of seed processed than the direct solvent mill. The oil loss can be added to the meal output of the process and a new price for expeller meal used to determine average revenue. Prices (average revenues) used for meal are shown in table 2.

#### Net Revenue

The average variable cost includes the cost of purchasing, transporting to the mill, and processing a ton of cottonseed (not including fixed costs). If the average revenue generated is greater than average variable cost, the mill will operate in the short run to attempt to recover some portion of its fixed costs. In all saw delinting mill situations and at all levels of capacity utilization, the average variable cost was lower than average revenue.

In terms of average net revenue (average revenue minus average total cost), the mills in the Southern region had lower net revenues than in other regions. This was due to two factors: (1) the higher five year average price paid for seed in the region and (2) the higher fixed cost which must be recovered. The 100 TPD mill had substantially higher fixed cost per ton of seed processed than the other mills. This suggests that building new small capacity mills is no longer feasible based on new construction costs. However, it may still be feasible to operate those mills which were previously built at lower investment costs and which are partially or completely depreciated. The lower average revenue in mills hulling undelinted seed was due to the loss of income from linters as a separate product of processing. For mills hulling undelinted seed, the

linters combined with hulls were assumed to sell at the same price per ton as do hulls alone.

Net revenue was greater for saw delinting mills than for mills hulling undelinted seed except in three cases: the 100 TPD mill in the South operating at less than 60 percent capacity and the 300 TPD mills in the Southwest and West operating at less than 40 percent capacity. In these instances the lower fixed cost at lower levels of capacity utilization resulted in an improved net revenue (smaller losses).

#### Break-even Linters Prices

One method of determining the profitability of removing linters from seed is to determine a break-even price for linters--that price which linters must bring on the average for all cuts over the production period to cover the cost of producing linters. Break-even linters prices were determined by dividing the total of all costs of producing linters by the amount of linters produced. The fixed costs of the buildings, machinery, and equipment necessary to remove, bale, and store linters, the associated taxes and insurance on these items, plus a portion of the fixed labor of the plant constitute the fixed cost of removing lint.

Calculations of break-even linters prices are shown in tables 11 through 16. Break-even prices range from a high of 14.5 cents per pound for the 100 TPD screwpress mill operating at 30 percent capacity to a low of 6.1 cents for the 300 TPD direct solvent mill in the South operating at 100 percent capacity. The 600 TPD plants have an advantage over the 300 TPD plants in the Southwest and Western regions because they can spread their fixed cost over larger production of linters. The Western region has a slightly higher variable cost of removing linters from seed. However,

Table 11. Cost summary and break-even linters prices for a 100 TPD screwpress mill, Southern region

	Capacity utilization (percent)							
	30	40	50	60	70	80	90	100
	-----Dollars-----							
Fixed costs associated with delinting								
Annual equivalency cost of machinery & buildings	129,419							129,419
Fixed labor	25,960							25,960
Taxes	3,452							3,452
Insurance	7,244							7,244
Total fixed cost	171,075							171,075
Variable costs associated with delinting								
Delinting	56,885	75,319	95,337	112,187	132,205	150,638	170,656	187,506
Baling & storage	22,721	29,972	38,191	44,474	52,693	59,944	68,163	74,446
Miscellaneous	5,585	7,393	9,361	11,010	12,978	14,787	16,755	18,403
Sub-total	85,191	112,684	142,889	167,671	197,876	225,369	255,574	280,355
Interest on oper. cap.	8,519	11,268	14,289	16,767	19,788	22,537	25,557	28,036
Total variable cost	93,710	123,952	157,178	184,438	217,664	247,906	281,131	308,391
Total cost	264,785	295,027	328,253	355,513	388,739	418,981	452,206	479,466
	-----Pounds-----							
Linters production	1,831,500	2,442,000	3,052,500	3,663,000	4,273,500	4,884,000	5,494,500	6,105,000
	-----Cents per pound-----							
Break-even price of linters	14.5	12.1	10.8	9.7	9.1	8.6	8.2	7.9

Table 12. Cost summary and break-even linters prices for a 300 TPD direct solvent mill, Southern region

	Capacity utilization (percent)							
	30	40	50	60	70	80	90	100
	-----Dollars-----							
Fixed costs associated with delinting								
Annual equivalency cost of machinery & buildings	292,013							292,013
Fixed labor	37,655							37,655
Taxes	19,054							19,054
Insurance	16,332							16,332
Total fixed cost	365,054							365,054
Variable costs associated with delinting								
Delinting	137,955	182,916	230,949	272,838	320,871	365,332	413,865	455,754
Baling & storage	53,146	70,134	89,305	104,109	123,280	140,268	159,439	174,354
Miscellaneous	14,195	18,320	23,765	28,070	33,015	37,640	42,585	46,890
Sub-total	205,296	271,870	344,019	405,017	477,166	543,740	615,889	676,998
Interest on oper. cap.	20,530	27,187	34,402	40,502	47,717	54,374	61,589	67,700
Total variable cost	225,826	299,057	378,421	445,519	524,883	598,114	677,478	744,698
Total cost	590,880	664,111	743,475	810,573	889,937	963,168	1,042,532	1,109,752
	-----Pounds-----							
Linters production	5,494,500	7,326,000	9,157,500	10,989,000	12,820,500	14,652,000	16,483,500	18,315,000
	-----Cents per pound-----							
Break-even price of linters	10.8	9.1	8.1	7.4	6.9	6.6	6.3	6.1

Table 13. Cost summary and break-even linters prices for a 300 TPD direct solvent mill, Southwest region

	Capacity utilization (percent)							
	30	40	50	60	70	80	90	100
	-----Dollars-----							
Fixed costs associated with delinting								
Annual equivalency cost of machinery & buildings	292,013							292,013
Fixed labor	40,260							40,260
Taxes	19,054							19,054
Insurance	16,332							16,332
Total fixed cost	367,659							367,659
Variable costs associated with delinting								
Delinting	140,172	185,832	234,684	277,152	326,004	371,664	420,516	462,984
Baling & storage	55,450	73,158	93,193	108,573	128,608	146,316	166,351	181,842
Miscellaneous	14,810	19,656	24,854	29,295	34,493	39,312	44,510	48,951
Sub-total	210,432	278,646	352,731	415,020	489,105	557,292	631,377	693,777
Interest on oper. cap.	21,043	27,865	35,273	41,502	48,911	55,729	63,138	69,378
Total variable cost	231,475	306,511	388,004	456,522	538,016	613,021	694,515	763,155
Total cost	599,134	674,170	755,663	824,181	905,675	980,680	1,062,174	1,130,814
	-----Pounds-----							
Linters production	4,692,600	6,256,800	7,821,000	9,385,200	10,949,400	12,513,600	14,077,800	15,642,000
	-----Cents per pound-----							
Breakeven price of linters	12.3	10.8	9.7	8.8	8.3	7.8	7.5	7.2

Table 14. Cost summary and break-even linters prices for a 600 TPD direct solvent mill, Southwest region

	Capacity utilization (percent)							
	30	40	50	60	70	80	90	100
	-----Dollars-----							
Fixed costs associated with delinting								
Annual equivalency cost of machinery & buildings	515,007							515,007
Fixed labor	49,198							49,198
Taxes	16,693							16,693
Insurance	14,309							14,309
Total fixed cost	595,207							595,207
Variable costs associated with delinting								
Delinting	253,080	335,880	423,360	501,480	588,960	671,760	759,240	837,360
Baling & storage	108,588	143,448	182,316	213,168	252,036	286,896	325,764	356,616
Miscellaneous	26,004	34,496	43,516	51,480	60,500	68,992	78,068	85,976
Sub-total	387,672	513,824	649,192	766,128	901,496	1,027,648	1,163,072	1,279,952
Interest on oper. cap.	38,767	51,382	64,919	76,613	90,150	102,765	116,307	127,995
Total variable cost	426,439	565,206	714,111	842,741	991,646	1,130,413	1,279,379	1,407,947
Total cost	1,021,646	1,160,413	1,309,318	1,437,948	1,586,853	1,725,620	1,874,586	2,003,154
	-----Pounds-----							
Linters production	9,385,200	12,513,600	15,642,000	18,770,400	21,898,800	25,027,200	28,155,600	31,284,000
	-----Cents per pound-----							
Breakeven price of linters	10.9	9.3	8.4	7.7	7.2	6.9	6.7	6.4

Table 15. Cost summary and break-even linters prices for a 300 TPD pre-press solvent mill, Western region

	Capacity utilization (percent)							
	30	40	50	60	70	80	90	100
	-----Dollars-----							
Fixed costs associated with delinting								
Annual equivalency cost of machinery & buildings	292,013							292,013
Fixed labor	46,700							46,700
Taxes	19,054							19,054
Insurance	16,332							16,332
Total fixed cost	374,099							374,099
Variable costs associated with delinting								
Delinting	180,708	239,085	303,085	355,839	419,793	478,170	542,124	594,924
Baling & storage	78,522	103,449	132,117	153,303	181,971	206,898	235,566	256,752
Miscellaneous	17,753	23,501	29,758	34,996	41,254	47,002	53,260	58,497
Sub-total	276,983	366,035	464,960	544,138	643,018	732,070	830,950	910,173
Interest on oper. cap.	27,698	36,604	46,496	54,414	64,302	73,207	83,095	91,017
Total variable cost	304,681	402,639	511,456	598,552	707,320	805,277	914,045	1,001,190
Total cost	678,780	776,738	885,555	972,651	1,081,419	1,179,376	1,288,144	1,375,289
	-----Pounds-----							
Linters production	5,643,000	7,524,000	9,405,000	11,286,000	13,167,000	15,048,000	16,929,000	18,810,000
	-----Cents per pound-----							
Breakeven price of linters	12.0	10.3	9.4	8.6	8.2	7.8	7.6	7.3

Table 16. Cost summary and break-even linters prices for a 600 TPD pre-press solvent mill, Western region

	Capacity utilization (percent)							
	30	40	50	60	70	80	90	100
	-----Dollars-----							
Fixed costs associated with delinting								
Annual equivalency cost of machinery & buildings	515,007							515,007
Fixed labor	56,200							56,200
Taxes	16,693							16,693
Insurance	14,309							14,309
Total fixed cost	602,209							602,209
Variable costs associated with delinting								
Delinting	315,672	418,131	528,885	623,049	733,803	836,262	947,016	1,041,179
Baling & storage	142,107	192,074	244,938	284,883	337,746	384,150	437,013	476,958
Miscellaneous	22,233	42,705	53,993	63,650	74,938	85,410	96,698	106,355
Sub-total	490,012	652,910	827,816	971,582	1,146,487	1,305,822	1,480,727	1,624,492
Interest on oper. cap.	49,001	65,291	82,782	97,158	114,649	130,582	148,073	162,449
Total variable cost	539,013	718,201	910,598	1,068,740	1,261,136	1,436,404	1,628,800	1,786,941
Total cost	1,141,222	1,320,410	1,512,807	1,670,949	1,863,345	2,038,613	2,231,009	2,389,150
	-----Pounds-----							
Linters production	11,286,000	15,048,000	18,810,000	22,572,000	26,344,000	30,096,000	33,585,000	37,620,000
	-----Cents per pound-----							
Breakeven price of linters	10.1	8.8	8.0	7.4	7.1	6.8	6.6	6.4



this is compensated for by the increased lint yield in the Western region over the Southwestern region. The 100 TPD plant has the highest break-even cost due to its inability to recover fixed costs as rapidly as the mills operating with larger capacities. The 300 TPD plant in the Southern region has the best capability of recovering cost of removing linters because of its lower variable cost, primarily wage rates, of producing linters and the higher linter yield per ton of seed processed, especially compared to the Southwestern region.

#### Break-even Prices for Hulls and Linters Combined

The new product of hulls and linters combined which would be produced from hulling undelinted seed has no market basis for determining price. Preliminary analysis suggests that the new product of hulls (75.5 percent by weight), linters (23 percent), and oil (1.5 percent) would have an increased per ton feed value of at least 10 percent over standard hulls.<sup>4/</sup> This value is not a dollar value increase but a feed value increase; market value for the new product as a livestock feed might be expected to increase, but the proportion is uncertain.

Because a market is not established for hulls and linters combined, a method of estimating the prices required for the new product to generate the same net revenue as generated by saw delinting mills was developed. The method of comparison was to calculate that price which hulls and linters combined must bring in the new technology mills in order to generate the same level of net revenue, given the five year average prices

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<sup>4/</sup> Estimate provided by Dr. C. Reed Richardson, Animal Science Dept., Texas Tech University, based on animal feeding trials with various cottonseed products performed at Texas Tech.

for oil, meal, and unprocessed cottonseed. The linters prices for the saw delinting mills were varied between an average price of \$.03 and \$.12 per pound. The prices which the new product must receive in order to achieve the same level of net revenue in the mills hulling undelinted seed were then calculated. The results are shown in table 17 and figures 5 through 10.

In each figure, the straight line shows the combinations of linters and new product prices for which the firm would be indifferent. At all price combinations below (above) the line, saw delinting (hulling undelinted seed) is more profitable. Point A represents the 5 year average price of linters in the conventional mill situation (table 2). Point B represents break-even linters price for the conventional mill (table 17), and Point C represents five year average price for hulls (table 2). In all mill situations, the five year average linter price was greater than both the breakeven linters price and the price of linters which generates the same level of net revenue in the conventional mill as the five year average hull price.

Changing an Existing Mill Using Saw  
Delinting to Hulling Undelinted Seed

The mill situations used for analysis were based on construction of new mills. However, for an established oil mill, the relevant issue may be whether or not to modify an existing plant to hull undelinted seed. In order to address that issue, some assumptions about management options on delinting and baling equipment must be made. If management can sell the equipment for its economic (undepreciated) value, the situation is as previously discussed (based on 1979 machinery prices). If management must

Table 17. Calculated prices for the new product of hulls and linters combined which would generate the same level of net revenue in mills hulling undelinted seed as hulls and linters separately generate in conventional mills, alternate linters prices, all mill situations at 100 percent capacity utilization.

Linters price (all cuts)	Price of new product of hulls and linters combined required for equal net revenue					
	100 TPD screwpress, South	300 TPD direct solvent, South	300 TPD direct solvent, Southwest	600 TPD direct solvent, Southwest	300 TPD pre-press solvent, West	600 TPD pre-press solvent, West
---\$/lb.---	---\$/ton---					
.03	16.77	28.32	29.97	31.74	18.19	21.05
.04	22.52	34.07	34.58	36.35	24.05	26.91
.05	28.27	39.81	39.18	40.95	29.91	32.76
.06	34.01	45.56	43.79	45.56	35.75	38.62
.07	39.76	51.30	48.40	50.17	41.62	44.47
.0770 <sup>1/</sup>	-----	-----	-----	-----	45.71	48.57
.08	45.50	57.05	53.00	54.77	47.47	50.33
.0815 <sup>2/</sup>	46.36	57.91	-----	-----	-----	-----
.0818 <sup>3/</sup>	-----	-----	53.83	55.60	-----	-----
.09	51.25	62.79	57.61	59.38	53.33	56.18
.10	56.99	68.54	62.21	63.99	59.18	62.04
.11	62.74	74.28	66.82	68.59	65.03	67.89
.12	68.48	80.03	71.43	73.20	70.89	73.75

<sup>1/</sup> Five year average linters price in the West

<sup>2/</sup> Five year average linters price in the South

<sup>3/</sup> Five year average linters price in the Southwest

Figure 5. Alternative linter prices in the conventional mill and new product prices in the new technology mill (100 TPD screwpress in the South) which will generate the same level of net revenue.

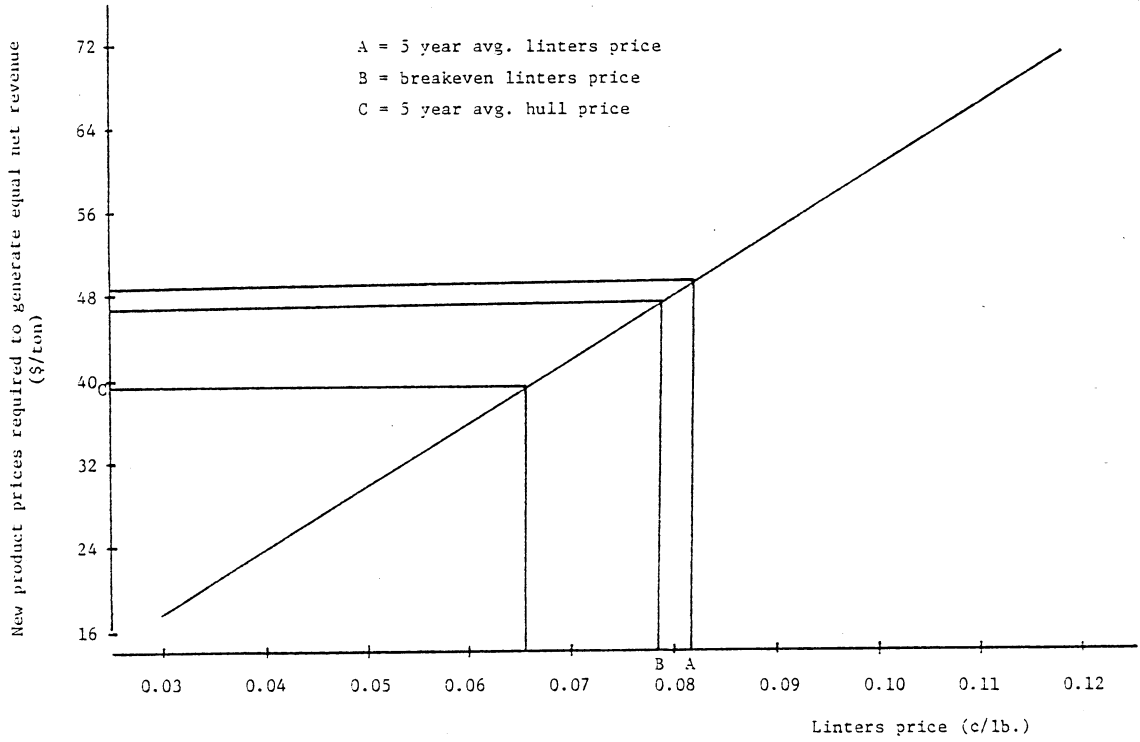


Figure 6. Alternative linter prices in the conventional mill and new product prices in the new technology mill (300 TPD direct solvent in the South) which will generate the same level of net revenue.

