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Costs and Returns for Corn, Cotton, Rice, Soybeans, and Wheat in Mississippi, 1998

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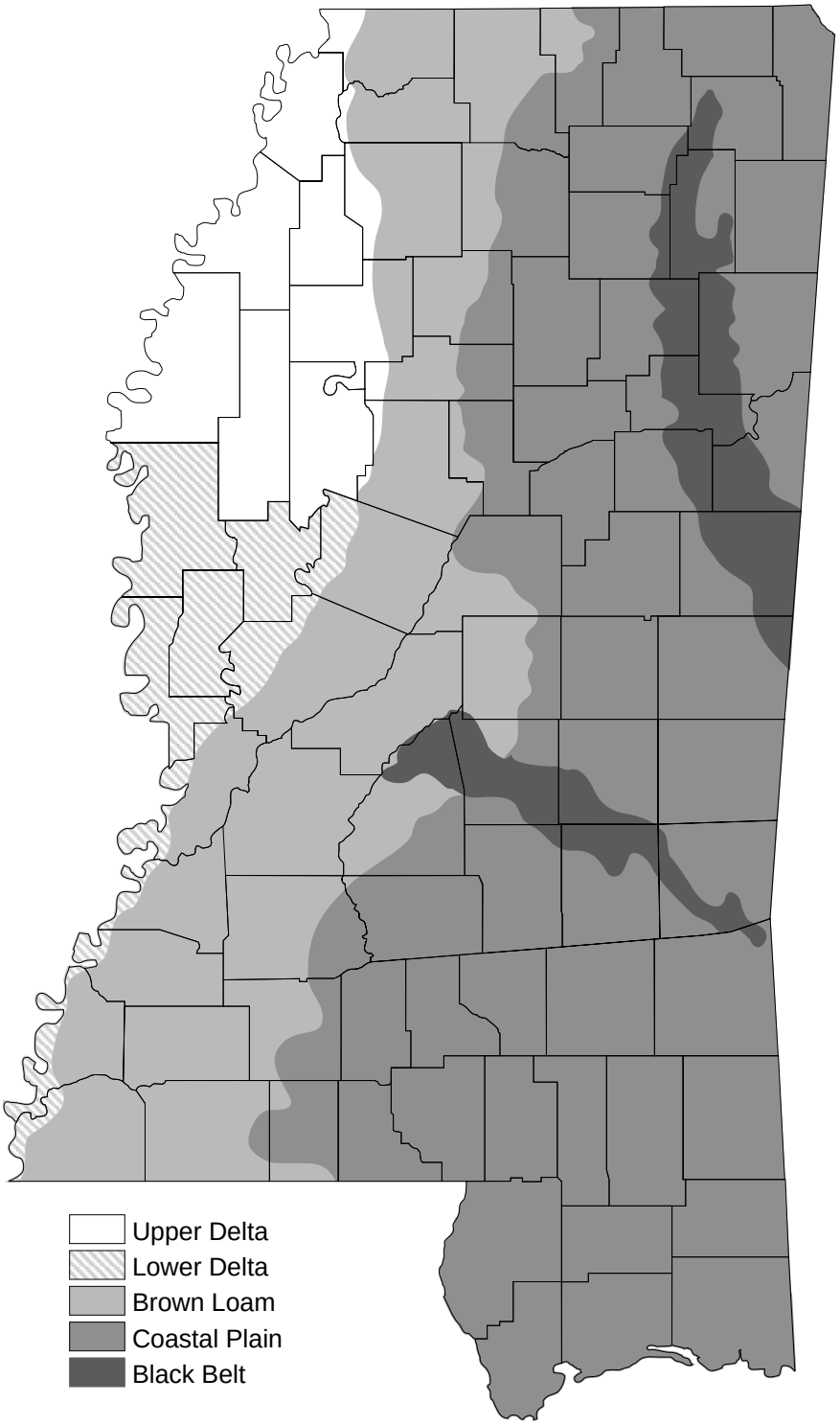

Figure 1. Major Soil Resource Areas of Mississippi

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INTRODUCTION

Information about production costs and returns from agricultural enterprises in Mississippi is important to producers, lenders, agricultural economists, researchers, extension personnel, policy makers, and others involved in agriculture. This bulletin presents per-acre information for yield, income, cost of production, and net income for corn, cotton, rice, soybean, and wheat crops produced in Mississippi during 1998. First, the methods and procedures used to develop the estimates are discussed. Then, the results of the study are presented.

METHODS AND PROCEDURES

Mississippi is divided into four major soil resource areas (see Figure 1). For purposes of this study, the Delta area was divided into two areas (Upper Delta and Lower Delta), and the Coastal Plain and Black Belt areas were combined into one area. For each of the four areas identified for this study, statisticians with the Mississippi Agricultural Statistics Service (MASS) developed a stratified random sample of farms that produced either corn, cotton, rice, soybeans, or wheat in 1998. The three strata were based on different farm sizes, as measured by the farm's acreage planted to a specific crop – not the farm's total acreage. Farms in stratum one had 1 to 99 acres, stratum two had 100 to 499 acres, and stratum three had 500 or more acres. After contacting the owner or manager of the farm operation in the fall of 1998, an enumerator employed by MASS randomly selected a field on the chosen farm and collected information about the farm and the cultural practices used to produce the crop on that field. Information included types of preplant tillage operations, planting practices, fertilizer and pesticide applications, harvesting operations, and custom-hired work. After the crop was harvested, the enumerator contacted the producer again to obtain the crop yield for the whole farm. A total of 481 usable surveys was taken. See Appendix Tables 1-5 for a list of the number of surveys taken in each county in each area.