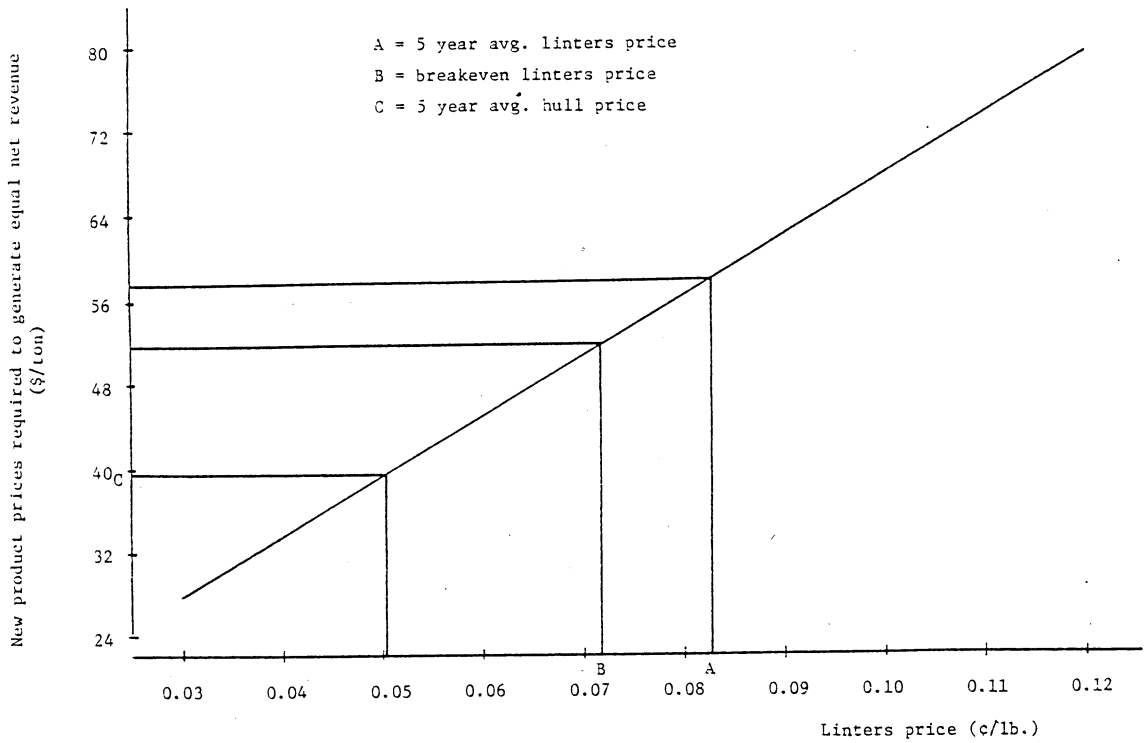


Figure 7. Alternative linter prices in the conventional mill and new product prices in the new technology mill (300 TPD direct solvent in the Southwest) which will generate the same level of net revenue.

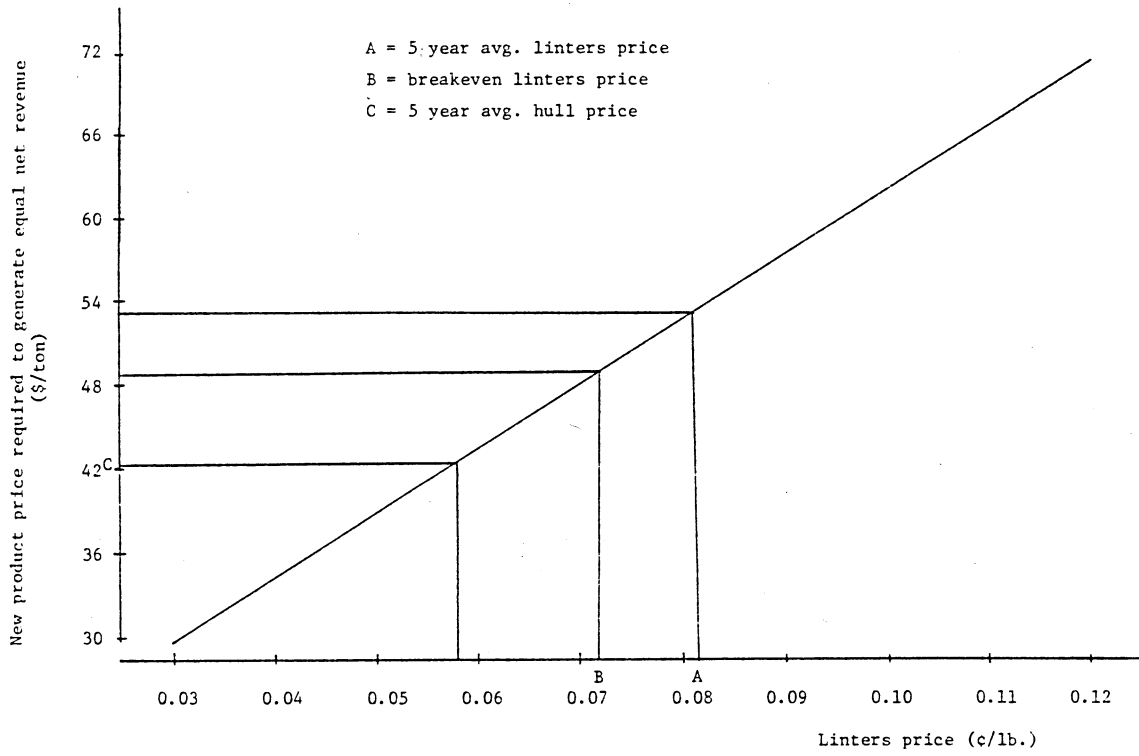


Figure 8. Alternative linter prices in the conventional mill and new product prices in the new technology mill (600 TPD direct solvent in the Southwest) which will generate the same level of net income.

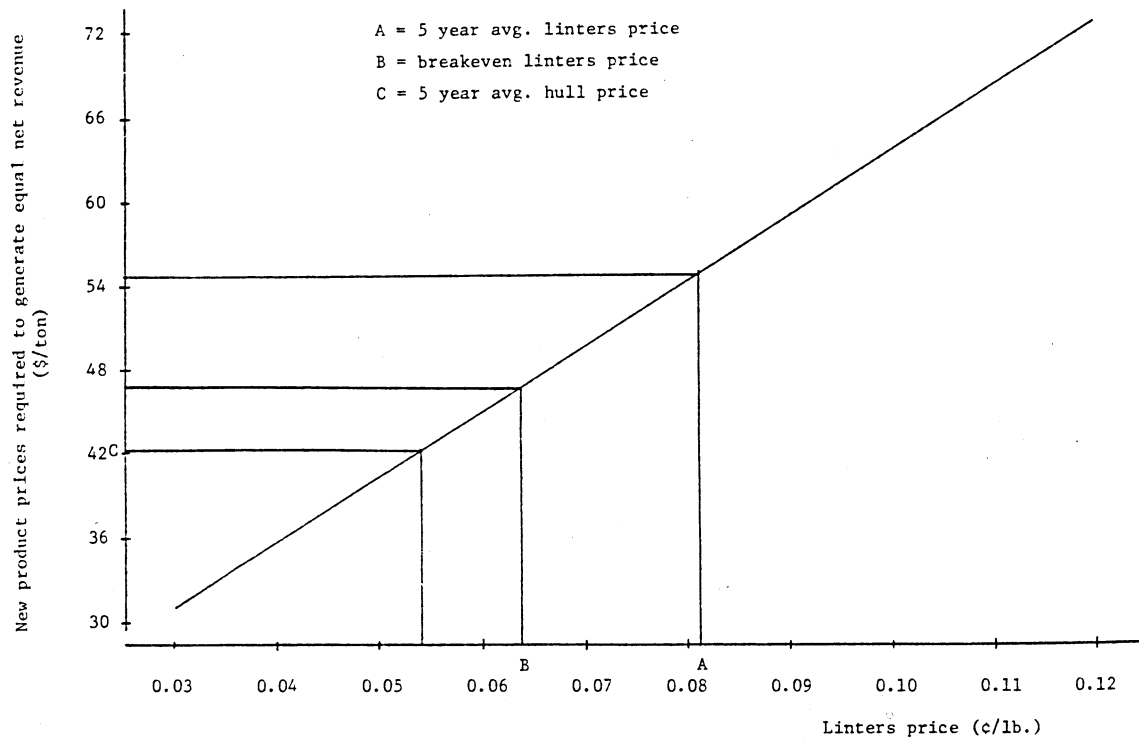


Figure 9. Alternative linter prices in the conventional mill and new product prices in the new technology mill (300 TPD pre-press solvent in the West) which will generate the same level of net revenue.

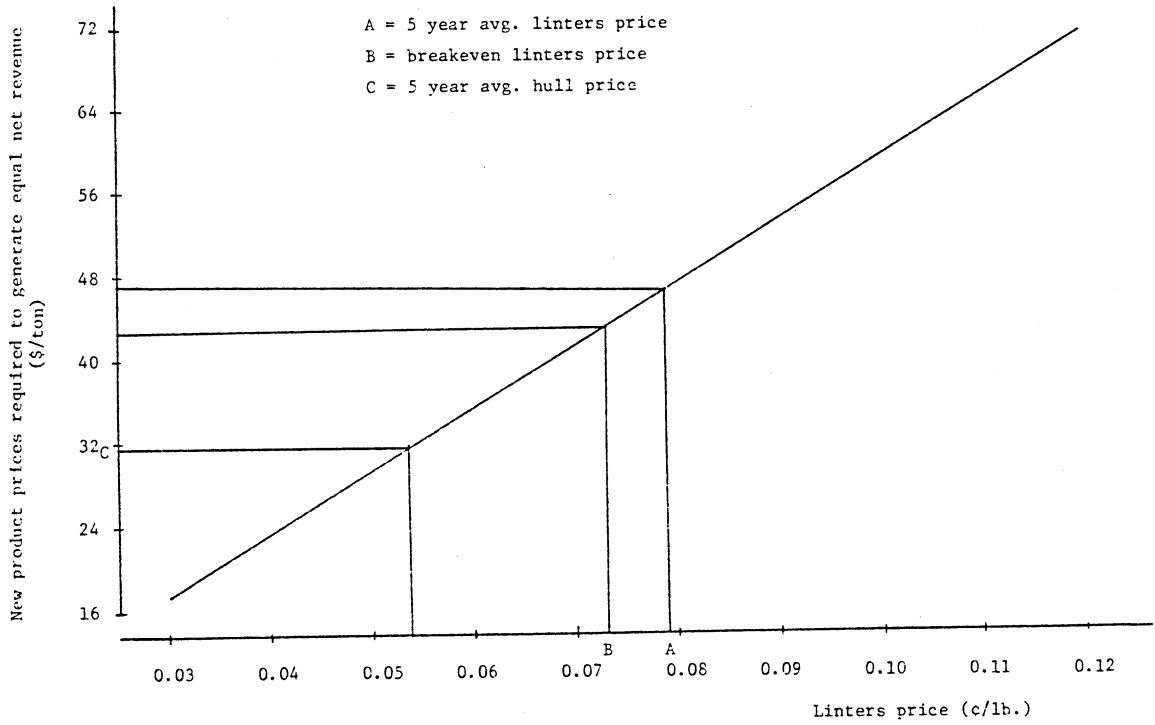
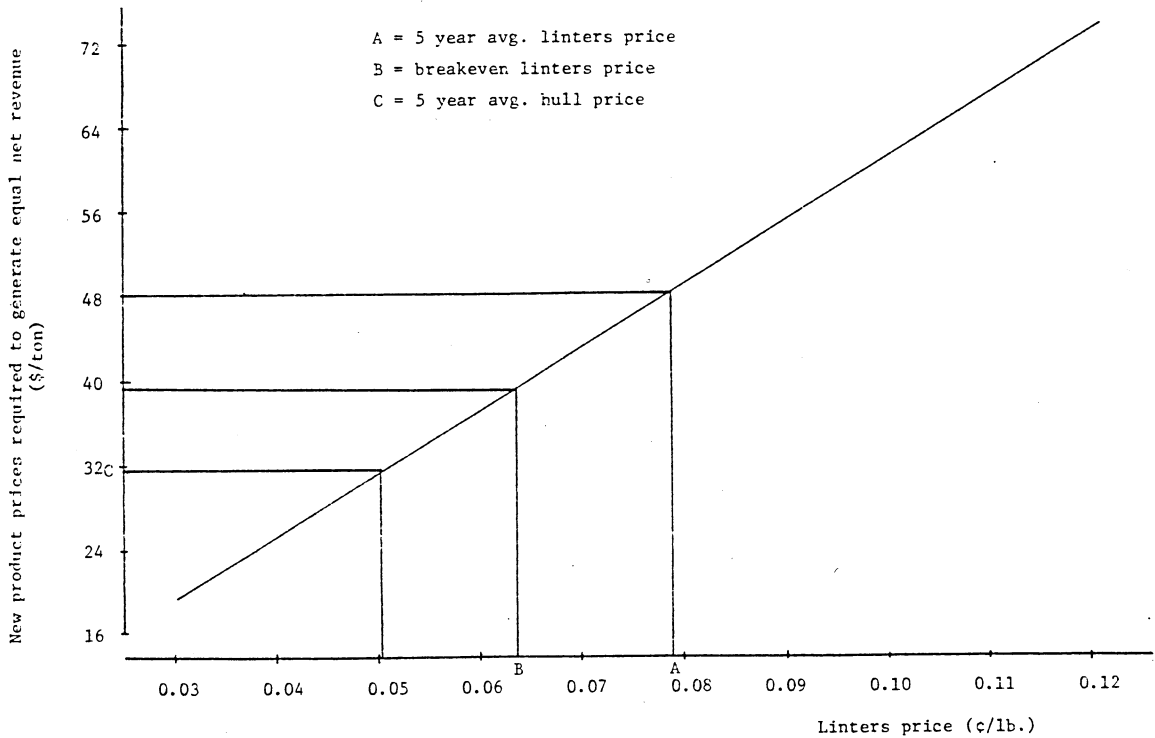


Figure 10. Alternative linter prices in the conventional mill and new product prices in the new technology mill (600 TPD pre-press solvent in the West) which will generate the same level of net revenue.



remove and discard the undepreciated equipment, the mill situation could be shown by adding the depreciation and interest on that equipment to the costs for the appropriate hulling undelinted seed mill situation. This increase in fixed costs of the mill would cause total cost of processing to increase and net revenue to decrease. For example, a 300 TPD direct solvent mill in the Southwest hulling undelinted seed would increase its total fixed cost from \$1,136,435 per year to \$1,428,446 per year. At 100 percent capacity utilization, average total cost would increase from \$11.48 per ton to \$14.43 per ton.

#### Conclusions

Processing costs per ton of cottonseed estimated with a processing plant simulation model vary greatly with both plant capacity and the rate of capacity utilized. Based on 1979 input costs and saw delinting, estimated processing costs at full plant utilization varied from a high of \$70.48 per ton for a 100 TPD plant in the South to a low of \$49.98 per ton for a 600 TPD plant in the Southwest. Costs are sensitive to rate of plant capacity utilization for all plants, but much more sensitive for small plants. The sensitivity of costs to plant size decreases as plant size increases.

The simulated costs and returns for the twelve cottonseed oil mill situations presented indicate that hulling undelinted seed is not a profitable processing plant modification for the industry. Under the assumptions of the study, every mill situation using saw delinting produced a greater net revenue than did the corresponding mill situation hulling undelinted seed. This general conclusion is drawn for the industry in the aggregate but does not necessarily hold for individual plants.

Several assumptions made in the study are critical, and variations in the assumptions may alter the conclusions drawn. First, a three percent loss in oil production for mills hulling undelinted seed was assumed, based on information available. However, suggestions that the percentage oil loss might be decreased have been made. Secondly, the 5-year average prices for products assumed for the study may change in the future. If average linters prices decline from the level used in the analysis, hulling undelinted seed may become more attractive. In addition, the assumption that the value of the new product -- hulls and linters combined and containing the three percent oil lost -- would be the same as the value of hulls alone may not hold. If the market value of the new product was 10-15 percent greater on a per ton basis than hulls, hulling undelinted seed would be more competitive. Finally, the comparisons excluded costs of any cotton dust control standards. If the cost of bringing mills hulling undelinted seed into compliance with a dust standard were less than the associated costs of compliance with saw delinting, the hulling undelinted seed technology would become a more attractive alternative. However, this question was beyond the scope of the study.



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Appendix I  
Cost Computations

### Fixed Cost Calculations for Depreciable Items

The fixed cost of depreciation and interest for fixed cost items is calculated by the following formula:

$$AEC = C \left[ \frac{R(1+R)^Y}{(1+R)^Y - 1} \right] - S \left[ \frac{R}{(1+R)^Y - 1} \right]$$

where AEC = annual equivalency cost (in dollars)  
C = installed cost of the item (in dollars)  
R = interest rate  
Y = years of useful life  
S = salvage value (in dollars)

For the buildings in the model, costs were calculated on a square-foot basis. The machinery and equipment installation costs were based on a percentage of the F.O.B. cost of the machinery (6). Therefore,

$$C = \text{F.O.B. cost} (1 + \text{Installation cost})$$

where installation cost is a percentage of F.O.B. cost.

The cost of fixed repairs was also added to the AEC. This was also estimated as a percentage of F.O.B. cost. The formula would then be:

$$RC = \text{FOB} (\text{FRC})$$

where RC = fixed repair cost (in dollars)  
FOB = F.O.B. cost of the item (in dollars)  
FRC = fixed repair cost of the item as a percent of F.O.B. cost

Total fixed cost of an item on a yearly basis becomes

$$FC = AEC + RC$$

where FC = annual fixed cost of the item (in dollars)

### Fixed Costs for Non-depreciable Items

#### Fixed Labor

The labor within a mill which was considered to be a fixed cost were those employees which remain on an annual salary regardless of the volume of seed processed. These employees include managers, assistant managers, buyers, sales personnel, accountants, secretaries, mill superintendents, and shift supervisors. The salaries, including all fringe benefits, assumed for each position in each region were:

<u>Position</u>	<u>Region</u>	<u>Plant Size</u> (TPD)	<u>Salary</u> (\$/year)
Mill Manager	South	100	22,500
		300	25,000
	Southwest West	300, 600	26,250
		300, 600	30,000
Mill Superintendent	South	100	20,000
		300	22,500
	Southwest West	300, 600	22,250
		300, 600	28,000
Shift Supervisor	South	100	17,500
		300	18,750
	Southwest West	300, 600	20,000
		300, 600	26,000
Foreman	South	100	16,000
		300	17,500
	Southwest West	300, 600	18,750
		300, 600	25,000
Secretary	South	100, 300	7,500
	Southwest	300, 600	8,750
	West	300, 600	10,000
Buyer	South	300	20,000
	Southwest	300, 600	21,250
	West	300, 600	25,000
Bookkeeper	South	100, 300	20,000
	Southwest	300, 600	21,250
	West	300, 600	25,000

#### Taxes

Property taxes on buildings, equipment, machinery, and land vary among regions and among mills within regions. One tax rate was used for all mills and all regions. A tax rate of \$1.40 per \$100 of value was applied to 50 percent of the cost of constructing a new plant, including land.

#### Insurance

The insurance rate used on machinery, equipment, and buildings was \$6 per \$1,000 value for all mills in all regions. Land was not insured.

## Variable Costs

### Labor

Wage rates for each region under consideration were based on information received from mills visited in the regions. The average wage rates used in the analysis were: South, \$3.10/hr.; Southwest, \$3.50/hr.; and West, \$5.40/hr. These wage rates were increased by 25 percent to include employee fringe benefit costs to the mills.

The mill was assumed to operate 24 hours a day, 7 days a week until processing is completed. Therefore, to decrease capacity, the number of days the mill operated would be decreased. This means that overtime at 1.5 times the average wage rate is paid each week of operation. Relief crews were not considered in the analysis.

### Insurance

Exact basis for insured value is the value of products on hand and the value of seed in storage adjusted each month. Because the value of products on hand is dependent upon management's decisions on selling products and the availability of storage to the mill, the value of products on hand is hard to determine on a monthly basis for hypothetical situations. For this reason, product insurance is based on total seed processed during the period.

An insurance rate of \$8 per \$1000 of value was applied to the value of seed. The value of seed was determined by the quantity of seed at the beginning of the period times the 5-year average price of seed.

### Boiler fuel

Assumed natural gas prices in the Southwest and West, and fuel oil price in the South were:

Natural gas, Southwest--\$1.75/1000 cu. ft.

Natural gas, West--\$1.90/1000 cu. ft.

Fuel oil, South--\$.39/gal.

Appendix II

Computer Model Runs

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100 TPD Saw Delinting Model, South. . . . .	49
100 TPD Hulling Undelinted Seed Model, South. . . . .	52
300 TPD Saw Delinting Model, South. . . . .	54
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600 TPD Saw Delinting Model, West . . . . .	78
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100 TPD SCREW PRESS COTTONSEED OIL MILL MODEL  
(SOUTH) SAW DELINTEERING

CAPACITY OF PLANT 31000 TONS  
 CAPACITY UTILIZATION 30%  
 INTEREST RATE 10%  
 COST OF RAW MATERIAL 110  
 NUMBER OF VARIABLE DATA SETS 3  
 ADDITION TO CAPACITY UTILIZATION 10%  
 GENERATE COST CURVES 1 1=YES  
 SORT VARIABLE REQUIREMENTS AND TOTAL 1 0=NO  
 PRINT OUT INPUT 1  
 PRINT OUT TOTAL FIXED COST BY ITEM 1  
 PRINT OUT TOTAL VARIABLE COST BY ITEM 1  
 PRINT OUT TOTAL REVENUE BY ITEM 1  
 NUMBER OF PROBLEMS 1

FIXED COST

ITEM NAME	FOB COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	5	40	0.0	0.0	5000.00	500.00
OFFICE	26.80	1500	40	0.0	0.02	8040.00	4896.66
SCALES	13852.00	1	30	1.45	0.0	1000.00	4893.45
TRUCK DUMP	56877.00	1	25	1.45	0.0	5000.00	15300.94
SPEEDHOUSE	465750.00	2	40	0.0	0.02	186300.00	113463.56
CONVEYORS	13880.00	1	20	1.45	0.0	755.00	5420.64
CLEANING BLDG	13.50	900	40	0.0	0.02	2430.00	1479.96
4-TRAY SHAKERS	29375.00	2	30	1.31	0.0	0.0	14336.29
CONVEYORS	4720.00	1	20	1.45	0.0	472.00	1350.06
DELINTEERING BLDG	13.50	3000	40	0.0	0.02	3100.00	4933.20
DELINTERS	14582.00	14	30	1.31	0.0	0.0	50025.09
CHAIN HOIST	2000.00	1	15	1.31	0.0	0.0	607.41
GUMMERS	15845.00	1	30	0.76	0.0	0.0	2953.26
LINT FLUE SYS 1ST	2500.00	4	25	1.31	0.0	0.0	2544.38
LINT ROBBING SYS 1ST	3500.00	1	25	1.31	0.0	0.0	390.71
LINT PICKUP SYS 1ST	3000.00	1	25	1.31	0.0	0.0	763.46
LINT CLEANERS 1ST	24744.00	1	30	1.31	0.0	0.0	6063.35
LINT FLUE SYS 2ND	2500.00	10	25	1.31	0.0	0.0	6362.21
LINT PICKUP SYS 2ND	3000.00	7	25	1.31	0.0	0.0	763.46
LINT CLEANERS 2ND	24744.00	1	30	1.31	0.0	0.0	6063.35
WIPES PICKUP SYS	3000.00	1	25	1.31	0.0	0.0	763.46
CONVEYORS	11060.00	1	25	1.31	0.0	0.0	2814.64
SALE PR-STOR BLDG	12.30	5000	40	0.0	0.02	15360.00	9354.80
SALE PRESS	143620.00	1	40	1.31	0.0	10000.00	33903.20
CHAIN HOIST	2000.00	1	15	1.31	0.0	0.0	607.41
HULL-SEP BLDG	13.50	1320	40	0.0	0.02	3564.00	2170.61
SAFETY SHAKERS	8378.00	1	25	1.31	0.0	0.0	2132.10
HULLER	14993.00	2	30	1.31	0.0	0.0	7747.86
PURIFYING HULLER	7393.00	2	30	1.31	0.0	0.0	3619.21
DOUBLE DRUM BEATER	13230.00	1	30	1.31	0.0	0.0	3241.92
H AND S MACHINE	7378.00	2	30	1.31	0.0	0.0	3615.86
MEATS PURIFIER	11793.00	1	30	1.31	0.0	0.0	2989.80
TAILINGS BEATER	7545.00	1	20	1.31	0.0	0.0	1943.65
WIPES BEATER	5395.00	1	30	1.31	0.0	0.0	1322.01
CONVEYORS	1260.00	1	20	1.31	0.0	0.0	341.88
HULLS BLOWING SYS	10100.00	1	20	1.31	0.0	1000.00	2723.00
HULL STORAGE	13.20	3900	40	0.0	0.02	10296.00	6270.64
MEATS COND BLDG	13.50	600	40	0.0	0.02	1620.00	986.64
5-HIGH CRUSH ROLLS	95040.00	1	30	1.31	0.0	0.0	23288.91
ROLLER	22700.00	1	30	1.31	0.0	0.0	5562.43
6-HIGH COOKER	128400.00	1	30	1.31	0.0	0.0	31483.55
CONVEYORS	8873.00	1	25	1.31	0.0	0.0	2258.08
EXTRATION BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.28
SCREW PRESS	139030.00	2	30	1.31	0.0	0.0	68136.69
BUCKET ELEVATOR	5300.00	1	25	1.31	0.0	0.0	1348.79
SETTLING TANK	19000.00	1	25	1.31	0.0	0.0	4580.79
FILTER PRESS	25450.00	1	25	1.31	0.0	0.0	6476.73
PUMPS-CONVEYORS	11850.00	1	25	1.31	0.0	0.0	3015.69
MEAL STORAGE	13.20	3150	40	0.0	0.02	8320.00	5064.74
OIL STORAGE	12300.00	1	20	1.31	0.0	1200.00	3235.04
REPAIR MACHINERY	10000.00	1	15	0.76	0.0	1000.00	3222.47
REPAIR BLDG	12.30	1200	40	0.0	0.02	3670.00	1970.67
MILL MANAGER	22500.00	1					24749.93
MILL SUPT	20000.00	1					21999.99
SHIFT SUPV	17500.00	4					76999.94
FOREMEN	16000.00	5					105599.94
SECRETARIES	7500.00	1					5249.99
BOOKKEEPER	20000.00	1					21999.99
TAXES	2207.00	14					33947.78
INSURANCE	4413.00	6					29125.78



TOTAL FIXED COST 812399.19

COST OF CONSTRUCTION NEW PLANT 4413246.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	10527000.00	0.28	2958086.00
COTTONSEED MEAL	15378.00	143.67	2208588.00
COTTONSEED LINTERS	5105000.00	0.03	497557.44
COTTONSEED HULLS	7408.50	39.26	290857.63

TOTAL REVENUE 5955089.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	30000.00	118.88	3923039.00
TRANSPORTATION IN	30000.00	5.00	165000.00

TOTAL PRODUCTION STAGE COST 4088039.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR SEASONAL	6.00	2784.00	16704.00
LABOR	1.50	12480.00	18720.00
ELECTRICITY	30000.00	0.16	5280.00
REPAIR PARTS	30000.00	0.25	8250.00
REPAIR LABOR	30000.00	0.14	4620.00

TOTAL PRODUCTION STAGE COST 53573.99

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	1.50	12480.00	18720.00
ELECTRICITY	300.00	37.00	12210.00
REPAIR PARTS	30000.00	0.25	8250.00
REPAIR LABOR	30000.00	0.03	990.00

TOTAL PRODUCTION STAGE COST 40170.00

PRODUCTION STAGE: DELINTERING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
HEAD LINTERMAN	3.00	14360.00	43080.00
ELECTRICITY	300.00	249.60	82367.94
REPAIR PARTS	30000.00	0.53	19140.00
REPAIR LABOR	30000.00	0.11	3630.00

TOTAL PRODUCTION STAGE COST 137505.81

PRODUCTION STAGE: BALING-BALE STOR

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR PRESS	3.00	12480.00	37440.00
LABOR STORAGE	1.00	12896.00	12896.00
ELECTRICITY	300.00	6.00	1980.00
BAGGING-TIES	10000.00	1.85	18499.99
REPAIR PARTS	30000.00	0.09	2970.00
REPAIR LABOR	30000.00	0.02	660.00

TOTAL PRODUCTION STAGE COST 74445.81

PRODUCTION STAGE: HULLING-SEPARATING			
	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	1.50	12480.00	18720.00
ELECTRICITY	330.00	42.00	13860.00
REPAIR PARTS	33000.00	0.47	15510.00
REPAIR LABOR	33000.00	0.09	2970.00
TOTAL PRODUCTION STAGE COST			51059.99

PRODUCTION STAGE: MEAL CONDITIONING			
	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	1.50	12480.00	18720.00
ELECTRICITY	330.00	94.00	31020.00
WATER	33000.00	0.04	1320.00
NATURAL GAS	33000.00	1.08	35640.00
REPAIR PARTS	33000.00	0.30	9900.00
REPAIR LABOR	33000.00	0.08	2640.00
TOTAL PRODUCTION STAGE COST			99239.31

PRODUCTION STAGE: EXTRACTION			
	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	227.00	74910.00
REPAIR PARTS	33000.00	0.31	10230.00
REPAIR LABOR	33000.00	0.15	4950.00
TOTAL PRODUCTION STAGE COST			127529.88

PRODUCTION STAGE: OIL-MEAL-HULL STOR			
	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	9.00	2970.00
REPAIR PARTS	33000.00	0.28	9240.00
REPAIR LABOR	33000.00	0.11	3630.00
TOTAL PRODUCTION STAGE COST			54527.99

PRODUCTION STAGE: MISCELLANEOUS			
	NO. OF UNITS	COST/UNIT	VARIABLE COST
MAINTENANCE LABOR	3.00	12896.00	38688.00
LABOR CLEANING	3.00	12064.00	36192.00
BROKERAGE FEES	33000.00	0.50	16500.00
LAB ANALYSIS	33000.00	0.05	1650.00
MISC. OFFICE	33000.00	1.25	41250.00
INSURANCE	33000.00	0.45	13350.00
TOTAL PRODUCTION STAGE COST			165629.88

INTEREST ON OPERATING CAPITAL 494170.00  
TOTAL VARIABLE COST 5435872.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	224597.88
LABOR REQUIREMENTS	399385.56
REPAIR REQUIREMENTS	63489.88
NATURAL GAS REQUIREMENTS	35640.00
WATER REQUIREMENTS	1320.00

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	812779.19
TOTAL VARIABLE COST	5435872.00
TOTAL COST	6248651.00

TOTAL REVENUE 3955048.00  
 TOTAL NET REVENUE -293683.00

AVERAGE FIXED COST 24.63  
 AVERAGE VARIABLE COST 164.72  
 AVERAGE TOTAL COST 189.36  
 AVERAGE REVENUE 180.46  
 AVERAGE NET REVENUE -8.90

MARGINAL COST 161.41

100 TPD SCREW PRESS COTTONSEED OIL MILL MODEL  
 (SOUTH) HULLING UNDELINERED SEED

CAPACITY OF PLANT 30000 TONS  
 CAPACITY UTILIZATION 30%  
 INTEREST RATE 10%  
 COST OF RAW MATERIAL 110  
 NUMBER OF VARIABLE DATA SETS 2  
 ADDITION TO CAPACITY UTILIZATION 10%  
 GENERATE COST CURVES 1 1=YES  
 SORT VARIABLE REQUIREMENTS AND TOTAL 1 0=NO  
 PRINT OUT INPUT 1  
 PRINT OUT TOTAL FIXED COST BY ITEM 1  
 PRINT OUT TOTAL VARIABLE COST BY ITEM 1  
 PRINT OUT TOTAL REVENUE BY ITEM 1  
 NUMBER OF PROBLEMS 1

FIXED COST

ITEM NAME	FOB COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	5	40	0.0	0.0	5000.00	500.00
OFFICE	26.80	1500	40	0.0	0.02	3040.00	4896.66
SCALES	18852.00	1	30	1.45	0.0	1000.00	4833.45
TRUCK DUMP	56877.00	1	25	1.45	0.0	5000.00	15300.94
SEEDHOUSE	465750.00	2	40	0.0	0.02	186300.00	113463.56
CONVEYORS	18880.00	1	20	1.45	0.0	755.00	5420.04
CLEANING BLDG	13.50	900	40	0.0	0.02	2430.00	1479.96
4-TRAY SHAKERS	29375.00	2	30	1.31	0.0	0.0	14336.29
CONVEYORS	4720.00	1	20	1.45	0.0	472.00	1350.08
HULL-SEP BLDG	13.50	2320	40	0.0	0.02	6264.00	3815.01
SAFETY SHAKERS	8378.00	1	25	1.31	0.0	0.0	2132.19
HULLER	14993.00	3	30	1.31	0.0	0.0	11021.79
PURIFYING HULLER	7383.00	3	30	1.31	0.0	0.0	5427.46
DOUBLE DRUM BEATER	13230.00	2	30	1.31	0.0	0.0	6483.84
H AND S MACHINE	7378.00	3	30	1.31	0.0	0.0	5427.79
MEATS PURIFIER	11793.00	1	30	1.31	0.0	0.0	2889.80
TAILINGS BEATER	7545.00	1	30	1.31	0.0	0.0	1848.85
MOTES BEATER	5395.00	1	30	1.31	0.0	0.0	1322.01
CONVEYORS	1260.00	2	20	1.31	0.0	0.0	683.76
HULLS BLOWING SYS	10100.00	2	20	1.31	0.0	2000.00	5445.99
HULL STORAGE	13.20	3900	40	0.0	0.02	20532.00	6247.38
MEATS COND BLDG	13.50	600	40	0.0	0.02	1620.00	986.64
5-HIGH CRUSH ROLLS	35040.00	1	30	1.31	0.0	0.0	23288.91
BOILER	27700.00	1	30	1.31	0.0	0.0	5562.48
6-HIGH COOKER	128400.00	1	30	1.31	0.0	0.0	31463.55
CONVEYORS	3873.00	1	25	1.31	0.0	0.0	2258.08
EXTRACTION BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.28
SCREW PRESS	139030.00	2	20	1.31	0.0	0.0	68136.69
BUCKET ELEVATOR	5300.00	1	25	1.31	0.0	0.0	1348.79
SETTLING TANK	18000.00	1	25	1.31	0.0	0.0	4580.79
FILTER PRESS	25450.00	1	25	1.31	0.0	0.0	6476.75
PUMPS-CONVEYORS	11350.00	1	25	1.31	0.0	0.0	3015.69
MEAL STORAGE	13.20	3150	40	0.0	0.02	8320.00	5064.74
OIL STORAGE	12000.00	1	20	1.31	0.0	1200.00	3235.04
REPAIR MACHINERY	10000.00	1	15	0.75	0.0	1000.00	2222.47
REPAIR BLDG	12.80	1200	40	0.0	0.02	3070.00	1870.97
MILL MANAGER	22500.00	1					24749.98
MILL SUPT	20000.00	1					21999.99
SHIFT SUPV	17500.00	4					76999.94
FOREMEN	16000.00	6					105599.94
SECRETARIES	7500.00	1					8249.99
BOOKKEEPER	20000.00	1					21999.99
TAXES	1873.00	14					23764.18
INSURANCE	3345.00	6					22076.58

TOTAL FIXED COST 683427.31

COST OF CONSTRUCTION NEW PLANT 3344931.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	10197000.00	0.28	2865356.00
COTTONSEED MEAL	15378.00	143.62	2208588.00
COTTONSEED HULLS	10626.00	39.26	417176.69

TOTAL REVENUE 5491120.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	33000.00	118.88	3923039.00
TRANSPORTATION IN	33000.00	5.00	165000.00

TOTAL PRODUCTION STAGE COST 4088039.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR SEASONAL	6.00	2784.00	16704.00
LABOR	1.50	12480.00	18720.00
ELECTRICITY	33000.00	0.16	5280.00
REPAIR PARTS	33000.00	0.25	8250.00
REPAIR LABOR	33000.00	0.14	4620.00

TOTAL PRODUCTION STAGE COST 53573.99

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	1.50	12480.00	18720.00
ELECTRICITY	330.00	37.00	12210.00
REPAIR PARTS	33000.00	0.25	8250.00
REPAIR LABOR	33000.00	0.03	990.00

TOTAL PRODUCTION STAGE COST 40170.00

PRODUCTION STAGE: HULLING-SEPARTING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	1.50	12480.00	18720.00
ELECTRICITY	330.00	66.24	21859.20
REPAIR PARTS	33000.00	0.94	31020.00
REPAIR LABOR	33000.00	0.18	5940.00