Upon completion of the survey, MASS developed two numbers called "expansion factors" for each sampled field so that the sample information related to the field could be expanded to represent the population of crop farms within the soil resource area. These expansion factors were used as weights to compute averages and standard deviations of costs and returns. The first expansion factor was used to expand information pertaining to the sampled field to the farm level. It was computed as the number of acres of the crop on the farm divided by the number of acres of the crop in the sampled field. This assumes that production practices for the crop at the whole-farm level are the same as those at the field level. The second expansion factor was used to expand the farm-level information about the crop to the whole soil resource area. Each crop in each stratum had an expansion factor of this type. This expansion factor was computed as the total number of farm operations that produced a specific crop in each stratum divided by the number of farms sampled in that stratum (i.e., the number of farms in the population divided by the number of farms in the sample). This assumes that similar-sized farms have similar production practices.

The information about production practices from each sampled field was entered into data files by using the Mississippi State Budget Generator (MSBG) program. This computer program uses information about farm machinery, operating inputs, and prices to convert production practice information into budgetary information (costs and returns). Essentially, the program estimates the operating and ownership costs per acre of each field operation. These field operation costs are then organized into various useful budget output formats. The prices used to estimate costs and returns are updated annually and are reported in departmental publications concerning planning budgets for crops.

Operating Cost Estimation

Operating costs are outlays for production inputs that are consumed in one production period. Categories for operating costs related to machinery were defined as diesel fuel, repairs and maintenance, and labor. Powered machines (tractors and combines, for example) consume diesel fuel at a specified rate per hour of operation. This consumption rate was multiplied by the machine's performance rate (the time it takes to complete a field operation on one acre) to obtain the fuel consumption per acre. This quantity was multiplied by the diesel fuel price (estimated to be 65 cents per gallon) to obtain the fuel cost per acre.

An average hourly cost for repairs and maintenance (R&M) was estimated by dividing the machine's estimated total lifetime R&M expense (specified as a percent of the machine's current list price, assuming the machine is new, not used) by the machine's estimated total operational life (in hours). This amount was then multiplied by the machine's performance rate to obtain the R&M cost per acre.

Depending on the type of field operation, the type of labor required may be the machine operator alone or may also include nonoperator labor. Labor use for each type of labor associated with the field operation (hours per acre) was multiplied by the labor cost per hour (the going wage rate plus employer contributions for perks and benefits, estimated to be $8.31 per hour for operator labor and $6.91 per hour for nonoperator labor) to obtain the labor cost per acre. A category for overhead labor (or nonfield labor) was established to account for labor expenses that are not directly related to fieldwork. Cox (1982) conducted a labor study and concluded that overhead labor expenses could be estimated as a percent of operator labor for specific crop enterprises. The estimation method used by Cox resulted in different overhead labor rates for different crops. The overhead rates (as a percent of operator labor) estimated by Cox and used in this study were 90% for corn, rice, and soybeans, and 80% for cotton and wheat.

For irrigated fields, similar computations were made to estimate operating costs for an acre-inch of irrigation water. Cost per acre-inch was multiplied by the number of acre-inches pumped per acre to obtain the cost per acre of irrigation water.

Other operating cost categories were defined for purchased operating inputs, such as fertilizer and pesticides. The quantity per acre of each operating input was multiplied by its price to obtain its cost per acre. Other operating cost items were ginning cotton, hauling the crop to a storage or handling facility, and hiring custom work. Again, the quantity per acre was multiplied by the charge or fee per unit to obtain the cost per acre. Producers could report the expense of custom harvesting as either dollars per acre or dollars per quantity harvested.

Finally, an interest charge was applied to each operating cost item to account for the opportunity cost of using operating capital to produce crops instead of some alternative investment, which could include paying off current debt. The interest cost was estimated by multiplying a short-term monthly interest rate on borrowed funds (estimated to be 9.32% per year or 0.78% per month in 1998) by the cost per acre for each month between the time that the field operation was performed and the harvest month.

Ownership Cost Estimation

Ownership costs reflect the annual cost of durable inputs such as machines. One type of ownership cost is the loss in market value of a machine from one year to the next; this cost is termed depreciation. There is also an annual opportunity cost for the use of the capital invested in a machine; an interest charge is estimated to account for this cost. These ownership costs of machines need to be estimated on an annual basis to properly allocate the original investment capital to one production period (i.e., 1 year). A traditional method of allocation is to estimate annual depreciation and annual interest on investment as separate items. However, the capital recovery method is a more accurate way to determine the annual ownership cost (Boehlje and Eidman, p. 142). This method is used to compute the amount of money required at the end of each year to (1) pay interest on the unrecovered capital at the designated interest rate, and (2) recover the initial investment within the specified number of years.

Technically, machinery ownership cost is often categorized as a noncash fixed cost because its annual value does not depend on the level of use. That is, the ownership cost per year would not vary if the machine were used 100 hours or 200 hours per year. However, the method used in this study to estimate ownership cost *per acre* does depend on machinery use *per acre*. First, the annual cost estimate is converted to an hourly cost estimate by dividing the annual cost by the hours used per year. Then, the number of hours per acre that the machine is used is multiplied by the cost per hour to obtain the cost per acre. Thus, if a tractor is used twice as much on one field as on another field, its ownership cost per acre will be twice as high.

A machine's price (assuming it was new, not used), its useful life (in years), its salvage value, and an annual interest rate were used to estimate the machine's annual capital recovery charge. In this study, the salvage value was specified to be zero, reflecting the assumption that a machine will be placed in use for its whole operational life, at which time it will have no remaining market value. An annual interest rate applicable for intermediate-term debt was estimated to be 9.32% in 1998.

Land Cost

Another cost category involves land, which may be a cash cost for rented land or a noncash opportunity cost in the case of owned land. In this study, either the cash rental rate or the cash value of the share rate per acre was used as an estimate of the annual cost of land. In the event that the producer rented land to produce the crop in question, the cash rental rate or the crop share was elicited from the producer. For producers who did not rent land, the rental rate had to be estimated. The average of the rental rates reported by the renters in the sample was assigned to those producers who did not report having a rental charge.

Overhead and Management

Other cost categories that may need to be allocated to crop enterprises are general farm overhead and a management charge. There was no reliable method for estimating these types of costs with the available data; therefore, these costs were not included in the analysis.

Income Estimation

Income per acre was estimated by multiplying the crop yield by the statewide average preliminary market year (through January 1) price received by farmers (published by MASS). Preliminary market year prices for 1998 crops were $0.634 per pound of cotton lint, $116 per ton of cottonseed, $8.75 per hundredweight of rice, $2.05 per bushel of corn, $6.05 per bushel of soybeans, and $2.25 per bushel of wheat. Cotton seed yield was assumed to be 1.55 pound of seed per pound of lint. The sampling procedure did not request information about government program payments received. Thus, income estimates do not account for any government payments that may have been received. Net income was then computed as the difference between total income and total specified cost.

Computing Averages and Standard Deviations

The data for machinery prices, performance rates, operational hours, operating input, and crop prices were the same for all producers; only the individual production practices and crop yields were different across sampled fields. After the budgetary information was estimated within the MSBG framework and the land rental rate was estimated where necessary, the average of each item was computed. For each sampled field, the number of acres in the field was multiplied by the product of the two expansion factors to obtain the total number of acres represented by the sampled field. These expanded acre values were summed over the whole sample to obtain the total acres represented by the sample. The weight for each sample unit was obtained by dividing its expanded acres by the total acres represented. These weights were used to compute averages and standard deviations for farm size information, crop yields, incomes, costs, and net income.

RESULTS

Interpretation of Data

Results from the surveys are presented in Tables 1 through 15. In each table, each item's average value, standard deviation, minimum value, and maximum value are listed. The average (or mean) value is a measure of central tendency of a distribution. On each table, there is a list of farm characteristics, yields, income, some of the more important operating cost categories, income above operating costs, machinery ownership costs and land charges, and net income. Since we list only some of the operating cost categories, the sum of the average values of the listed categories does not equal the total operating cost presented.

While the average gives some indication of the midpoint of a large group of values, it does not provide any information about the amount of variation in the values. The standard deviation is the measure of variability used in this study to indicate how spread out, or dispersed, the values are. The higher the standard deviation, the more dispersed the values are around the average. The lower the standard deviation, the more concentrated the values. If the measurements were from a normal distribution (a particular type of a symmetric distribution), about 68% of the values would occur between one standard deviation below the average and one standard deviation above the average. Also, only about 2.5% of the values would occur less than two standard deviations below the average and only about 2.5% of the values would occur more than two standard deviations above the average. If an item has an average value that is close to the average of its minimum and maximum values, then it is likely to be from a symmetric distribution. For those items that do not come from a symmetric distribution, the above percentages may not be applicable.

An item's minimum value is the lowest value observed in the sample, while its maximum value is the largest value observed. These extreme values for the various items would necessarily have come from different farms. Thus, it is not proper to add or subtract the values in these columns.

In Table 1, the results for corn production in the Upper Delta Area show that the average size of the total operation was 3,711 acres. About 73% of the 3,569 cropland acres were rented. On average, these producers planted 902 acres of corn for grain. The average corn yield was 100 bushels per acre (irrigated yield averaged 121 bushels per acre, and dryland yield averaged 72 bushels per acre). The average income was $205 per acre, the average total specified cost of production was $295 per acre, and the average net income was a loss of $90 per acre. The fertilizer category was by far the largest operating cost item at $45 per acre. Other major cost categories were seed, custom harvest/haul, repairs and maintenance, and herbicides. Operator and overhead labor expense was estimated to be $14 per acre.

Twenty of the 29 producers surveyed rented the selected fields. Thirteen cash rents ranged from $48 to $125 per acre, 6 were share based, and 1 producer did not specify the rental arrangement. Two of the producers indicated that their corn was produced on Class I soils, 19 on Class II soils, 7 on Class III soils, and 1 on Class IV soils. Soil tests were performed on 17 operations. Eleven operations applied lime to some of their fields. Nine operations plan to lime in the future. Eighteen producers had irrigation systems available in the field. The numbers and types of systems were 6 center pivot, 11 roll-out pipe, and 1 gated pipe. Eleven fields were land formed from 1955 to 1991, with costs ranging from $125 to $400 per acre. Twenty-four operators purchased Catastrophic crop insurance and 3 purchased Buy-up crop insurance.