TOTAL PRODUCTION STAGE COST 77539.13

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	1.50	12480.00	18720.00
ELECTRICITY	330.00	94.00	31020.00
WATER	33000.00	0.04	1320.00
NATURAL GAS	33000.00	1.08	35640.00
REPAIR PARTS	33000.00	0.30	9900.00
REPAIR LABOR	33000.00	0.08	2640.00

TOTAL PRODUCTION STAGE COST 99239.81

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	227.00	74910.00
REPAIR PARTS	33000.00	0.31	10230.00
REPAIR LABOR	33000.00	0.15	4950.00

TOTAL PRODUCTION STAGE COST 127529.98

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	9.00	2970.00
REPAIR PARTS	33000.00	0.28	9240.00
REPAIR LABOR	33000.00	0.11	3630.00
TOTAL PRODUCTION STAGE COST			54527.99

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	COST/UNIT	VARIABLE COST
MAINTENANCE LABOR	3.00	12896.00	38688.00
LABOR CLEANING	3.00	12064.00	36192.00
BROKERAGE FEES	33000.00	0.50	16500.00
LAB ANALYSIS	33000.00	0.05	1650.00
MISC. OFFICE	33000.00	1.25	41250.00
INSURANCE	33000.00	0.95	31350.00
TOTAL PRODUCTION STAGE COST			165629.98

INTEREST ON OPERATING CAPITAL 470623.31

TOTAL VARIABLE COST 5176858.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	148249.19
LABOR REQUIREMENTS	255361.69
REPAIR REQUIREMENTS	76889.92
NATURAL GAS REQUIREMENTS	35640.00
WATER REQUIREMENTS	1320.00

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	683427.31
TOTAL VARIABLE COST	5176858.00
TOTAL COST	5860285.00
TOTAL REVENUE	5491120.00
TOTAL NET REVENUE	-369165.00

AVERAGE FIXED COST	29.71
AVERAGE VARIABLE COST	156.87
AVERAGE TOTAL COST	177.58
AVERAGE REVENUE	166.40
AVERAGE NET REVENUE	-11.19

300 TPD DIRECT SOLVENT COTTONSEED OIL MILL MODEL  
(SOUTH) SAW DELINTEING

CAPACITY OF PLANT	99000 TONS	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	2	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
SORT VARIABLE REQUIREMENTS AND TOTAL	1	0=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOB COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	15	40	0.0	0.0	15000.00	1500.00
OFFICE	26.80	2500	40	0.0	0.02	13400.00	8161.09
SCALES	18852.00	1	30	1.45	0.0	1000.00	4393.45
TRUCK DUMP	56877.00	2	25	1.45	0.0	10000.00	30601.39
SEEDHOUSE	465750.00	5	40	0.0	0.02	465750.00	283659.25
CONVEYORS	37760.00	1	20	1.45	0.0	1510.00	10840.08
CLEANING BLDG	13.50	1800	40	0.0	0.02	4860.00	2959.92
4-TRAY SHAKERS	29375.00	4	30	1.31	0.0	0.0	28792.58
CONVEYORS	9440.00	1	20	1.45	0.0	944.00	2700.13
DELINTEING BLDG	13.50	8000	40	0.0	0.02	21600.00	13155.21
DELINTERS	14582.00	36	30	1.31	0.0	0.0	128635.81
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
GUMMERS	15845.00	3	30	0.75	0.0	0.0	3374.76
LINT FLUE SYS 1ST	2500.00	10	25	1.31	0.0	0.0	6362.21
LINT ROBBING SYS 1ST	3500.00	1	25	1.31	0.0	0.0	890.71
LINT PICKUP SYS 1ST	3000.00	1	25	1.31	0.0	0.0	763.46
LINT CLEANERS 1ST	24744.00	1	30	1.31	0.0	0.0	6063.35
LINT FLUE SYS 2ND	2500.00	26	25	1.31	0.0	0.0	16541.74
LINT PICKUP SYS 2ND	6500.00	1	25	1.31	0.0	0.0	1654.17
LINT CLEANERS 2ND	24744.00	2	30	1.31	0.0	0.0	12126.70
MOTES PICKUP SYS	3000.00	1	25	1.31	0.0	0.0	763.46
CONVEYORS	28440.00	1	25	1.31	0.0	0.0	7237.65
BALE PR-STOR BLDG	12.80	12000	40	0.0	0.02	30720.00	13709.63
BALE PRESS	143620.00	2	40	1.31	0.0	20000.00	67806.38
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
HULL-SEP BLDG	13.50	2400	40	0.0	0.02	6480.00	3946.56
SAFETY SHAKERS	3378.00	1	25	1.31	0.0	0.0	2132.10
HULLER	14993.00	4	30	1.31	0.0	0.0	14695.73
PURIFYING HULLER	7383.00	4	30	1.31	0.0	0.0	7235.61
DOUBLE DRUM BEATER	12230.00	2	30	1.31	0.0	0.0	6483.34
H AND S MACHINE	7378.00	4	30	1.31	0.0	0.0	7231.71
MEATS PURIFER	11793.00	2	30	1.31	0.0	0.0	5779.59
TAILINGS BEATER	7545.00	2	30	1.31	0.0	0.0	3697.70
MOTES BEATER	5395.00	1	30	1.31	0.0	0.0	1322.01
CONVEYORS	2520.00	1	20	1.31	0.0	0.0	683.76
HULLS BLOWING SYS	10100.00	1	20	1.31	0.0	1000.00	2723.00
HULL STORAGE	13.20	11700	40	0.0	0.02	30888.00	18811.95
MEATS COND BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.28
ROILER	52480.00	1	30	1.31	0.0	5250.00	12827.95
9-HIGH COOKER	173700.00	1	30	1.31	0.0	0.0	42564.02
FLAKING ROLLS	38500.00	2	30	1.31	0.0	0.0	18868.33
CONVEYORS	13500.00	1	25	1.31	0.0	0.0	3435.59
EXTRACTION BLDG	14.10	2100	40	0.0	0.02	6000.00	3606.54
SOLVENT EXT PLANT	585000.00	1	30	1.45	0.0	58500.00	151682.38
OIL STORAGE	24000.00	2	30	1.31	0.02	4800.00	12692.88
MEAL STORAGE	13.20	9450	40	0.0	0.02	24950.00	15194.26
REPAIR BLDG	12.80	1800	40	0.0	0.02	4600.00	2806.46
REPAIR MACHINERY	20000.00	1	10	0.76	0.0	2000.00	5603.16
REPAIR PARTS INV	30000.00	1	1	0.0	0.0	0.0	33000.16
MILL MANAGER	25000.00	1					27495.98
MILL SUPT	22250.00	1					24474.98
SHIFT SUPV.	18750.00	4					32499.94
FOREMEN	17500.00	2					173249.88
SECRETARIES	7500.00	3					24749.93
SEED BUYERS	20000.00	1					21999.99
BOOKKEEPER	20000.00	1					21999.99
TAXES	4539.00	14					69900.56
INSURANCE	9077.00	6					59908.17

TOTAL FIXED COST 1551398.00

COST OF CONSTRUCTION NEW PLANT

9076554.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	32570992.00	0.28	9152447.00
COTTONSEED MEAL	45639.00	141.88	6475260.00
COTTONSEED LINTERS	19314992.00	0.08	1492571.00
COTTONSEED HULLS	22225.50	39.26	872573.00

TOTAL REVENUE 17992923.00

VARIABLE COSTS

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	99000.00	118.38	11769118.00
TRANSPORTATION IN	99000.00	5.00	495000.00
TOTAL PRODUCTION STAGE COST			12264118.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
SEASONAL LABOR	12.00	2784.00	33408.00
LABOR	5.00	17480.00	74900.00
ELECTRICITY	99000.00	0.16	15840.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.14	13860.00
TOTAL PRODUCTION STAGE COST			162737.88

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	72.00	23760.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.03	2970.00
TOTAL PRODUCTION STAGE COST			38919.94

PRODUCTION STAGE: DELINTERING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	9.00	12896.00	116064.00
HEAD LINTERMAN	3.00	14560.00	43680.00
ELECTRICITY	330.00	640.00	227700.00
REPAIR PARTS	99000.00	0.58	57420.00
REPAIR LABOR	99000.00	0.11	10890.00
TOTAL PRODUCTION STAGE COST			455753.88

PRODUCTION STAGE: BALING-BALE STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
PRESS LABOR	6.00	12480.00	74900.00
STORAGE LABOR	3.00	12396.00	37188.00
ELECTRICITY	330.00	18.00	5940.00
BAGGING-TIES	27760.00	1.25	43955.98
REPAIR PARTS	99000.00	0.09	3910.00
REPAIR LABOR	99000.00	0.02	1980.00
TOTAL PRODUCTION STAGE COST			174353.88

PRODUCTION STAGE: HULLING-SEPARATING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	102.00	33660.00
REPAIR PARTS	99000.00	0.47	46530.00
REPAIR LABOR	99000.00	0.09	3910.00
TOTAL PRODUCTION STAGE COST			126539.88

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	171.00	56430.00
WATER	99000.00	0.04	3960.00
NATURAL GAS	99000.00	1.08	106919.94
REPAIR PARTS	99000.00	0.32	31680.00
REPAIR LABOR	99000.00	0.08	7920.00
TOTAL PRODUCTION STAGE COST			244349.78

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
HEAD EXTRACTION	3.00	14560.00	43680.00
ELECTRICITY	330.00	108.00	35640.00
WATER-SEWAGE	99000.00	0.10	9900.00
NATURAL GAS	99000.00	1.62	160379.94
REPAIR PARTS	99000.00	0.35	34650.00
REPAIR LABOR	99000.00	0.12	11879.99
HEXANE	99000.00	0.68	67319.94
TOTAL PRODUCTION STAGE COST			409889.69

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	6.00	12396.00	77376.00
ELECTRICITY	330.00	27.00	8910.00
REPAIR PARTS	99000.00	0.29	27720.00
REPAIR LABOR	99000.00	0.11	10889.99
TOTAL PRODUCTION STAGE COST			124895.88

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR MAINTENANCE	6.00	12396.00	77376.00
LABOR CLEANING	6.00	12064.00	72384.00
LAB ANALYSIS	99000.00	0.05	4950.00
BROKERAGE FEES	99000.00	0.50	49500.00
OFFICE	99000.00	1.25	123750.00
INSURANCE	99000.00	0.95	94049.94
TOTAL PRODUCTION STAGE COST			422009.86

INTEREST ON OPERATING CAPITAL 1446454.00

TOTAL VARIABLE COST 15911001.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	407879.94
LABOR REQUIREMENTS	326925.88
REPAIR REQUIREMENTS	300959.31
NATURAL GAS REQUIREMENTS	267299.88
WATER REQUIREMENTS	13859.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1551398.00
TOTAL VARIABLE COST	15911001.00
TOTAL COST	17462399.00
TOTAL REVENUE	17992928.00
TOTAL NET REVENUE	530544.00

AVERAGE FIXED COST	15.67
AVERAGE VARIABLE COST	160.72
AVERAGE TOTAL COST	176.39
AVERAGE REVENUE	181.75
AVERAGE NET REVENUE	5.36

MARGINAL COST 159.00



300 TPD DIRECT SOLVENT COTTONSEED OIL MILL MODEL  
(SOUTH) HULLING UNDELINERED SEED

CAPACITY OF PLANT 100000 TONS  
 CAPACITY UTILIZATION 30%  
 INTEREST RATE 10%  
 COST OF RAW MATERIAL 110  
 NUMBER OF VARIABLE DATA SETS 8  
 ADDITION TO CAPACITY UTILIZATION 10%  
 GENERATE COST CURVES 1 1=YES  
 SORT VARIABLE REQUIREMENTS AND TOTAL 1 0=NO  
 PRINT OUT INPUT 1  
 PRINT OUT TOTAL FIXED COST BY ITEM 1  
 PRINT OUT TOTAL VARIABLE COST BY ITEM 1  
 PRINT OUT TOTAL REVENUE BY ITEM 1  
 NUMBER OF PROBLEMS 1

FIXED COST

ITEM NAME	F08 COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	15	40	0.0	0.0	15000.00	1500.00
OFFICE	26.80	2500	40	0.0	0.02	13400.00	8161.09
SCALES	13852.00	1	30	1.45	0.0	1000.00	4873.45
TRUCK DUMP	56877.00	2	25	1.45	0.0	10000.00	30601.89
SEEDHOUSE	465750.00	5	40	0.0	0.02	465750.00	283659.25
CONVEYORS	37760.00	1	20	1.45	0.0	1510.00	10840.08
CLEANING BLDG	13.50	1800	40	0.0	0.02	4860.00	2959.92
4-TRAY SHAKERS	29375.00	4	30	1.31	0.0	0.0	28792.58
CONVEYORS	9440.00	1	20	1.45	0.0	944.00	2700.13
HULL-SEP BLDG	13.50	4400	40	0.0	0.02	11830.00	7235.36
SAFETY SHAKERS	8373.00	1	25	1.31	0.0	0.0	2132.10
HULLER	14993.00	7	30	1.31	0.0	0.0	25717.54
PURIFYING HULLER	7333.00	7	30	1.31	0.0	0.0	12664.08
DOUBLE DRUM BEATER	13230.00	4	30	1.31	0.0	0.0	12967.58
H AND S MACHINE	7373.00	7	30	1.31	0.0	0.0	12655.50
MEATS PURIFIER	11793.00	4	30	1.31	0.0	0.0	11559.18
TAILINGS BEATER	7545.00	4	30	1.31	0.0	0.0	7395.40
MEATS BEATER	5395.00	2	30	1.31	0.0	0.0	2644.02
CONVEYORS	2520.00	2	20	1.31	0.0	0.0	1367.51
HULLS BLOWING SYS	10100.00	2	20	1.31	0.0	2000.00	5445.99
HULL STORAGE	13.20	35100	40	0.0	0.02	92644.00	56435.91
MEATS COND BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.28
BOILER	52480.00	1	30	1.31	0.0	5250.00	12827.95
3-HIGH COOKER	173700.00	1	30	1.31	0.0	0.0	42564.02
FLAKING ROLLS	38500.00	2	30	1.31	0.0	0.0	18268.33
CONVEYORS	13500.00	1	25	1.31	0.0	0.0	3435.59
EXTRACTION BLDG	14.10	2100	40	0.0	0.02	6000.00	3606.54
SOLVENT EXT PLANT	585000.00	1	30	1.45	0.0	53500.00	151682.38
OIL STORAGE	24000.00	2	30	1.31	0.02	4800.00	12692.88
MEAL STORAGE	13.20	9450	40	0.0	0.02	24950.00	15174.26
REPAIR BLDG	12.80	1800	40	0.0	0.02	4600.00	2806.46
REPAIR MACHINERY	20000.00	1	10	0.75	0.0	2000.00	5603.15
REPAIR PARTS INV	33000.00	1	1	0.0	0.0	0.0	33000.16
MILL MANAGER	25000.	1					27499.98
MILL SUPT	22250.	1					24474.98
SHIFT SUPV.	18750.	4					82499.94
FOREMEN	17500.	3					173249.88
SECRETARIES	7500.	3					24749.98
SEED BUYERS	25000.	1					21999.49
BOOKKEEPER	20000.	1					21999.99
TAXES	3545.	14					54592.97
INSURANCE	7089.	6					46787.32

TOTAL FIXED COST 1314433.00

COST OF CONSTRUCTION NEW PLANT

7083784.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	31500992.00	0.28	3874257.00
COTTONSEED MEAL	45639.00	141.34	6475260.00
COTTONSEED HULLS	31973.00	39.26	1251520.00

TOTAL REVENUE 16601047.00

VARIABLE COSTS

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	99000.00	118.88	11769118.00
TRANSPORTATION IN	99000.00	5.00	495000.00

TOTAL PRODUCTION STAGE COST 12264118.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
SEASONAL LABOR	12.00	2784.00	33408.00
LABOR	6.00	12480.00	74880.00
ELECTRICITY	99000.00	0.16	15840.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.14	13860.00

TOTAL PRODUCTION STAGE COST 162737.88

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	72.00	23760.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.03	2970.00

TOTAL PRODUCTION STAGE COST 88919.94

PRODUCTION STAGE: HULLING-SEPARATING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	6.00	12480.00	74880.00
ELECTRICITY	330.00	186.24	61459.20
REPAIR PARTS	99000.00	0.94	93057.94
REPAIR LABOR	99000.00	0.18	17819.99

TOTAL PRODUCTION STAGE COST 247219.06

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
ELECTRICITY	330.00	171.00	56430.00
WATER	99000.00	0.34	33660.00
NATURAL GAS	99000.00	1.03	106917.94
REPAIR PARTS	99000.00	0.32	31680.00
REPAIR LABOR	99000.00	0.26	25740.00

TOTAL PRODUCTION STAGE COST 244349.75

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12480.00	37440.00
HEAD EXTRACTION	3.00	14560.00	43680.00
ELECTRICITY	330.00	108.00	35640.00
WATER-SEWAGE	99000.00	0.10	9900.00
NATURAL GAS	99000.00	1.62	160379.94
REPAIR PARTS	99000.00	0.35	34650.00
REPAIR LABOR	99000.00	0.12	11879.99
HEXANE	99000.00	0.68	67319.94

TOTAL PRODUCTION STAGE COST 600859.69

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	6.00	12896.00	77376.00
ELECTRICITY	330.00	27.00	8910.00
REPAIR PARTS	99000.00	0.28	27720.00
REPAIR LABOR	99000.00	0.11	10889.99
TOTAL PRODUCTION STAGE COST			124895.88

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR MAINTENANCE	6.00	12896.00	77376.00
LABOR CLEANING	6.00	12064.00	72384.00
LAB ANALYSIS	99000.00	0.05	4950.00
BROKERAGE FEES	99000.00	0.50	49500.00
OFFICE	99000.00	1.25	123750.00
INSURANCE	99000.00	0.95	94049.94
TOTAL PRODUCTION STAGE COST			422009.88

INTEREST ON OPERATING CAPITAL 1395511.00

TOTAL VARIABLE COST 15350634.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	202039.19
LABOR REQUIREMENTS	597983.88
REPAIR REQUIREMENTS	270269.50
NATURAL GAS REQUIREMENTS	267299.88
WATER REQUIREMENTS	13859.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1314433.00
TOTAL VARIABLE COST	15350634.00
TOTAL COST	16665067.00
TOTAL REVENUE	16601047.00
TOTAL NET REVENUE	-64020.00
AVERAGE FIXED COST	13.28
AVERAGE VARIABLE COST	155.06
AVERAGE TOTAL COST	168.33
AVERAGE REVENUE	167.69
AVERAGE NET REVENUE	-0.65