In Table 2, the results for corn production in the Lower Delta Area show that the average size of the total operation was 2,165 acres. About 88% of the 2,137 cropland acres operated were rented. On average, these producers planted 487 acres of corn for grain. The average corn yield was 120 bushels per acre (irrigated yield averaged 130 bushels per acre, and dryland yield averaged 116 bushels per acre). The average income was $245 per acre, the average total specified cost of production was $267 per acre, and the average net income was a loss of $22 per acre. The fertilizer category was by far the largest operating cost item at $40 per acre. Other major cost categories were custom harvest/haul, seed, herbicides, and repairs and maintenance. Operator and overhead labor expense was estimated to be $13 per acre.

Twenty-five of the 31 producers surveyed rented the selected fields. Twenty-two cash rents ranged from $30 to $120 per acre and 3 were share based. Ten of the producers indicated that their corn was produced on Class I soils, 13 on Class II soils, 4 on Class III soils, and 4 on Class IV soils. Soil tests were performed on 10 operations. Eight operations applied lime to some of their fields. Seven operations plan to lime in the future. Eleven producers had irrigation systems available in the field. The numbers and types of systems were 3 center pivot and 7 roll-out pipe, and 1 gated pipe. Twenty-nine operators purchased Catastrophic crop insurance. Five producers land formed their fields from 1963-1997, with cost ranging from $300 to $500 per acre.

In Table 3, the results for corn production in the Brown Loam Area show that the average size of the total operation was 1,721 acres. Eighty-eight percent of the 1,271 cropland acres operated were rented. On average, these producers planted 370 acres of corn for grain. The average corn yield was 87 bushels per acre. The average income was $179 per acre, the average total specified cost of production was $238 per acre, and the average net income was a loss of $60 per acre. The fertilizer category was by far the largest operating cost item at $54 per acre. Seed, custom harvest/haul, repairs and maintenance, and herbicides were also major cost categories. Operator and overhead labor expense was estimated to be $13 per acre.

Twenty-three of the 28 corn producers surveyed rented the selected fields. Twenty cash rents ranged from $15 to $62, and 3 were share based. Three of the producers indicated that their corn was produced on Class I soils, 19 on Class II soils, and 6 on Class III soils. Soil tests were performed on 12 operations. Twelve operations applied lime to some fields. Twenty-four plan to lime in the future. The most frequently used application rate was 1 ton every 3 years. Two producers had irrigation systems available in the field. One operator land formed in 1999 for $750 per acre. Nineteen operators bought Catastrophic crop insurance, 2 purchased Buy-up crop insurance, and 1 bought Buy-up revenue insurance.

In Table 4, the results for corn production in the Coastal Plains and Black Belt Areas show that the average size of the total operation was 1,424 acres. About 63% of the 1,171 cropland acres operated were rented. On average, these producers planted 352 acres of corn for grain. The average corn yield was 69 bushels per acre. The average income was $142 per acre, the average total specified cost of production was $229 per acre, and the average net income was a loss of $87 per acre. The fertilizer category was by far the largest operating cost item at $63 per acre. Other important cost categories were seed, herbicides, repairs and maintenance, and custom harvest/haul. Operator and overhead labor expense was estimated to be $11 per acre.

Table 1. Farm characteristics and cost and return estimates from a sample of 29 corn producers in the Upper Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	1,164	1,986	0	7,500
Rented acres in operation	2,630	2,238	0	10,000
Total acres in operation	3,711	2,399	802	10,000
Owned cropland acres	1,051	1,866	0	7,500
Rented cropland acres	2,601	2,235	0	10,000
Total cropland acres	3,569	2,373	802	10,000
Owned corn acres	242	457	0	1,600
Rented corn acres	660	682	0	2,265
Total corn acres	902	838	103	3,400
Irrigated corn acres	519	634	0	2,040
Field size (acres)	83	58	5	250
Corn yield (bu/acre)	100	31	35	138
Income (@ $2.05/bu)	205	63	72	283
Selected operating costs				
Fertilizers	45	14	21	74
Seed	29	3	21	38
Custom harvest/haul	19	9	6	60
Repairs & maintenance	18	5	5	36
Herbicides	18	7	5	32
Diesel fuel	9	4	2	23
Operator labor	7	2	4	13
Interest on operating capital	7	2	4	11
Overhead labor	7	1	3	11
Custom fert/lime	6	9	3	53
Insecticides	3	5	1	14
Total operating cost	172	29	116	244
Income above operating costs	34	53	-134	120
Machinery ownership cost	57	18	13	88
Operating + ownership cost	229	37	157	313
Land rent	67	18	31	125
Total specified cost	295	47	206	438
Income above specified costs	-90	48	-251	-11

Table 2. Farm characteristics and cost and return estimates from a sample of 31 corn producers in the Lower Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	255	645	0	3,150
Rented acres in operation	1,910	1,328	0	6,300
Total acres in operation	2,165	1,260	600	6,300
Owned cropland acres	249	637	0	3,150
Rented cropland acres	1,888	1,302	0	6,300
Total cropland acres	2,137	1,235	560	6,300
Owned corn acres	67	150	0	700
Rented corn acres	421	374	0	2,100
Total corn acres	487	357	56	2,100
Irrigated corn acres	123	180	0	780
Field size (acres)	80	42	10	200
Corn yield (bu/acre)	120	21	40	166
Income (@ $2.05/bu)	245	42	82	341
Selected operating costs				
Fertilizers	40	15	19	77
Custom harvest/haul	34	20	14	90
Seed	27	2	22	32
Herbicides	19	11	3	48
Repairs & maintenance	14	5	4	23
Operator labor	7	2	3	11
Diesel fuel	6	4	2	18
Overhead labor	6	2	2	10
Interest on operating capital	6	2	3	12
Custom fert/lime	3	6	4	31
Total operating cost	167	34	112	276
Income above operating costs	78	44	-30	170
Machinery ownership cost	41	22	10	78
Operating + ownership cost	208	43	131	350
Land rent	59	22	30	120
Total specified cost	267	52	187	420
Income above specified costs	-22	59	-140	82

Twenty of the 36 producers surveyed rented the selected fields. Nine cash rents ranged from $30 to $50, and 11 fields were share based. Three producers indicated that their corn was produced on Class I soils, 31 on Class II soils, and 2 on Class III soils. Soil tests were performed on 15 operations. Seventeen operations applied lime. Thirty operations plan to lime in the future. The most frequent application rates were 1 ton per acre every 3 years (9) and 1 ton every 4 years (7). Two operations land formed in 1995, but cost information was unavailable. Seventeen operators purchased Catastrophic crop insurance, and 8 purchased Buy-up crop insurance.

Table 3. Farm characteristics and cost and return estimates from a sample of 28 corn producers in the Brown Loam area, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	289	443	0	2,100
Rented acres in operation	1,453	1,396	0	8,319
Total acres in operation	1,721	1,353	280	8,319
Owned cropland acres	164	247	0	1,450
Rented cropland acres	1,116	1,309	0	8,319
Total cropland acres	1,271	1,283	180	8,319
Owned corn acres	46	115	0	500
Rented corn acres	324	367	0	1,572
Total corn acres	370	378	50	1,572
Irrigated corn acres	20	71	0	300
Field size (acres)	46	95	4	700
Corn yield (bu/acre)	87	26	26	128
Income (@ $2.05/bu)	179	54	53	262
Selected operating costs				
Fertilizers	54	15	23	75
Seed	24	2	20	27
Herbicides	17	10	3	49
Repairs & maintenance	16	3	6	24
Custom harvest/haul	15	6	5	47
Custom fert/lime	7	11	2	44
Operator labor	7	2	3	11
Overhead labor	6	2	3	10
Interest on operating capital	6	1	3	8
Diesel fuel	5	2	2	11
Total operating cost	158	22	107	197
Income above operating costs	20	58	-107	126
Machinery ownership cost	40	12	15	75
Operating + ownership cost	198	28	149	260
Land rent	40	16	15	66
Total specified cost	238	36	190	326
Income above specified costs	-60	51	-180	46

Table 4. Farm characteristics and cost and return estimates from a sample of 36 corn producers in the the Coastal Plain and Black Belt, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	639	885	0	5,100
Rented acres in operation	785	1,389	0	12,500
Total acres in operation	1,424	1,964	121	17,600
Owned cropland acres	438	633	0	3,500
Rented cropland acres	733	1,330	0	12,000
Total cropland acres	1,171	1,708	120	15,500
Owned corn acres	134	212	0	1,600
Rented corn acres	218	254	0	1,450
Total corn acres	352	335	60	1,600
Irrigated corn acres	10	41	0	315
Field size (acres)	57	44	5	200
Corn yield (bu/acre)	69	30	20	140
Income (@ $2.05/bu)	142	61	41	287
Selected operating costs				
Fertilizers	63	15	33	91
Seed	27	6	16	48
Herbicides	16	9	4	41
Repairs & maintenance	14	5	9	35
Custom harvest/haul	12	5	3	23
Interest on operating capital	6	2	4	11
Operator labor	6	2	2	12
Custom fert/lime	5	8	2	30
Overhead labor	5	2	2	11
Diesel fuel	4	3	1	18
Total operating cost	162	25	107	216
Income above operating costs	-20	63	-141	103
Machinery ownership cost	33	11	20	74
Operating + ownership cost	195	31	132	285
Land rent	34	9	12	66
Total specified cost	229	34	166	351
Income above specified costs	-87	67	-224	40

In Table 5, the results for cotton production in the Upper Delta Area show that the average size of the total operation was 1,648 acres, with 1,583 acres in cropland. Approximately 71% of the total cropland was rented. On average, 750 acres of cotton were produced on the sampled farms. The average cotton lint yield was 699 pounds per acre (irrigated yield averaged 746 pounds per acre, and dryland yield averaged 639 pounds per acre). The average income for cotton producers was $504 per acre, the average total specified cost of production was $534 per acre, and the average net income was a loss of $30 per acre. Ginning charges were the largest operating cost items. Insecticide and herbicide costs (which do not include application costs) and repairs and maintenance were also large cost categories, followed by fertilizers. Operator and overhead labor expense was estimated to average $27 per acre.