300 TPD DIRECT SOLVENT COTTONSEED OIL MILL MODEL  
(SOUTHWEST) SAW DELINTEING

CAPACITY OF PLANT	99000 TONS	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	8	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
SOFT VARIABLE REQUIREMENTS AND TOTAL	1	0=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOR COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	15	40	0.0	0.0	15000.00	1500.00
OFFICE	26.30	2500	40	0.0	0.02	13400.00	8161.09
SCALES	19852.00	1	30	1.45	0.0	1000.00	4893.45
TRUCK DUMP	56877.00	2	25	1.45	0.0	10000.00	30691.89
SEEDHOUSE	465750.00	1	40	0.0	0.02	93150.00	56731.84
OPEN STORAGE	57000.00	3	40	1.31	0.02	8550.00	43794.15
CONVEYORS	37760.00	1	20	1.45	0.0	1510.00	10940.89
CLEANING BLDG	13.50	1800	40	0.0	0.02	4860.00	2959.97
4-TRAY SHAKERS	29375.00	4	30	1.31	0.0	0.0	28792.58
CONVEYORS	9440.00	1	20	1.45	0.0	944.00	2700.13
DELINTEING BLDG	13.50	8000	40	0.0	0.02	21600.00	12155.71
DELINTERS	14522.00	36	30	1.31	0.0	0.0	128635.81
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
GUMMERS	15845.00	3	30	0.76	0.0	0.0	8874.76
LINT FLUE SYS 1ST	2500.00	10	25	1.31	0.0	0.0	6362.71
LINT ROBBING SYS1ST	3500.00	1	25	1.31	0.0	0.0	890.71
LINT PICKUP SYS 1ST	3000.00	1	25	1.31	0.0	0.0	763.46
LINT CLEANERS 1ST	24744.00	1	30	1.31	0.0	0.0	6063.33
LINT FLUE SYS 2ND	2500.00	26	25	1.31	0.0	0.0	16541.74
LINT PICKUP SYS 2ND	6500.00	1	25	1.31	0.0	0.0	1654.17
LINT CLEANERS 2ND	24744.00	2	30	1.31	0.0	0.0	12126.70
NOTES PICKUP SYS	3000.00	1	25	1.31	0.0	0.0	763.46
CONVEYORS	28440.00	1	25	1.31	0.0	0.0	7237.65
BALE PR-STOR BLDG	12.60	12000	40	0.0	0.02	30720.00	18709.63
BALE PRESS	143620.00	2	40	1.31	0.0	20000.00	57806.38
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
HULL-SEP BLDG	13.50	2400	40	0.0	0.02	6480.00	3946.56
SAFETY SHAKERS	8378.00	1	25	1.31	0.0	0.0	2132.10
HULLER	14793.00	4	30	1.31	0.0	0.0	14695.73
PURIFYING HULLER	7383.00	4	30	1.31	0.0	0.0	7236.61
DOUBLE DRUM BEATER	13230.00	2	30	1.31	0.0	0.0	6433.84
H AND S MACHINE	7378.00	4	30	1.31	0.0	0.0	7231.71
MEATS PURIFER	11793.00	2	30	1.31	0.0	0.0	5779.59
TAILINGS BEATER	7545.00	2	30	1.31	0.0	0.0	3697.70
NOTES BEATER	5395.00	1	30	1.31	0.0	0.0	1322.01
CONVEYORS	2520.00	1	20	1.31	0.0	0.0	683.76
HULLS BLOWING SYS	10100.00	1	20	1.31	0.0	1000.00	2723.00
HULL STORAGE	13.20	11700	40	0.0	0.02	30839.00	18911.95
MEATS COND BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.28
BOILER	52480.00	1	30	1.31	0.0	5250.00	12327.95
8-HIGH COOKER	173700.00	1	30	1.31	0.0	0.0	42564.02
FLAKING ROLLS	38520.00	2	30	1.31	0.0	0.0	18268.33
CONVEYORS	13500.00	1	25	1.31	0.0	0.0	3435.59
EXTRACTION BLDG	14.10	2100	40	0.0	0.02	6000.00	3606.54
SOLVENT EXT PLANT	535000.00	1	30	1.45	0.0	53500.00	151692.39
OIL STORAGE	24000.00	2	30	1.31	0.02	4800.00	12692.89
MEAL STORAGE	13.20	9450	40	0.0	0.02	24950.00	15194.26
REPAIR BLDG	12.30	1800	40	0.0	0.02	4600.00	2808.46
REPAIR MACHINERY	20000.00	1	10	0.76	0.0	2000.00	5603.16
REPAIR PARTS INV	30000.00	1	1	0.0	0.0	0.0	75000.15
MILL MANAGER	26250.	1					28874.98
MILL SUPT.	22250.	1					24474.93
SHIFT SUPV.	20000.	4					87999.94
FOREMAN	19750.	9					145624.88
SECRETARIES	8750.	3					28974.98
BOOKKEEPER	21250.	1					23374.93
SEED BUYER	21250.	1					23374.98
TAXES	3805.	14					56596.97
INSURANCE	7609.	6					50219.37

TOTAL FIXED COST 1373400.00

COST OF CONSTRUCTION NEW PLANT 7608564.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	31878000.00	0.28	8862093.00
COTTONSEED MEAL	45737.50	142.39	6519682.00
COTTONSEED LINTERS	15642000.00	0.08	1279515.00
COTTONSEED HULLS	25641.00	42.33	1085483.00

TOTAL REVENUE 17746656.00

VARIABLE COSTS

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	99000.00	107.76	10668237.00
TRANSPORTATION IN	99000.00	5.00	495000.00
TOTAL PRODUCTION STAGE COST			11163239.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR SEASONAL	12.00	3712.00	44544.00
LABOR	6.00	12896.00	77376.00
ELECTRICITY	99000.00	0.16	15840.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.15	14850.00
TOTAL PRODUCTION STAGE COST			177359.88

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	72.00	23760.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.03	2970.00
TOTAL PRODUCTION STAGE COST			90167.94

PRODUCTION STAGE: DELINTEERING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	116064.00
HEAD LINTERMAN	3.00	16640.00	49920.00
ELECTRICITY	330.00	690.00	227700.00
REPAIR PARTS	99000.00	0.58	57420.00
REPAIR LABOR	99000.00	0.12	11879.59
TOTAL PRODUCTION STAGE COST			462983.88

PRODUCTION STAGE: BALING-BALE STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
PRESS LABOR	6.00	12896.00	77376.00
STORAGE LABOR	3.00	14560.00	43680.00
ELECTRICITY	330.00	18.00	5940.00
BAGGING-TIES	23760.00	1.85	43955.98
REPAIR PARTS	99000.00	0.09	8910.00
REPAIR LABOR	99000.00	0.02	1980.00
TOTAL PRODUCTION STAGE COST			181841.98

PRODUCTION STAGE: HULLING-SEPARATING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	102.00	33660.00
REPAIR PARTS	99000.00	0.47	46530.00
REPAIR LABOR	99000.00	0.09	8910.00
TOTAL PRODUCTION STAGE COST			127787.88

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	171.00	56430.00
WATER	99000.00	0.04	3960.00
NATURAL GAS	99000.00	1.02	106919.94
REPAIR PARTS	99000.00	0.32	31680.00
REPAIR LABOR	99000.00	0.08	7920.00
TOTAL PRODUCTION STAGE COST			245597.75

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
HEAD EXTRACTION	3.00	16640.00	49920.00
ELECTRICITY	330.00	108.00	35640.00
WATER-SEWAGE	99000.00	0.10	9900.00
NATURAL GAS	99000.00	1.62	160379.94
REPAIR PARTS	99000.00	0.35	34650.00
REPAIR LABOR	99000.00	0.12	11879.99
HEXANE	99000.00	0.68	67319.94
TOTAL PRODUCTION STAGE CCST			408377.69

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	14560.00	87360.00
ELECTRICITY	330.00	27.00	8910.00
REPAIR PARTS	99000.00	0.29	27720.00
REPAIR LABOR	99000.00	0.11	10899.99
TOTAL PRODUCTION STAGE COST			134879.99

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR MAINTENANCE	6.00	16640.00	99840.00
LABOR CLEANING	6.00	12896.00	77376.00
LAB ANALYSIS	99000.00	0.05	4950.00
BROKERAGE FEES	99000.00	0.50	49500.00
OFFICE	99000.00	1.25	123750.00
INSURANCE	99000.00	0.86	85139.94
TOTAL PRODUCTION STAGE COST			440555.94

INTEREST ON OPERATING CAPITAL 1343276.00

TOTAL VARIABLE COST 14776046.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	407879.94
LABOR REQUIREMENTS	378208.00
REPAIR REQUIREMENTS	327589.19
NATURAL GAS REQUIREMENTS	267299.88
WATER REQUIREMENTS	13859.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1373400.00
TOTAL VARIABLE COST	14776046.00
TOTAL COST	16149446.00
TOTAL REVENUE	17746656.00
TOTAL NET REVENUE	1597210.00

AVERAGE FIXED COST	13.87
AVERAGE VARIABLE COST	149.25
AVERAGE TOTAL COST	163.13
AVERAGE REVENUE	179.26
AVERAGE NET REVENUE	16.13

MARGINAL COST 147.46

300 TPD DIRECT SOLVENT COTTONSEED OIL MILL MODEL  
(SOUTHWEST) HULLING UNDELINERED SEED

CAPACITY OF PLANT 99000TONS  
 CAPACITY UTILIZATION 30%  
 INTEREST RATE 10%  
 COST OF RAW MATERIAL 110  
 NUMBER OF VARIABLE DATA SETS 8  
 ADDITION TO CAPACITY UTILIZATION 10%  
 GENERATE COST CURVES 1  
 SORT VARIABLE REQUIREMENTS AND TOTAL 1 1=YES  
 PRINT OUT INPUT 1 0=NO  
 PRINT OUT TOTAL FIXED COST BY ITEM 1  
 PRINT OUT TOTAL VARIABLE COST BY ITEM 1  
 PRINT OUT TOTAL REVENUE BY ITEM 1  
 NUMBER OF PROBLEMS 1

FIXED COST

ITEM NAME	F0B COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	15	40	0.0	0.0	15000.00	1500.00
OFFICE	26.80	2500	40	0.0	C.02	13400.00	8161.05
SCALES	18852.00	1	30	1.45	0.0	1000.00	4893.45
TRUCK DUMP	56877.00	2	25	1.45	0.0	10000.00	30601.89
SEEDHOUSE	465750.00	1	40	0.0	C.02	93150.00	56731.84
OPEN STORAGE	57000.00	3	40	1.31	C.02	8550.00	43794.15
CONVEYORS	37760.00	1	20	1.45	C.0	1510.00	10840.08
CLEANING BLDG	13.50	1800	40	0.0	C.02	4860.00	2959.52
4-TRAY SHAKERS	29375.00	4	30	1.31	C.0	0.0	28792.58
CONVEYORS	9440.00	1	20	1.45	C.C	544.00	2700.13
HULL-SEP BLDG	13.50	4400	40	0.0	0.02	11880.00	7235.36
SAFETY SHAKERS	8378.00	1	25	1.31	C.0	0.0	2132.10
HULLER	14993.00	7	30	1.31	C.0	0.0	25717.54
PURIFYING HULLER	7383.00	7	30	1.31	0.0	0.0	12664.08
OCURLE DRUM BEATER	13230.00	4	30	1.31	C.0	0.0	12967.68
H AND S MACHINE	7378.00	7	30	1.31	C.0	0.0	12655.50
MEATS PURIFIER	11793.00	4	30	1.31	C.C	0.0	11559.18
TAILINGS BEATER	7545.00	4	30	1.31	C.0	0.0	7395.40
MOTES BEATER	5395.00	2	30	1.31	C.0	0.0	2644.02
CONVEYORS	2520.00	2	20	1.31	C.C	0.0	1367.51
HULLS BLOWING SYS	10100.00	2	20	1.31	0.0	2000.00	5445.59
HULL STORAGE	13.20	35100	40	0.0	0.02	92664.00	56435.86
MEATS COND BLDG	13.50	1200	40	0.0	C.02	3240.00	1973.28
ECILER	52480.00	1	30	1.31	0.0	5250.00	12827.55
3-HIGH COOKER	173700.00	1	30	1.31	C.C	0.0	42564.02
FLAKING ROLLS	38500.00	2	30	1.31	C.C	0.0	18868.33
CONVEYORS	13500.00	1	25	1.31	C.0	0.0	3435.59
EXTRACTION BLDG	14.10	2100	40	0.0	C.02	6000.00	3606.54
SOLVENT EXT PLANT	585000.00	1	30	1.45	C.0	58500.00	151682.39
OTL STORAGE	24000.00	2	30	1.31	C.02	4800.00	12692.88
MEAL STORAGE	13.20	9450	40	0.0	C.02	24950.00	15194.26
REPAIR BLDG	12.80	1800	40	0.0	C.02	4600.00	2806.46
REPAIR MACHINERY	20000.00	1	10	0.76	C.C	2000.00	5603.16
REPAIR PARTS INV	30000.00	1	1	0.0	C.0	0.0	33000.16
MILL MANAGER	26250.	1					28874.98
MILL SUPT.	22250.	1					24474.98
SHIFT SUPV.	20000.	4					87999.94
FOREMAN	18750.	9					185624.88
SECRETARIES	8750.	3					28874.98
BOOKKEEPER	21250.	1					23374.98
SEED BUYER	21250.	1					23374.98
TAXES	2811.	14					43289.38
INSURANCE	5621.	6					37098.58

TOTAL FIXED COST 1136436.00

COST OF CONSTRUCTION NEW PLANT

5620794.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	30338000.00	0.28	3586863.00
COTTONSEED MEAL	45787.50	142.39	6519682.00
COTTONSEED HULLS	33957.00	42.33	1437399.00
TOTAL REVENUE			16543944.00

VARIABLE COSTS

PRODUCTION STAGE: COTTONSEED BUY	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	99000.00	107.76	10668239.00
TRANSPORTATION IN	99000.00	5.00	495000.00
TOTAL PRODUCTION STAGE COST			11163239.00

PRODUCTION STAGE: UNLOADING-STORAGE	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR SEASONAL	12.00	3712.00	44544.00
LABOR	6.00	12896.00	77376.00
ELECTRICITY	99000.00	0.16	15840.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.15	14850.00
TOTAL PRODUCTION STAGE COST			177359.88

PRODUCTION STAGE: CLEANING	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	72.00	23760.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.03	2970.00
TOTAL PRODUCTION STAGE COST			90167.94

PRODUCTION STAGE: HULLING-SEPARATING	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	6.00	12896.00	77376.00
ELECTRICITY	330.00	186.24	61459.20
REPAIR PARTS	99000.00	0.94	93059.94
REPAIR LABOR	99000.00	0.18	17819.99
TOTAL PRODUCTION STAGE COST			249715.06

PRODUCTION STAGE: MEAL CONDITIONING	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	171.00	56430.00
WATER	99000.00	0.04	3960.00
NATURAL GAS	99000.00	1.08	106919.94
REPAIR PARTS	99000.00	0.32	31680.00
REPAIR LABOR	99000.00	0.03	7920.00
TOTAL PRODUCTION STAGE COST			245597.75

PRODUCTION STAGE: EXTRACTION	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
HEAD EXTRACTION	3.00	16640.00	49920.00
ELECTRICITY	330.00	108.00	35640.00
WATER-SEWAGE	99000.00	0.10	9900.00
NATURAL GAS	99000.00	1.62	160379.94
REPAIR PARTS	99000.00	0.35	34650.00
REPAIR LABOR	99000.00	0.12	11879.99
HEXANE	99000.00	0.68	67319.94
TOTAL PRODUCTION STAGE COST			408377.69



PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	14560.00	87360.00
ELECTRICITY	330.00	27.00	8910.00
REPAIR PARTS	99000.00	0.28	27720.00
REPAIR LABOR	99000.00	0.11	10889.99
TOTAL PRODUCTION STAGE COST			134879.88

PRODUCTION STAGE: MISCELLANEDUS

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR MAINTENANCE	6.00	16640.00	99840.00
LABOR CLEANING	6.00	12896.00	77376.00
LAB ANALYSIS	99000.00	0.05	4950.00
BROKERAGE FEES	99000.00	0.50	49500.00
OFFICE	99000.00	1.25	123750.00
INSURANCE	99000.00	0.86	85139.94
TOTAL PRODUCTION STAGE COST			440555.88

INTEREST ON OPERATING CAPITAL 1290987.00

TOTAL VARIABLE COST 14200863.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	202039.19
LABOR REQUIREMENTS	647675.94
REPAIR REQUIREMENTS	285119.50
NATURAL GAS REQUIREMENTS	267299.88
WATER REQUIREMENTS	13859.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1136436.00
TOTAL VARIABLE COST	14200863.00
TOTAL COST	15337299.00
TOTAL REVENUE	16543944.00
TOTAL NET REVENUE	1206645.00
AVERAGE FIXED COST	11.48
AVERAGE VARIABLE COST	143.44
AVERAGE TOTAL COST	154.92
AVERAGE REVENUE	167.11
AVERAGE NET REVENUE	12.19