Of the 31 cotton producers surveyed, 22 rented the selected fields. Nineteen cash rents ranged from $40 to $125 per acre, and 3 rents were share based. Three producers indicated their cotton was grown on Class I soils, 16 on Class II soils, 11 on Class III soils, and 1 on Class IV soil. Soil tests were performed on 14 operations. Nine applied lime, and 9 plan to lime in the future. The irrigation systems available for use in the fields were 7 center pivot, 9 roll-out pipe, and 1 furrow. Six land formed fields from 1972-1994, with costs ranging from $180 to $235 per acre. Twenty-eight operators

Table 5. Farm characteristics and cost and return estimates from a sample of 31 cotton producers in the Upper Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	483	1,172	0	5,400
Rented acres in operation	1,166	1,723	0	7,833
Total acres in operation	1,648	1,845	84	7,833
Owned cropland acres	454	1,103	0	5,200
Rented cropland acres	1,129	1,658	0	7,833
Total cropland acres	1,583	1,748	72	7,833
Owned cotton acres	139	303	0	1,677
Rented cotton acres	611	977	0	5,313
Total cotton acres	750	949	64	5,313
Irrigated cotton acres	421	698	0	3,719
Field size (acres)	88	81	7	320
Lint yield (lb/acre)	699	117	250	900
Seed yield (cwt/acre)	10	2	4	14
Lint income (@ $0.634/lb)	443	74	159	571
Seed income (@ $116/ton)	61	10	22	78
Total income	504	84	180	649
Selected operating costs				
Ginning	55	11	20	72
Herbicides	51	22	7	111
Insecticides	50	25	9	124
Repairs & maintenance	35	6	12	50
Fertilizers	26	10	12	52
Custom spray	20	9	7	35
Operator labor	15	3	7	24
Custom harvest/haul	15	8	5	86
Harvest aids	14	9	2	35
Diesel fuel	12	3	5	21
Overhead labor	12	2	5	19
Seed	11	2	7	17
Interest on operating capital	10	2	6	16
Technology fee	6	13	32	32
Total operating cost	351	58	205	510
Income above operating costs	153	89	-117	292
Machinery ownership cost	101	20	33	129
Operating + ownership cost	452	69	273	637
Land rent	82	17	32	131
Total specified cost	534	75	334	737
Income above specified costs	-30	89	-321	145

Table 6. Farm characteristics and cost and return estimates from a sample of 34 cotton producers in the Lower Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	417	910	0	4,170
Rented acres in operation	1,413	1,630	0	7,500
Total acres in operation	1,821	1,637	40	7,500
Owned cropland acres	412	910	0	4,170
Rented cropland acres	1,409	1,630	0	7,500
Total cropland acres	1,812	1,642	40	7,500
Owned cotton acres	221	620	0	3,300
Rented cotton acres	659	828	0	3,249
Total cotton acres	880	924	40	3,600
Irrigated cotton acres	273	477	0	1,650
Field size (acres)	69	61	8	332
Lint yield (lb/acre)	917	167	450	1,200
Seed yield (tons/acre)	14	3	7	18
Lint income (@ $0.634/lb)	581	106	285	761
Seed income (@ $116/ton)	80	15	39	104
Total income	661	121	324	865
Selected operating costs				
Ginning	75	14	36	96
Insecticides	46	27	6	114
Technology fee	42	21	22	57
Herbicides	41	14	11	66
Repairs & maintenance	32	7	7	45
Fertilizers	27	8	16	83
Custom spray	23	8	3	41
Custom harvest/haul	21	11	9	95
Harvest aids	16	6	1	40
Operator labor	14	2	7	22
Overhead labor	11	2	5	18
Seed	11	2	8	15
Diesel fuel	11	3	3	20
Interest on operating capital	10	2	7	14
Total operating cost	391	50	264	500
Income above operating costs	270	113	-22	463
Machinery ownership cost	88	28	18	130
Operating + ownership cost	480	66	331	567
Land rent	86	12	40	113
Total specified cost	565	68	391	667
Income above specified costs	96	128	-209	310

Table 7. Farm characteristics and cost and return estimates from a sample of 31 cotton producers in the Brown Loam area, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	381	597	0	2,200
Rented acres in operation	1,225	2,127	0	11,000
Total acres in operation	1,605	2,223	20	11,000
Owned cropland acres	262	384	0	1,400
Rented cropland acres	1,059	1,928	0	10,965
Total cropland acres	1,321	1,915	16	10,965
Owned cotton acres	136	219	0	950
Rented cotton acres	613	1,331	0	7,979
Total cotton acres	748	1,351	16	7,979
Irrigated cotton acres	191	824	0	5,000
Field size (acres)	57	52	2	222
Lint yield (lb/acre)	670	124	370	1,000
Seed yield (tons/acre)	10	2	6	15
Lint income (@ $0.634/lb)	425	78	235	634
Seed income (@ $116/ton)	58	11	32	87
Total income	483	89	267	721
Selected operating costs				
Ginning	55	10	30	80
Fertilizers	42	14	14	79
Herbicides	37	13	10	88
Repairs & maintenance	37	10	19	51
Insecticides	34	21	2	107
Technology fee	28	25	20	67
Harvest aids	17	10	4	54
Operator labor	15	4	8	31
Custom harvest/haul	14	3	7	20
Overhead labor	12	3	6	25
Custom spray	12	10	2	27
Seed	12	7	9	48
Diesel fuel	11	5	3	19
Interest on operating capital	10	2	6	13
Total operating cost	351	38	260	423
Income above operating costs	132	85	-120	366
Machinery ownership cost	93	33	41	139
Operating + ownership cost	444	57	317	541
Land rent	87	30	35	151
Total specified cost	531	76	388	634
Income above specified costs	-48	89	-284	215