600 TPD DIRECT SOLVENT COTTONSEED OIL MILL MODEL  
(SOUTHWEST) SAW DELINTERING

CAPACITY OF PLANT	198000TONS	
CAPACITY UTILIZATION	100%	
INTEREST RATE	10%	
CCST OF RAW MATERIAL	109	
NUMBER OF VARIABLE DATA SETS	1	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
SOFT VARIABLE REQUIREMENTS AND TOTAL	1	C=NC
PRINT OUT INPLT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOB COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL ECUIV. COSTS
LAND	1000.00	25	40	0.0	0.0	25000.00	2500.00
OFFICE	26.80	4000	40	0.0	0.02	21440.00	13057.75
SCALES	18852.00	1	30	1.45	0.0	1000.00	4893.45
TRUCK DUMP	56877.00	4	25	1.45	0.0	20000.00	61203.78
SEEDHOUSE	465750.00	2	40	0.0	0.02	186300.00	113463.56
OPEN STORAGE	57000.00	5	40	1.31	0.02	14250.00	72990.13
CONVEYORS	75570.00	1	20	1.45	0.0	3020.00	21680.16
CLEANING BLDG	13.50	3600	40	0.0	0.02	5920.00	5919.39
4-TRAY SHAKERS	29375.00	8	30	1.31	0.0	0.0	57585.16
CONVEYORS	18880.00	1	20	1.45	0.0	1888.00	5400.26
DELINTEGRING BLDG	13.50	16000	40	0.0	0.02	43200.00	26310.42
DELINTERS	14582.00	72	30	1.31	0.0	0.0	257271.81
CHAIN HOIST	2000.00	4	15	1.31	0.0	0.0	2429.64
GUMMERS	15845.00	6	30	0.76	0.0	0.0	17749.53
LINT FLUE SYS 1ST	2500.00	20	25	1.31	0.0	0.0	12724.42
LINT ROPPING SYS1ST	3500.00	2	25	1.31	0.0	0.0	1781.42
LINT PICKUP SYS 1ST	3000.00	2	25	1.31	0.0	0.0	1526.93
LINT CLEANERS 1ST	24744.00	2	30	1.31	0.0	0.0	12126.70
LINT FLUE SYS2ND	2500.00	52	25	1.31	0.0	0.0	33083.50
LINT PICKUP SYS 2ND	13000.00	1	25	1.31	0.0	0.0	3308.35
LINT CLEANERS 2ND	24744.00	4	30	1.31	0.0	0.0	24253.40
MOTES PICKUP SYS	3000.00	2	25	1.31	0.0	0.0	1526.93
CONVEYORS	56880.00	1	25	1.31	0.0	0.0	14475.30
BALE PR-STOR BLDG	12.80	24000	40	0.0	0.02	61440.00	37419.25
BALE PRESS	143620.00	2	40	1.31	0.0	20000.00	67806.38
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
HULL-SEP BLDG	13.50	4850	40	0.0	0.02	13095.00	7975.34
SAFETY SHAKERS	8378.00	2	25	1.31	0.0	0.0	4264.21
HULLFR	14993.00	8	30	1.31	0.0	0.0	29391.47
PURIFYING HULLER	7383.00	8	30	1.31	0.0	0.0	14473.23
DOUBLE DRUM BEATER	13230.00	4	30	1.31	0.0	0.0	12967.68
H AND S MACHINE	7378.00	8	30	1.31	0.0	0.0	14463.43
MEATS PURIFER	11793.00	4	30	1.31	0.0	0.0	11559.18
TAILINGS BEATER	7545.00	4	30	1.31	0.0	0.0	7395.40
MOTES BEATER	5395.00	2	30	1.31	0.0	0.0	2644.02
CONVEYORS	5040.00	1	20	1.31	0.0	0.0	1367.51
HULLS BLOWING SYS	10100.00	2	20	1.31	0.0	2000.00	5445.99
HULL STORAGE	13.20	23400	40	0.0	0.02	61776.00	37623.90
MEATS COND BLDG	13.50	2000	40	0.0	0.02	5400.00	3288.80
BOILER	87727.00	1	30	1.31	0.0	8775.00	21443.56
R-HIGH COOKER	173700.00	2	30	1.31	0.0	0.0	85128.00
FLAKING ROLLS	38500.00	4	30	1.31	0.0	0.0	37736.66
CONVEYORS	20000.00	1	25	1.31	0.0	0.0	5089.77
SOLVENT EXT BLDG	14.10	2450	40	0.0	0.02	6900.00	4207.86
SOLVENT EXT PLANT	750000.00	1	30	1.45	0.0	75000.00	194464.69
OIL STORAGE	48000.00	2	30	0.0	0.02	9600.00	12045.25
MEAL STORAGE	13.20	19000	40	0.0	0.02	50160.00	30549.30
REPAIR BLDG	12.80	2400	40	0.0	0.02	6150.00	3741.91
REPAIR MACHINERY	30000.00	1	10	0.76	0.0	3000.00	8404.75
REPAIR PARTS INV	60000.00	1	1	0.0	0.0	0.0	66000.25
MILL MANAGER	26250.	1					28874.98
MILL SUPT	22250.	1					24474.98
SHIFT SUPV.	20000.	4					87999.94
FOREMAN	18750.	9					185624.88
SECRETARIES	9750.	5					48124.97
BUY-SALES	21250.	4					93499.94
BOOKKEEPER	21250.	1					23374.98
TAXES	6532.	14					100592.69
INSURANCE	13063.	6					86215.75

TOTAL FIXED COST 2174143.00

COST OF CONSTRUCTION NEW PLANT

13062961.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	63756000.00	0.28	17724160.00
COTTONSEED MEAL	91575.00	142.39	13039364.00
COTTONSEED LINTERS	31294000.00	0.08	2559020.00
COTTONSEED HULLS	51282.00	42.33	2170766.00

TOTAL REVENUE 35493296.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
COTTONSEED	19000.00	107.76	21336464.00
TRANSPORTATION IN	19000.00	5.00	990000.00
TOTAL PRODUCTION STAGE COST			22326464.00

PRODUCTION STAGE: UNLOADING-STORAGE			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	9.00	12896.00	116064.00
SEASONAL LABOR	15.00	3712.00	55680.00
ELECTRICITY	19000.00	0.16	31679.99
REPAIR PARTS	19000.00	0.25	49500.00
REPAIR LABOR	19000.00	0.15	29699.99
TOTAL PRODUCTION STAGE COST			282523.88

PRODUCTION STAGE: CLEANING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	144.00	47520.00
REPAIR PARTS	19000.00	0.25	49500.00
REPAIR LABOR	19000.00	0.03	5940.00
TOTAL PRODUCTION STAGE COST			141647.94

PRODUCTION STAGE: BELINTERING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	15.00	12896.00	193440.00
HEAD LINTERMAN	3.00	16640.00	49920.00
ELECTRICITY	330.00	1380.00	455400.00
REPAIR PARTS	19000.00	0.58	114239.94
REPAIR LABOR	19000.00	0.12	23759.99
TOTAL PRODUCTION STAGE COST			837359.88

PRODUCTION STAGE: BALING-BALE STOR			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
BALING LABOR	6.00	12896.00	77376.00
STORAGE LABOR	9.00	14560.00	131040.00
ELECTRICITY	330.00	108.00	35640.00
BAGGING-TIES	40000.00	1.85	82799.94
REPAIR PARTS	19000.00	0.09	17819.99
REPAIR LABOR	19000.00	0.03	5940.00
TOTAL PRODUCTION STAGE COST			356615.91

PRODUCTION STAGE: HULLING-SEPARATING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	12896.00	77376.00
ELECTRICITY	330.00	216.00	71280.00
REPAIR PARTS	19000.00	0.47	92099.94
REPAIR LABOR	19000.00	0.09	17819.99
TOTAL PRODUCTION STAGE COST			259535.88

PRODUCTION STAGE: MEAL CONDITIONING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	342.00	112860.00
WATER	19000.00	0.04	7920.00
NATURAL GAS	19000.00	1.08	213839.94
REPAIR PARTS	19000.00	0.32	63360.00
REPAIR LABOR	19000.00	0.03	15840.00
TOTAL PRODUCTION STAGE COST			452507.75

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	12896.00	77376.00
HEAD EXTRACTION	3.00	16640.00	49920.00
ELECTRICITY	330.00	216.00	71280.00
WATER-SEWAGE	198000.00	0.10	19799.99
NATURAL GAS	198000.00	1.62	320759.94
HEXANE	198000.00	0.68	134639.94
REPAIR PARTS	198000.00	0.35	69259.94
REPAIR LABOR	198000.00	0.12	23759.99
TOTAL PRODUCTION STAGE COST			766835.69

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	9.00	14560.00	131040.00
ELECTRICITY	330.00	36.00	11880.00
REPAIR PARTS	198000.00	0.28	55439.99
REPAIR LABOR	198000.00	0.11	21779.99
TOTAL PRODUCTION STAGE COST			220139.88

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR MAINTENANCE	9.00	14560.00	131040.00
LABOR CLEANING	9.00	12896.00	116064.00
LAB ANALYSIS	198000.00	0.05	9900.00
BROKERAGE FEES	198000.00	0.50	99000.00
OFFICE	198000.00	1.25	247500.00
INSURANCE	198000.00	0.86	170279.94
TOTAL PRODUCTION STAGE COST			773783.88

INTEREST ON OPERATING CAPITAL 2641717.00

TOTAL VARIABLE COST 29058896.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	837539.94
LABOR REQUIREMENTS	1422310.00
REPAIR REQUIREMENTS	518759.56
NATURAL GAS REQUIREMENTS	534599.88
WATER REQUIREMENTS	27719.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	2174143.00
TOTAL VARIABLE COST	29058896.00
TOTAL COST	31233074.00
TOTAL REVENUE	35493296.00
TOTAL NET REVENUE	4260272.00

AVERAGE FIXED COST	10.98
AVERAGE VARIABLE COST	146.76
AVERAGE TOTAL COST	157.74
AVERAGE REVENUE	179.26
AVERAGE NET REVENUE	21.52

600 TPD DIRECT SOLVENT COTTONSEED OIL MILL MODEL  
(SOUTHWEST) HULLING UNDELINERED SEED

CAPACITY OF PLANT	198000 TONS	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	8	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
SORT VARIABLE REQUIREMENTS AND TOTAL	1	0=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOB COST	NUM	YRS	INST	REF	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	25	40	0.0	0.0	25000.00	2500.00
OFFICE	26.80	4000	40	0.0	0.02	21440.00	13057.75
SCALES	13952.00	1	30	1.45	0.0	1000.00	4893.45
TRUCK DUMP	53877.00	4	25	1.45	0.0	20000.00	61203.72
SEEDHOUSE	465750.00	2	40	0.0	0.02	196300.00	113463.56
OPEN STORAGE	57000.00	5	40	1.31	0.02	14250.00	72990.13
CONVEYORS	75520.00	1	20	1.45	0.0	3020.00	21680.16
CLEANING BLDG	13.50	3600	40	0.0	0.02	9920.00	5919.39
4-TRAY SHAKERS	29375.00	8	30	1.31	0.0	0.0	57585.16
CONVEYORS	18880.00	1	20	1.45	0.0	1888.00	5430.24
HULL-SEP BLDG	13.50	8850	40	0.0	0.02	23895.00	14552.95
SAFETY SHAKERS	3378.00	2	25	1.31	0.0	0.0	4264.21
HULLER	14993.00	13	30	1.31	0.0	0.0	47761.14
PURIFYING HULLER	7333.00	13	30	1.31	0.0	0.0	23519.01
DOUBLE CRUM BEATER	13230.70	7	30	1.31	0.0	0.0	22693.45
H AND S MACHINE	7378.00	13	30	1.31	0.0	0.0	23503.07
MEATS PURIFIER	11793.00	7	30	1.31	0.0	0.0	20238.57
TAILINGS BEATER	7545.00	7	30	1.31	0.0	0.0	12941.95
MOTES BEATER	5395.00	4	30	1.31	0.0	0.0	5228.03
CONVEYORS	5040.00	2	20	1.31	0.0	0.0	2735.03
HULLS BLOWING SYS	10100.00	4	20	1.31	0.0	4000.00	10891.93
HULL STORAGE	13.20	70200	40	0.0	0.02	189540.00	112962.06
MEATS COND BLDG	13.50	2000	40	0.0	0.02	5400.00	2289.80
BOILER	87727.00	1	30	1.31	0.0	8775.00	21443.56
8-HIGH COOKER	173700.00	2	30	1.31	0.0	0.0	63128.00
FLAKING ROLLS	33500.00	4	30	1.31	0.0	0.0	37736.66
CONVEYORS	20000.00	1	25	1.31	0.0	0.0	5089.77
SOLVENT EXT BLDG	14.10	2450	40	0.0	0.02	6900.00	4207.86
SOLVENT EXT PLANT	750000.00	1	30	1.45	0.0	75000.00	194464.69
OIL STORAGE	48000.00	2	30	0.0	0.02	9600.00	12045.25
MEAL STORAGE	13.20	19000	40	0.0	0.02	50160.00	30549.30
REPAIR BLDG	12.80	2400	40	0.0	0.02	6150.00	3741.01
REPAIR MACHINERY	30000.00	1	10	0.76	0.0	3000.00	2474.75
REPAIR PARTS INV	60000.00	1	1	0.0	0.0	0.0	66000.25
MILL MANAGER	26250.	1					28974.93
MILL SUPT.	22250.	1					24474.58
SHIFT SUPV.	20000.	4					87539.94
FOREMEN	18750.	9					125624.83
SECRETARIES	3750.	5					48124.97
BOOKKEEPER	21250.	1					23374.92
BUYERS-SALES	21250.	4					93459.94
TAXES	4808.	14					74043.13
INSURANCE	9616.	6					62465.57

TOTAL FIXED COST 1761509.00

COST OF CONSTRUCTION NEW PLANT

9616207.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	51775000.00	0.23	17173712.00
COTTONSEED MEAL	91575.00	142.39	13030364.00
COTTONSEED HULLS	67914.00	42.33	2874798.00

TOTAL REVENUE 33087856.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED	190000.00	107.76	2048464.00
TRANSPORTATION IN	190000.00	5.00	950000.00

TOTAL PRODUCTION STAGE COST 22326464.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR SEASONAL	15.00	3712.00	55680.00
LABOR	9.00	12896.00	116064.00
ELECTRICITY	198000.00	0.16	31679.99
REPAIR PARTS	198000.00	0.25	49500.00
REPAIR LABOR	198000.00	0.15	29699.99
TOTAL PRODUCTION STAGE COST			282623.88

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	144.00	47520.00
REPAIR PARTS	198000.00	0.25	49500.00
REPAIR LABOR	198000.00	0.03	5940.00
TOTAL PRODUCTION STAGE COST			141647.94

PRODUCTION STAGE: HULLING-SEPARATING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	9.00	12896.00	116064.00
ELECTRICITY	330.00	374.00	123420.00
REPAIR PARTS	198000.00	0.94	186119.94
REPAIR LABOR	198000.00	0.18	35639.99
TOTAL PRODUCTION STAGE COST			461243.88

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	12896.00	38688.00
ELECTRICITY	330.00	342.00	112860.00
WATER	198000.00	0.04	7920.00
NATURAL GAS	198000.00	1.08	213839.94
REPAIR PARTS	198000.00	0.32	63360.00
REPAIR LABOR	198000.00	0.08	15840.00
TOTAL PRODUCTION STAGE COST			452507.75

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	6.00	12896.00	77376.00
HEAD EXTRACTION	3.00	16640.00	49920.00
ELECTRICITY	330.00	216.00	71280.00
WATER-SEWAGE	198000.00	0.10	19799.99
NATURAL GAS	198000.00	1.62	320759.94
HEXANE	198000.00	0.68	134439.94
REPAIR PARTS	198000.00	0.35	69299.94
REPAIR LABOR	198000.00	0.12	23759.99
TOTAL PRODUCTION STAGE COST			766835.69

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	9.00	14560.00	131040.00
ELECTRICITY	330.00	36.00	11880.00
REPAIR PARTS	198000.00	0.28	55439.99
REPAIR LABOR	198000.00	0.11	21779.99
TOTAL PRODUCTION STAGE COST			220139.88

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	COST/UNIT	VARIABLE COST
MAINTENANCE LABOR	9.00	14560.00	131040.00
CLEANING LABOR	9.00	12896.00	116064.00
LAB ANALYSIS	198000.00	0.05	9900.00
BROKERAGE FEES	198000.00	0.50	99000.00
OFFICE	198000.00	1.25	247500.00
INSURANCE	198000.00	0.86	170279.94
TOTAL PRODUCTION STAGE COST			773783.88

INTEREST ON OPERATING CAPITAL 254246.00

TOTAL VARIABLE COST 2706747.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	398639.94
LABOR REQUIREMENTS	987443.69
REPAIR REQUIREMENTS	473219.75
NATURAL GAS REQUIREMENTS	534599.83
WATER REQUIREMENTS	27719.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1761509.00
TOTAL VARIABLE COST	27967472.00
TOTAL COST	29728976.00
TOTAL REVENUE	33087856.00
TOTAL NET REVENUE	3358980.00

AVERAGE FIXED COST	9.70
AVERAGE VARIABLE COST	141.25
AVERAGE TOTAL COST	150.15
AVERAGE REVENUE	167.11
AVERAGE NET REVENUE	16.96

300 TPD PRE-PRESS SOLVENT COTTONSEED OIL MILL MODEL  
(WEST) SAW DELINTEING

CAPACITY OF PLANT	99000TCHS	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	3	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	I=YES
PRINT VARIABLE REQUIREMENTS AND TOTAL	1	O=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOB COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	15	40	0.0	0.0	15000.00	1500.00
OFFICE	26.80	2500	40	0.0	0.02	13400.00	3161.09
SCALES	18852.00	1	30	1.45	0.0	1000.00	4493.45
TRUCK DUMP	56877.00	2	25	1.45	0.0	10000.00	30501.89
SPEEDHOUSE	465750.00	1	40	0.0	0.02	93150.00	56731.84
OPEN STORAGE	57000.00	3	40	1.31	0.02	3550.00	43794.15
CONVEYORS	37760.00	1	20	1.45	0.0	1510.00	10846.08
CLEANING BLDG	13.50	1300	40	0.0	0.02	4860.00	2959.92
4-TRAY SHAKERS	29375.00	4	30	1.31	0.0	0.0	23792.58
CONVEYORS	9440.00	1	20	1.45	0.0	944.00	2700.13
DELINTEING BLDG	13.50	3000	40	0.0	0.02	21600.00	13155.21
DELINTERS	14582.00	36	30	1.31	0.0	0.0	129635.81
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
GUMMERS	15845.00	3	30	0.75	0.0	0.0	8974.76
LINT FLUE SYS 1ST	2500.00	10	25	1.31	0.0	0.0	6362.21
LINT ROBBING SYST	3500.00	1	25	1.31	0.0	0.0	390.71
LINT PICKUP SYS 1ST	3000.00	1	25	1.31	0.0	0.0	753.46
LINT CLEANERS 1ST	24744.00	1	30	1.31	0.0	0.0	6053.35
LINT FLUE SYS 2ND	2500.00	26	25	1.31	0.0	0.0	16541.74
LINT PICKUP SYS 2ND	5500.00	1	25	1.31	0.0	0.0	1656.17
LINT CLEANERS 2ND	24744.00	2	30	1.31	0.0	0.0	12126.70
NOTES PICKUP SYS	3000.00	1	25	1.31	0.0	0.0	763.46
CONVEYORS	28440.00	1	25	1.31	0.0	0.0	7237.65
BALE PR-STOR BLDG	12.80	12000	40	0.0	0.02	30720.00	19738.63
BALE PRESS	143620.00	2	40	1.31	0.0	20000.00	67906.34
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.82
HULL-SEP BLDG	13.50	2400	40	0.0	0.02	6480.00	3946.56
SAFETY SHAKERS	3378.00	1	25	1.31	0.0	0.0	2132.10
HULLER	14993.00	4	30	1.31	0.0	0.0	14695.73
PURIFYING HULLER	7333.00	4	30	1.31	0.0	0.0	7236.61
DOUBLE DRUM BEATER	13230.00	2	30	1.31	0.0	0.0	6493.84
H AND S MACHINE	7378.00	4	30	1.31	0.0	0.0	7231.71
MEATS PURIFER	11793.00	2	30	1.31	0.0	0.0	5779.59