Table 8. Farm characteristics and cost and return estimates from a sample of 22 cotton producers in the Coastal Plains, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	380	400	0	1,800
Rented acres in operation	807	541	70	2,070
Total acres in operation	1,179	720	257	2,900
Owned cropland acres	221	247	0	1,100
Rented cropland acres	714	572	70	2,070
Total cropland acres	927	648	168	2,400
Owned cotton acres	131	170	0	900
Rented cotton acres	414	330	10	1,700
Total cotton acres	545	430	80	2,100
Irrigated cotton acres	20	74	0	400
Field size (acres)	30	20	6	75
Lint yield (lb/acre)	628	98	400	815
Seed yield (tons/acre)	9	1	6	12
Lint income (@ $0.634/lb)	398	62	254	517
Seed income (@ $116/ton)	55	9	35	71
Total income	453	71	288	588
Selected operating costs				
Ginning	50	8	32	70
Technology fee	48	13	20	57
Fertilizers	44	17	12	66
Herbicides	42	21	13	87
Repairs & maintenance	31	3	26	40
Insecticides	18	14	2	52
Harvest aids	15	8	6	35
Operator labor	14	2	12	21
Custom harvest/haul	13	2	8	17
Overhead labor	12	2	9	17
Interest on operating capital	11	2	6	14
Seed	10	2	9	14
Diesel fuel	8	1	6	11
Total operating cost	336	49	263	415
Income above operating costs	116	64	-42	224
Machinery ownership cost	73	11	61	114
Operating + ownership cost	410	55	329	530
Land rent	61	23	30	129
Total specified cost	470	69	360	659
Income above specified costs	-18	66	-141	127

purchased Catastrophic crop insurance, and 3 purchased Buy-up crop insurance.

In Table 6, the results for cotton production in the Lower Delta Area show that the average size of the operation was 1,821 acres, with 1,812 acres in cropland. Approximately 78% of the total cropland was rented. On average, 880 acres of cotton were produced on the sampled farms. The average cotton lint yield was 917 pounds per acre (irrigated yield averaged 904 pounds per acre, and dryland yield averaged 923 pounds per acre). The average income was $661 per acre, the average total specified cost of production was $565 per acre, and the average net income was $96 per acre. Ginning charges were the largest operating cost items. Insecticide costs (which do not include application costs) and technology fees were also large cost categories, followed by herbicide costs (which do not include application costs) and repairs and maintenance. Operator and overhead labor expense was estimated to average $25 per acre.

Of the 34 cotton producers surveyed, 22 rented the selected fields. Twenty cash rents ranged from $40 to $100 per acre, and 2 rents were share based. Sixteen producers indicated that their cotton was grown on Class I soils, 14 on Class II soils, and 4 on Class III soils. Soil tests were performed on 16 operations. Thirteen applied lime and 4 plan to lime in the future. Six producers used center pivot systems. Two fields were land formed from 1975-1986, with 1 cost estimate of $250 per acre. Twenty-nine operators purchased Catastrophic crop insurance.

In Table 7, the results for cotton production in the Brown Loam Area show that the average size of the operation was 1,605 acres, with 1,321 acres in cropland. Approximately 80% of the total cropland was rented. On average, 748 acres of cotton were produced on the sampled farms. The average cotton yield was 670 pounds of lint per acre. The average income was $483 per acre, the average total specified cost of production was $531 per acre, and the average net income was a loss of $48 per acre. Ginning charges were the largest operating cost items. Fertilizers and herbicides were also large cost categories followed by insecticides, repairs and maintenance, and technology fees. Operator and overhead labor expense was estimated to average $27 per acre.

Of the 31 producers surveyed, 19 rented the selected fields. Thirteen cash rents ranged from $35 to $75 per acre, and 6 rents were share based. Four producers indicated that the cotton was grown on Class I soils, 22 on Class II soils, and 5 on Class III soils. Soil tests were performed on 20 operations. Sixteen applied lime, and 25 plan to lime in the future. The most frequent application rate was 1 ton per acre every 3 years. Three producers had center-pivot irrigation systems available for use in the selected fields. Two fields were land formed from 1992-1997, with 1 cost being $200 per acre. Ten operators purchased Catastrophic crop insurance, and 5 bought Buy-up crop insurance.

In Table 8, the results for cotton production in the Coastal Plains Area show that the average size of the operation was 1,179 acres, with 927 acres in cropland. Approximately 77% of the total cropland was rented. On average, 545 acres of cotton were produced on the sampled farms. The average cotton yield was 628 pounds of lint per acre. The average income was $453 per acre, the average total specified cost of production was $470 per acre, and the average net income was a loss of $18 per acre. Ginning charges were the largest operating cost items. Technology fees and fertilizer costs were also large cost categories, followed by herbicides and repairs and maintenance. Operator and overhead labor expense was estimated to average $26 per acre.