TAILINGS BEATER	7545.00	2	30	1.31	0.0	0.0	3697.73
MOTES BEATER	5395.00	1	30	1.31	0.0	0.0	1322.01
CONVEYORS	2520.00	1	20	1.31	0.0	0.0	693.76
HULLS BLOWING SYS	10100.00	1	20	1.31	0.0	1000.00	2723.00
HULL STORAGE	13.20	11700	40	0.0	0.02	30886.00	18811.95
MEATS COND BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.29
BOILER	52480.00	1	30	1.31	0.0	5250.00	12927.95
9-HIGH COOKER	173700.00	1	30	1.31	0.0	0.0	42564.02
FLAKING ROLLS	38500.00	2	30	1.31	0.0	0.0	13868.33
CONVEYORS	13500.00	1	25	1.31	0.0	0.0	3435.59
EXTRACTION BLDG	13.50	1500	40	0.0	0.02	4050.00	2466.60
SCREWPRESS	109610.00	3	30	1.31	0.0	0.0	30577.50
BUCKET ELEVATOR	6140.00	1	25	1.31	0.0	0.0	1562.56
SETTLING TANK	22240.00	1	25	1.31	0.0	0.0	5659.82
FILTER PRESS	52364.00	1	25	1.31	0.0	0.0	13453.27
PUMPS-CONVEYORS	46880.00	1	25	1.31	0.0	0.0	11930.41
SOLVENT EXT BLDG	14.10	1800	40	0.0	0.02	5070.00	3091.49
SOLVENT EXT PLANT	510000.00	1	30	1.45	0.0	31000.00	122235.94
OIL STORAGE	24000.00	2	30	0.0	0.02	2400.00	6037.21
MEAL STORAGE	13.20	9450	40	0.0	0.02	24950.00	15194.26
REPAIR BLDG	12.80	1300	40	0.0	0.02	4600.00	2806.46
REPAIR MACHINERY	20000.00	1	10	0.75	0.0	2000.00	5603.16
REPAIR PARTS INV	50000.00	1	1	0.0	0.0	0.0	55000.23
MILL MANAGER	30000.	1					32999.98
MILL SUPT	28000.	1					30799.98
SHIFT SUPV.	26000.	4					114399.94
FOREMAN	25000.	9					247499.81
SECRETARIES	10000.	3					32999.98
BUYER	25000.	1					27499.98
BOOKKEEPER	25000.	1					27499.98
TAXES	4227.	14					65095.77
INSURANCE	3453.	6					55759.77

TOTAL FIXED COST 1607601.00

COST OF CONSTRUCTION NEW PLANT 8453516.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	34352992.00	0.31	10821192.00
COTTONSEED MEAL	45698.50	143.79	6565437.00
COTTONSEED LINTERS	18810000.00	0.08	1448369.00
COTTONSEED HULLS	22225.50	31.78	706326.31

TOTAL REVENUE 19541312.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	COST/UNIT	VARIABLE COST
COTTONSEED BUY	90000.00	109.39	10829609.00
TRANSPORTATION IN	90000.00	5.00	495000.00

TOTAL PRODUCTION STAGE COST 11324609.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
SEASONAL LABOR	12.00	4000.00	48000.00
LABOR	6.00	20644.00	123864.00
ELECTRICITY	90000.00	0.16	15440.00
REPAIR PARTS	90000.00	0.25	24750.00
REPAIR LABOR	90000.00	0.24	23759.99

TOTAL PRODUCTION STAGE COST 236213.98



PRODUCTION STAGE: CLEANING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
ELECTRICITY	330.00	72.00	23760.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.05	4950.00
TOTAL PRODUCTION STAGE COST			115391.94

PRODUCTION STAGE: DELINTERING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	23556.00	70668.00
HEAD LINTERMAN	3.00	26000.00	78000.00
ELECTRICITY	330.00	690.00	227700.00
REPAIR PARTS	99000.00	0.58	57420.00
REPAIR LABOR	99000.00	0.20	19800.00
TOTAL PRODUCTION STAGE COST			594923.88

PRODUCTION STAGE: BALING-BALE STOR

	NO. OF UNITS	COST/UNIT	VARIABLE COST
PRESS LABOR	6.00	20644.00	123864.00
STORAGE LABOR	3.00	23556.00	70668.00
ELECTRICITY	330.00	18.00	5940.00
BAGGING-TIES	24000.00	1.85	44399.98
REPAIR PARTS	99000.00	0.09	8910.00
REPAIR LABOR	99000.00	0.03	2970.00
TOTAL PRODUCTION STAGE COST			256751.81

PRODUCTION STAGE: HULLING-SEPARATING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	23556.00	70668.00
ELECTRICITY	330.00	102.00	33660.00
REPAIR PARTS	99000.00	0.47	46530.00
REPAIR LABOR	99000.00	0.15	14850.00
TOTAL PRODUCTION STAGE COST			165707.88

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	23556.00	70668.00
ELECTRICITY	330.00	171.00	56430.00
WATER	99000.00	0.04	3960.00
NATURAL GAS	99000.00	1.08	106919.94
REPAIR PARTS	99000.00	0.32	31680.00
REPAIR LABOR	99000.00	0.21	20790.00
TOTAL PRODUCTION STAGE COST			290447.75

PRODUCTION STAGE: PRE-PRESS EXT

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	429.00	141570.00
REPAIR PARTS	99000.00	0.30	29699.99
REPAIR LABOR	99000.00	0.13	12870.00
TOTAL PRODUCTION STAGE COST			325475.88

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
HEAD EXTRACTION	3.00	26000.00	78000.00
ELECTRICITY	330.00	93.00	30690.00
WATER-SEWAGE	99000.00	0.10	9900.00
NATURAL GAS	99000.00	1.26	124739.84
HEXANE	99000.00	0.58	57319.94
REPAIR PARTS	99000.00	0.35	34650.00
REPAIR LABOR	99000.00	0.20	19800.00
TOTAL PRODUCTION STAGE COST			427031.68

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	27.00	8910.00
REPAIR PARTS	99000.00	0.28	27720.00
REPAIR LABOR	99000.00	0.17	16829.99
TOTAL PRODUCTION STAGE COST			194795.89

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR MAINTENANCE	6.00	23556.00	141336.00
LABOR CLEANING	6.00	20644.00	123864.00
LAB ANALYSIS	99000.00	0.10	9900.00
BROKERAGE FEES	99000.00	1.00	99000.00
OFFICE	99000.00	1.25	123750.00
INSURANCE	99000.00	0.88	87119.99
TOTAL PRODUCTION STAGE COST			584969.88

INTEREST ON OPERATING CAPITAL 1451629.00

TOTAL VARIABLE COST 15967925.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	544499.94
LABOR REQUIREMENTS	1634088.00
REPAIR REQUIREMENTS	236109.56
NATURAL GAS REQUIREMENTS	235619.75
WATER REQUIREMENTS	9900.00

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1507501.00
TOTAL VARIABLE COST	15967925.00
TOTAL COST	17575520.00
TOTAL REVENUE	17541312.00
TOTAL NET REVENUE	1965792.00
AVERAGE FIXED COST	16.24
AVERAGE VARIABLE COST	161.29
AVERAGE TOTAL COST	177.53
AVERAGE REVENUE	197.39
AVERAGE NET REVENUE	19.86
MARGINAL COST	156.01

300 TPD PRE-PRESS SOLVENT COTTONSEED OIL MILL MODEL  
(WEST) HULLING UNDELINERED SEED

CAPACITY OF PLANT	990000TONS	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	9	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
SORT VARIABLE REQUIREMENTS AND TOTAL	1	0=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FGE COST	NUM	YRS	INST	RFD	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	15	40	0.0	0.0	15000.00	1500.00
OFFICE	26.80	2500	40	0.0	0.02	13400.00	2161.09
SCALES	18852.00	1	30	1.45	0.0	1000.00	4293.45
TRUCK DUMP	56877.00	2	25	1.45	0.0	10000.00	30601.89
SEEDHOUSE	465750.00	1	40	0.0	0.02	93150.00	56731.84
OPEN STORAGE	57000.00	3	40	1.31	0.02	8550.00	43754.15
CONVEYORS	37760.00	1	20	1.45	0.0	1510.00	10840.08
CLEANING BLDG	13.50	1800	40	0.0	0.02	4860.00	2959.92
4-TRAY SHAKERS	29375.00	4	30	1.31	0.0	0.0	28792.53
CONVEYORS	9440.00	1	20	1.45	0.0	944.00	2700.13
HULL-SEP BLDG	13.50	4400	40	0.0	0.02	11880.00	7235.36
SAFETY SHAKERS	9378.00	1	25	1.31	0.0	0.0	2132.10
HULLER	14993.00	7	30	1.31	0.0	0.0	25717.54
PURIFYING HULLER	7393.00	7	30	1.31	0.0	0.0	12664.09
DOUBLE DRUM BEATER	13230.00	4	30	1.31	0.0	0.0	12967.68
H AND S MACHINE	7378.00	7	30	1.31	0.0	0.0	12655.50
MEATS PURIFIER	11793.00	4	30	1.31	0.0	0.0	11559.18
TAILINGS BEATER	7545.00	4	30	1.31	0.0	0.0	7395.40
WOTES BEATER	5395.00	2	30	1.31	0.0	0.0	2644.02
CONVEYORS	2520.00	2	20	1.31	0.0	0.0	1367.51
HULLS PLOWING SYS	10100.00	2	20	1.31	0.0	2000.00	5445.99
HULL STORAGE	13.20	35100	40	0.0	0.02	92664.00	56435.86
MEATS COND BLDG	13.50	1200	40	0.0	0.02	3240.00	1973.28
ROLLER	52480.00	1	30	1.31	0.0	5250.00	12827.95
3-HIGH COOKER	173700.00	1	30	1.31	0.0	0.0	42564.02
FLAKING ROLLS	38500.00	2	30	1.31	0.0	0.0	18868.33
CONVEYORS	13500.00	1	25	1.31	0.0	0.0	3435.59
EXTRACTION BLDG	13.50	1500	40	0.0	0.02	4050.00	2466.60
SCREW PRESS	103610.00	3	30	1.31	0.0	0.0	80577.50
BUCKET ELEVATOR	5140.00	1	25	1.31	0.0	0.0	1562.56
SETTLING TANK	22240.00	1	25	1.31	0.0	0.0	5659.82
FILTER PRESS	52864.00	1	25	1.31	0.0	0.0	13453.27
PUMPS-CONVEYORS	46880.00	1	25	1.31	0.0	0.0	11930.41
SOLVENT EXT BLDG	14.10	1300	40	0.0	0.02	5070.00	3091.49
SOLVENT EXT PLANT	510000.00	1	30	1.45	0.0	51000.00	132235.94
OIL STORAGE	24000.00	2	30	0.0	0.02	2400.00	6037.21
MEAL STORAGE	13.20	9450	40	0.0	0.02	24950.00	15194.26
REPAIR BLDG	12.30	1300	40	0.0	0.02	4600.00	2806.46
REPAIR MACHINERY	20000.00	1	10	0.75	0.0	2000.00	5603.16
REPAIR PARTS INV	50000.00	1	1	0.0	0.0	0.0	55000.23
MILL MANAGER	30000.00	1					32999.98
MILL SUPT	28000.00	1					30799.98
SHIFT SUPV.	26000.00	4					114399.94
FOREMAN	25000.00	2					247499.81
SECRETARIES	10000.00	3					32999.98
BUYER	25000.00	1					27499.98
BOOKKEEPER	25000.00	1					27499.98
TAXES	3233.00	14					40738.17
INSURANCE	3466.00	6					42675.57

TOTAL FIXED COST 1370642.00

COST OF CONSTRUCTION NEW PLANT 6465746.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	33362992.00	0.31	10509342.00
COTTONSEED MEAL	45638.50	143.70	6565437.00
COTTONSEED HULLS	32125.50	31.78	1020948.31

TOTAL REVENUE 18095712.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
COTTONSEED BUY	99000.00	109.39	10829609.00
TRANSPORTATION IN	99000.00	5.00	495000.00
TOTAL PRODUCTION STAGE COST			11324609.00

PRODUCTION STAGE: UNLOADING-STORAGE			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
SEASONAL LABOR	12.00	4000.00	48000.00
LABOR	6.00	20644.00	123864.00
ELECTRICITY	99000.00	0.16	15840.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.24	23759.99
TOTAL PRODUCTION STAGE COST			236213.88

PRODUCTION STAGE: CLEANING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
ELECTRICITY	330.00	72.00	23760.00
REPAIR PARTS	99000.00	0.25	24750.00
REPAIR LABOR	99000.00	0.05	4950.00
TOTAL PRODUCTION STAGE COST			115391.94

PRODUCTION STAGE: HULLING-SEPARATING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	186.24	61459.20
REPAIR PARTS	99000.00	0.34	33659.94
REPAIR LABOR	99000.00	0.30	29659.99
TOTAL PRODUCTION STAGE COST			325555.06

PRODUCTION STAGE: MEAL CONDITIONING			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	23556.00	70668.00
ELECTRICITY	330.00	171.00	56430.00
WATER	99000.00	0.04	3960.00
NATURAL GAS	99000.00	1.08	106919.94
REPAIR PARTS	99000.00	0.32	31680.00
REPAIR LABOR	99000.00	0.21	20750.00
TOTAL PRODUCTION STAGE COST			290447.75

PRODUCTION STAGE: PRE-PRESS EXT			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	429.00	141570.00
REPAIR PARTS	99000.00	0.30	29659.99
REPAIR LABOR	99000.00	0.13	12870.00
TOTAL PRODUCTION STAGE COST			325475.98

PRODUCTION STAGE: EXTRACTION			
	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
HEAD EXTRACTION	3.00	26000.00	78000.00
ELECTRICITY	330.00	93.00	30690.00
WATER-SEWAGE	99000.00	0.10	9900.00
NATURAL GAS	99000.00	1.26	124779.88
HEXANE	99000.00	0.68	67319.94
REPAIR PARTS	99000.00	0.35	34650.00
REPAIR LABOR	99000.00	0.20	19800.00
TOTAL PRODUCTION STAGE COST			427031.63

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	27.00	8910.00
REPAIR PARTS	99000.00	0.28	27720.00
REPAIR LABOR	99000.00	0.17	16829.99
TOTAL PRODUCTION STAGE COST			194795.88

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR MAINTENANCE	6.00	23556.00	141336.00
LABOR CLEANING	6.00	20644.00	123864.00
LAB ANALYSIS	99000.00	0.10	9900.00
BROKERAGE FEES	99000.00	1.00	99000.00
OFFICE	99000.00	1.25	123750.00
INSURANCE	99000.00	0.88	87119.94
TOTAL PRODUCTION STAGE COST			584969.88

INTEREST ON OPERATING CAPITAL 1382446.00

TOTAL VARIABLE COST 15206918.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	338659.19
LABOR REQUIREMENTS	1262303.00
REPAIR REQUIREMENTS	266309.69
NATURAL GAS REQUIREMENTS	235619.75
WATER REQUIREMENTS	9900.00

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	1370442.00
TOTAL VARIABLE COST	15206918.00
TOTAL COST	16577360.00
TOTAL REVENUE	18095712.00
TOTAL NET REVENUE	1512152.00

AVERAGE FIXED COST	13.84
AVERAGE VARIABLE COST	153.61
AVERAGE TOTAL COST	167.45
AVERAGE REVENUE	182.78
AVERAGE NET REVENUE	15.33

MARGINAL COST 121.30

600 TPD PRE-PRESS SOLVENT COTTONSEED OIL MILL MODEL  
(WEST) SAW DELINTERING

CAPACITY OF PLANT	199000T745	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	3	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
PRINT VARIABLE REQUIREMENTS AND TOTAL	1	0=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOR COST	NUM	YRS	INST	REP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	25	40	0.0	0.0	25000.00	7500.00
OFFICE	26.00	4000	40	0.0	0.02	21440.00	13057.75
SCALES	18852.00	1	30	1.45	0.0	1000.00	4893.45
TRUCK DUMP	52977.00	4	25	1.45	0.0	20000.00	61203.78
SEEDHOUSE	465750.00	2	40	0.0	0.02	186300.00	113463.56
OPEN STORAGE	57000.00	5	40	1.31	0.02	14250.00	72990.13
CONVEYORS	75520.00	1	20	1.45	0.0	3020.00	21680.16
CLEANING PLUG	13.50	3600	40	0.0	0.02	9920.00	5919.39
4-TRAY SHAKERS	29375.00	8	30	1.31	0.0	0.0	57585.16
CONVEYORS	19880.00	1	20	1.45	0.0	1889.00	5400.26
DELIMITING PLUG	13.50	16000	40	0.0	0.02	43200.00	26310.42
DELINTERS	14582.00	72	30	1.31	0.0	0.0	257271.81
CHAIN HOIST	2000.00	4	15	1.31	0.0	0.0	2429.64
GUMMERS	15845.00	6	30	0.76	0.0	0.0	17749.53
LINT FLUF SYS 1ST	2500.00	20	25	1.31	0.0	0.0	12724.42
LINT ROBBING SYS 1ST	3500.00	2	25	1.31	0.0	0.0	1781.42
LINT PICKUP SYS 1ST	3000.00	2	25	1.31	0.0	0.0	1526.93
LINT CLEANERS 1ST	24744.00	2	30	1.31	0.0	0.0	12126.70
LINT FLUF SYS 2ND	2500.00	52	25	1.31	0.0	0.0	33083.50
LINT PICKUP SYS 2ND	13000.00	1	25	1.31	0.0	0.0	3308.35
LINT CLEANERS 2ND	24744.00	4	30	1.31	0.0	0.0	24253.40
NOTES PICKUP SYS	3000.00	2	25	1.31	0.0	0.0	1526.93
CONVEYORS	56980.00	1	25	1.31	0.0	0.0	14475.30
BALE PR-STOR HLDG	12.80	24000	40	0.0	0.02	61440.00	37419.25
BALE PRESS	143620.00	2	40	1.31	0.0	20000.00	67806.38
CHAIN HOIST	2000.00	2	15	1.31	0.0	0.0	1214.62
HULL-SEP HLDG	13.50	4850	40	0.0	0.02	13095.00	7975.24
SAFETY SHAKERS	8378.00	2	25	1.31	0.0	0.0	4264.21
HULLER	14993.00	8	30	1.31	0.0	0.0	29391.47
PURIFYING HULLER	7243.00	2	30	1.31	0.0	0.0	14473.23
DOUBLE DRUM BEATER	13230.00	4	30	1.31	0.0	0.0	12967.68
H AND S MACHINE	7378.00	8	30	1.31	0.0	0.0	14463.43
MEATS PURIFIER	11793.00	4	30	1.31	0.0	0.0	11559.18
TAILINGS BEATER	7545.00	4	30	1.31	0.0	0.0	7395.40
NOTES BEATER	5395.00	2	30	1.31	0.0	0.0	2644.02
CONVEYORS	5040.00	1	20	1.31	0.0	0.0	1267.51
HULLS BLOWING SYS	10100.00	2	20	1.31	0.0	2000.00	5445.99
HULL STORAGE	13.20	23400	40	0.0	0.02	61776.00	37623.90
MEATS COND PLOG	13.50	2000	40	0.0	0.02	5400.00	3288.80
PULLER	87727.00	1	30	1.31	0.0	8775.00	21443.56
B-HIGH COOKER	173700.00	2	30	1.31	0.0	0.0	85128.00
FLAKING ROLLS	38500.00	4	30	1.31	0.0	0.0	37736.66
CONVEYORS	20250.00	1	25	1.31	0.0	0.0	5153.39
EXTRACTION PLOG	13.50	2000	40	0.0	0.02	5400.00	3288.80
SCREW PRESS	109610.00	6	30	1.31	0.0	0.0	161155.06
BUCKET ELEVATOR	9210.00	1	25	1.31	0.0	0.0	2343.84
SETTLING TANK	44000.00	1	25	1.31	0.0	0.0	11197.48
FILTER PRESS	52364.00	1	25	1.31	0.0	0.0	13453.27
PUMP-CONVEYORS	70320.00	1	25	1.31	0.0	0.0	17895.63
SOLVENT EXT PLOG	14.10	2100	40	0.0	0.02	6000.00	3606.54
SOLVENT EXT PLANT	705000.00	1	30	1.45	0.0	70500.00	182796.81
OIL STORAGE	48000.00	2	30	0.0	0.02	9600.00	12045.25
MEAL STORAGE	13.20	19000	40	0.0	0.02	50160.00	30549.20
REPAIR BLDG	12.80	2400	40	0.0	0.02	6150.00	3741.91
REPAIR MACHINERY	30000.00	1	10	0.76	0.0	3000.00	8404.75
REPAIR PARTS INV	80000.00	1	1	0.0	0.0	0.0	80000.00
MILL MANAGER	30000.00	1					30799.98
MILL SUPT	29000.00	1					114399.94
SHIFT SUPV.	26000.00	4					247499.81
FIREMAN	25000.00	9					54999.97
SECRETARIES	10000.00	5					100999.94
BUY-SALES	25000.00	4					27499.98
BOOKKEEPER	25000.00	1					114899.31
TAXES	7461.00	14					98485.13
INSURANCE	14922.00	6					

TOTAL FIXED COST 2546071.00

COST OF CONSTRUCTION NEW PLANT

14922016.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED OIL	69705000.00	0.31	21642334.00
COTTONSEED MEAL	91377.00	143.70	13130874.00
COTTONSEED LINTERS	37620000.00	0.08	2996738.00
COTTONSEED HULLS	44451.00	31.73	1412652.00

TOTAL REVENUE 39082624.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
COTTONSEED	190000.00	109.39	21659216.00
TRANSPORTATION IN	190000.00	5.00	900000.00

TOTAL PRODUCTION STAGE COST 22649216.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	COST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	135796.00
SEASONAL LABOR	15.00	4000.00	60000.00
ELECTRICITY	190000.00	0.16	31579.99
REPAIR PARTS	190000.00	0.25	49500.00
REPAIR LABOR	190000.00	0.24	47519.99

TOTAL PRODUCTION STAGE COST 374495.88

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
ELECTRICITY	330.00	144.00	47520.00
REPAIR PARTS	190000.00	0.25	49500.00
REPAIR LABOR	190000.00	0.05	9900.00

TOTAL PRODUCTION STAGE COST 168851.94

PRODUCTION STAGE: DELINTERING

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	15.00	23556.00	352340.00
HEAD LINTERMAN	3.00	26000.00	78000.00
ELECTRICITY	330.00	1380.00	455400.00
REPAIR PARTS	190000.00	0.58	114839.94
REPAIR LABOR	190000.00	0.20	39600.00

TOTAL PRODUCTION STAGE COST 1041179.88

PRODUCTION STAGE: BALING-BALE STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
PRESS LABOR	6.00	20644.00	123864.00
STORAGE LABOR	9.00	23556.00	212004.00
ELECTRICITY	330.00	36.00	11930.00
BAGGING-TIES	57000.00	1.85	105449.94
REPAIR PARTS	190000.00	0.09	17319.99
REPAIR LABOR	190000.00	0.03	5940.00

TOTAL PRODUCTION STAGE COST 475957.81

PRODUCTION STAGE: HULLING-SEPARATING

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	216.00	71280.00
REPAIR PARTS	190000.00	0.47	90059.94
REPAIR LABOR	190000.00	0.15	29699.99

TOTAL PRODUCTION STAGE COST 335375.88

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	CCST/UNIT	VARIABLE CCST
LABOR	3.00	23556.00	70668.00
ELECTRICITY	330.00	342.00	112860.00
WATER	198000.00	0.04	7920.00
NATURAL GAS	198000.00	1.08	213839.94
REPAIR PARTS	198000.00	0.32	63360.00
REPAIR LABOR	198000.00	0.21	41579.59
TOTAL PRODUCTION STAGE CCST			519227.75

PRODUCTION STAGE: PRE-PRESS EXT

	NO. OF UNITS	CCST/UNIT	VARIABLE CCST
LABOR	6.00	23556.00	141336.00
ELECTRICITY	330.00	358.00	283140.00
REPAIR PARTS	198000.00	0.20	59359.99
REPAIR LABOR	198000.00	0.13	25740.00
TOTAL PRODUCTION STAGE CCST			509615.88

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	CCST/UNIT	VARIABLE CCST
LABOR	3.00	20644.00	51932.00
HEAD EXTRACTION	3.00	26000.00	78000.00
ELECTRICITY	330.00	186.00	51380.00
WATER-SEWAGE	198000.00	0.10	19759.99
NATURAL GAS	198000.00	1.26	249479.81
HEXANE	198000.00	0.69	134639.94
REPAIR PARTS	198000.00	0.35	69259.94
REPAIR LABOR	198000.00	0.20	39600.00
TOTAL PRODUCTION STAGE CCST			714131.56

PRODUCTION STAGE: OIL-MEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE CCST
LABOR	9.00	23556.00	212004.00
ELECTRICITY	330.00	54.00	17820.00
REPAIR PARTS	198000.00	0.28	55439.99
REPAIR LABOR	198000.00	0.17	33659.99
TOTAL PRODUCTION STAGE CCST			318923.88

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	CCST/UNIT	VARIABLE CCST
LABOR MAINTENANCE	9.00	23556.00	212004.00
LABOR CLEANING	9.00	23556.00	212004.00
LAB ANALYSIS	198000.00	0.10	19759.99
BOOKRAGE FEES	198000.00	1.00	198000.00
OFFICE	198000.00	1.25	247500.00
INSURANCE	198000.00	0.88	174239.94
TOTAL PRODUCTION STAGE CCST			1063547.00

INTEREST ON OPERATING CAPITAL 2816205.00

TOTAL VARIABLE COST 30978256.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	1092959.00
LABOR REQUIREMENTS	2471514.00
REPAIR REQUIREMENTS	578159.50
NATURAL GAS REQUIREMENTS	463319.75
WATER REQUIREMENTS	27719.99



RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	2546071.00
TOTAL VARIABLE COST	30978256.00
TOTAL COST	33524327.00
TOTAL REVENUE	39032624.00
TOTAL NET REVENUE	5583304.00
AVERAGE FIXED COST	12.86
AVERAGE VARIABLE COST	156.46
AVERAGE TOTAL COST	169.31
AVERAGE REVENUE	197.39
AVERAGE NET REVENUE	28.07
MARGINAL COST	153.37

600 TPD PRE-PRESS SOLVENT COTTONSEED OIL MILL MODEL  
(WEST) HULLING UNDELINERED SEED

CAPACITY OF PLANT	100000TONS	
CAPACITY UTILIZATION	30%	
INTEREST RATE	10%	
COST OF RAW MATERIAL	110	
NUMBER OF VARIABLE DATA SETS	8	
ADDITION TO CAPACITY UTILIZATION	10%	
GENERATE COST CURVES	1	1=YES
SHORT VARIABLE REQUIREMENTS AND TOTAL	1	0=NO
PRINT OUT INPUT	1	
PRINT OUT TOTAL FIXED COST BY ITEM	1	
PRINT OUT TOTAL VARIABLE COST BY ITEM	1	
PRINT OUT TOTAL REVENUE BY ITEM	1	
NUMBER OF PROBLEMS	1	

FIXED COST

ITEM NAME	FOR COST	NUM	YRS	INST	RFP	SALVAGE VALUE	ANNUAL EQUIV. COSTS
LAND	1000.00	25	40	0.0	0.0	25000.00	2500.00
OFFICE	26.80	4000	40	0.0	0.02	21440.00	13057.75
SCALES	13852.00	1	30	1.45	0.0	1000.00	4393.45
TRUCK DUMP	56477.00	4	25	1.45	0.0	20000.00	61203.78
SFEEDHOUSE	465750.00	2	40	0.0	0.02	196300.00	113463.56
OPEN STORAGE	57000.00	5	40	1.31	0.02	14250.00	72990.13
CONVEYORS	75520.00	1	20	1.45	0.0	3020.00	21680.16
CLEANING BLDG	13.50	3500	40	0.0	0.02	5920.00	5919.39
4-TRAY SHAKERS	24375.00	2	30	1.31	0.0	0.0	57595.16
CONVEYORS	13880.00	1	20	1.45	0.0	1898.00	5400.26
HULL-SEP BLDG	13.50	9850	40	0.0	0.02	23695.00	14552.55
SAFETY SHAKERS	3378.00	2	25	1.31	0.0	0.0	4264.21
HULLER	14993.00	13	30	1.31	0.0	0.0	47761.14
PURIFYING HULLER	7383.00	13	30	1.31	0.0	0.0	23519.01
DOUBLE DRUM BEATER	13230.00	7	30	1.31	0.0	0.0	22673.45
H AND S MACHINE	7378.00	13	30	1.31	0.0	0.0	23503.07
MEATS PURIFIER	11793.00	7	30	1.31	0.0	0.0	20228.57
TAILINGS BEATER	7545.00	7	30	1.31	0.0	0.0	12941.35
MOTES BEATER	5395.00	4	30	1.31	0.0	0.0	5229.03
CONVEYORS	5040.00	2	20	1.31	0.0	0.0	2735.03
HULLS BLOWING SYS	10100.00	4	20	1.31	0.0	4000.00	10991.90
HULL STORAGE	13.20	70200	40	0.0	0.02	139540.00	112862.06
MEATS COND BLDG	13.50	2000	40	0.0	0.02	5400.00	3238.80
BOILER	87727.00	1	30	1.31	0.0	3775.00	21443.56
3-HIGH COOKER	173700.00	2	30	1.31	0.0	0.0	45128.00
FLAKING ROLLS	38500.00	4	30	1.31	0.0	0.0	37736.66
CONVEYORS	20250.00	1	25	1.31	0.0	0.0	5153.39
EXTRACTION BLDG	13.50	2000	40	0.0	0.02	5400.00	3293.80
SCREW PRESS	103610.00	6	30	1.31	0.0	0.0	161155.06
BUCKET ELEVATOR	9210.00	1	25	1.31	0.0	0.0	2343.94
SETTLING TANK	44000.00	1	25	1.31	0.0	0.0	11197.40

FILTER PRESS	52864.00	1	25	1.31	0.0	0.0	13453.27
PUMP-CONVEYORS	70320.00	1	25	1.31	3.0	0.0	17895.63
SOLVENT EXT BLDG	14.10	2100	40	0.0	0.02	6000.00	3606.54
SOLVENT EXT PLANT	705000.00	1	30	1.45	0.0	70500.00	182796.81
GIL STORAGE	48000.00	2	30	0.0	0.02	9600.00	12045.25
MEAL STORAGE	13.20	19000	40	0.0	0.02	50160.00	30549.30
REPAIR BLDG	12.80	2400	40	0.0	0.02	6150.00	3741.91
REPAIR MACHINERY	30000.00	1	10	0.76	0.0	3000.00	8404.75
REPAIR PARTS INV	80000.00	1	1	0.0	0.0	0.0	38000.38
MILL MANAGER	30000.00	1					32559.99
MILL SUPT	28000.00	1					30799.98
SHIFT SUPV.	26000.00	4					114399.94
FOREMAN	25000.00	9					247499.91
SECRETARIES	10000.00	5					54599.97
BUY-SALES	25000.00	4					109999.94
BOOKKEEPER	25000.00	1					27499.98
TAXES	5738.00	14					83365.13
INSURANCE	11475.00	6					75734.74

TOTAL FIXED COST 2133453.00

COST OF CONSTRUCTION NEW PLANT 11475262.00

TOTAL REVENUE (AT 100% CAPACITY)

PRODUCT	NUMBER OF UNITS	PRICE/UNIT	REVENUE
COTTONSEED GIL	66726000.00	0.31	21013688.00
COTTONSEED MEAL	91377.00	143.70	13130374.00
COTTONSEED HULLS	64251.00	31.78	2041896.00

TOTAL REVENUE 36191440.00

VARIABLE COST

PRODUCTION STAGE: COTTONSEED BUY

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
COTTONSEED	190000.00	109.39	21659216.00
TRANSPORTATION IN	190000.00	5.00	950000.00

TOTAL PRODUCTION STAGE COST 22649216.00

PRODUCTION STAGE: UNLOADING-STORAGE

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	9.00	20644.00	185796.00
SEASONAL LABOR	15.00	4000.00	60000.00
ELECTRICITY	190000.00	0.16	31600.00
REPAIR PARTS	190000.00	0.25	47500.00
REPAIR LABOR	190000.00	0.24	47519.99

TOTAL PRODUCTION STAGE COST 374459.98

PRODUCTION STAGE: CLEANING

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
ELECTRICITY	330.00	144.00	47520.00
REPAIR PARTS	190000.00	0.25	47500.00
REPAIR LABOR	190000.00	0.05	9500.00

TOTAL PRODUCTION STAGE COST 168851.94

PRODUCTION STAGE: HULLING-SEPARTING

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	9.00	23556.00	212004.00
ELECTRICITY	330.00	374.00	123420.00
REPAIR PARTS	190000.00	0.94	126119.94
REPAIR LABOR	190000.00	0.30	57399.99

TOTAL PRODUCTION STAGE COST 530943.98

PRODUCTION STAGE: MEAL CONDITIONING

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	23556.00	70668.00
ELECTRICITY	330.00	342.00	112860.00
WATER	198000.00	0.04	7920.00
NATURAL GAS	198000.00	1.08	213839.94
REPAIR PARTS	198000.00	0.32	63360.00
REPAIR LABOR	198000.00	0.21	41579.59
TOTAL PRODUCTION STAGE COST			510227.75

PRODUCTION STAGE: PRE-PRESS EXT

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	9.00	23556.00	141336.00
ELECTRICITY	330.00	358.00	283140.00
REPAIR PARTS	198000.00	0.30	59359.99
REPAIR LABOR	198000.00	0.13	25740.00
TOTAL PRODUCTION STAGE COST			509615.88

PRODUCTION STAGE: EXTRACTION

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	3.00	20644.00	61932.00
HEAD EXTRACTION	3.00	26000.00	78000.00
ELECTRICITY	330.00	186.00	61380.00
WATER-SEWAGE	198000.00	0.10	19759.99
NATURAL GAS	198000.00	1.26	249479.81
HEXANE	198000.00	0.53	134639.94
REPAIR PARTS	198000.00	0.35	69299.94
REPAIR LABOR	198000.00	0.20	39600.00
TOTAL PRODUCTION STAGE COST			714131.56

PRODUCTION STAGE: OIL-NEAL-HULL STOR

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR	9.00	23556.00	212004.00
ELECTRICITY	330.00	54.00	17820.00
REPAIR PARTS	198000.00	0.28	55439.99
REPAIR LABOR	198000.00	0.17	33659.99
TOTAL PRODUCTION STAGE COST			318923.98

PRODUCTION STAGE: MISCELLANEOUS

	NO. OF UNITS	CCST/UNIT	VARIABLE COST
LABOR MAINTENANCE	9.00	23556.00	212004.00
LABOR CLEANING	9.00	23556.00	212004.00
LAB ANALYSIS	198000.00	0.10	19759.99
BROKERAGE FEES	198000.00	1.00	198000.00
OFFICE	198000.00	1.25	247500.00
INSURANCE	198000.00	0.88	174239.94
TOTAL PRODUCTION STAGE COST			1063547.00

INTEREST ON OPERATING CAPITAL 2688955.00

TOTAL VARIABLE COST 29578512.00

TOTAL VARIABLE REQUIREMENTS

ELECTRICITY REQUIREMENTS	677819.74
LABOR REQUIREMENTS	1765077.00
REPAIR REQUIREMENTS	532619.69
NATURAL GAS REQUIREMENTS	463319.75
WATER REQUIREMENTS	27719.99

RESULTS OF THE MODEL AT 100% CAPACITY

TOTAL FIXED COST	2133453.00
TOTAL VARIABLE COST	29578512.00
TOTAL COST	31711965.00
TOTAL REVENUE	36191440.00
TOTAL NET REVENUE	4479475.00

AVERAGE FIXED COST	10.78
AVERAGE VARIABLE COST	149.39
AVERAGE TOTAL COST	160.16
AVERAGE REVENUE	182.79
AVERAGE NET REVENUE	22.62

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