Of the 22 producers surveyed, 15 rented the selected fields. Nine cash rents ranged from $30 to $60 per acre, and 6 rents were share based. Three producers indicated that their cotton was grown on Class I soils and 19 produced on Class II soils. Soil tests were performed on 15 operations. Seventeen applied lime and 20 plan to lime in the future. Lime application rates ranged from 1 ton every 3 years to 2 tons every 5 years. Only 1 field was irrigated. No fields were land formed. Thirteen operators bought Catastrophic crop insurance, and 8 purchased Buy-up crop insurance.

Rice Costs and Returns

In Table 9, the results for rice in the Upper Delta Area show that the average size of the total operation was 2,435 acres, with 2,264 acres in cropland. Approximately 66% of the total cropland was rented. On average, 545 acres of rice were produced on the sampled farms. The average rice yield was 60 hundredweight per acre. The average income was $527 per acre, the average total specified cost of production was $468 per acre, and the average net income was $59 per acre. Drying charges were the largest operating cost items. Herbicide and fertilizer were also large cost categories, followed by repairs and maintenance, seed, and diesel fuel. Operator and overhead labor expense was estimated to average $35 per acre.

Of the 37 producers surveyed, 18 rented the selected fields. Fourteen cash rents ranged from $50 to $90 per acre, and 4 rents were share based. Eighteen producers indicated that the crop was grown on Class II soils, 18 on Class III soils, and 1 on Class IV soils. Soil tests were performed on 10 operations. Thirteen producers had contour levee systems, 21 had straight levee systems, and 3 had parallel levees. The most prominent crop rotation was 1 year of rice followed by 2 years of soybeans. Twenty-eight operators bought Catastrophic crop insurance, 6 had Buy-up crop insurance, and 1 had Buy-up revenue insurance. Twenty-seven producers had land formed fields from 1969-1997, with costs ranging from $100 to $400 per acre.

In Table10, the results for rice in the Lower Delta Area show that the average size of the total operation was 2,594 acres, with 2,568 acres in cropland. Approximately 77% of the total cropland was rented. On average, 543 acres of rice were produced on the sampled farms. The average rice yield was 59 hundredweight per acre. The average income was $518 per acre, the average total specified cost of production was $466 per acre, and the average net income was $53 per acre. The drying charge was the largest operating cost item. Herbicide and fertilizer costs were also large cost categories, followed by repairs and maintenance, seed, and diesel fuel. Operator and overhead labor expense was estimated to average $36 per acre.

Of the 26 producers surveyed, 16 rented the selected fields. Fourteen cash rents ranged from $25 to $100 per acre, and 2 rents were share based. Three producers indicated that the crop was grown on Class II soils, 13 on Class III soils, and 10 on Class IV soils. Soil tests were performed on 3 operations. Twelve producers had contour levee systems, 13 had straight levee systems, and 1 had no levees. The most prominent crop rotation was 1 year of rice followed by 2 years of soybeans used by 11 producers. Twenty-two operators purchased Catastrophic crop insurance, and 3 purchased Buy-up crop insurance. Seventeen producers had land formed fields from 1968-1997, with costs ranging from $80 to $400 per acre.

Table 9. Farm characteristics and cost and return estimates from a sample of 37 rice producers in the Upper Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	939	1,464	0	8,000
Rented acres in operation	1,531	1,956	0	8,000
Total acres in operation	2,435	2,103	100	8,000
Owned cropland acres	802	1,255	0	7,500
Rented cropland acres	1,496	1,956	0	8,000
Total cropland acres	2,264	2,009	100	8,000
Owned rice acres	219	302	0	1,193
Rented rice acres	326	455	0	2,000
Total rice acres	545	497	80	2,000
Field size (acres)	67	38	20	225
Yield (cwt/acre)	60	6	38	70
Income (@ $8.75/cwt)	527	54	335	610
Selected operating costs				
Drying	54	6	34	62
Herbicides	53	22	5	99
Fertilizers	36	7	14	50
Repairs & maintenance	31	3	19	37
Seed	23	3	17	28
Diesel fuel	21	3	9	25
Operator labor	18	5	13	26
Custom fert/lime	17	4	8	24
Overhead labor	17	4	12	23
Custom harvest/haul	13	2	9	40
Custom spray	9	5	3	19
Interest on operating capital	8	1	6	11
Total operating cost	314	31	256	361
Income above operating costs	213	60	18	294
Machinery ownership cost	75	7	51	92
Operating + ownership cost	389	35	325	452
Land rent	80	17	50	134
Total specified cost	468	39	395	550
Income above specified costs	59	66	-138	188

Table 10. Farm characteristics and cost and return estimates from a sample of 26 rice producers in the Lower Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	676	1,257	0	4,500
Rented acres in operation	1,985	2,510	0	5,000
Total acres in operation	2,594	3,137	800	7,500
Owned cropland acres	662	1,210	0	4,100
Rented cropland acres	1,972	2,492	0	5,000
Total cropland acres	2,568	3,104	800	7,500
Owned rice acres	216	562	0	2,320
Rented rice acres	327	446	0	1,000
Total rice acres	543	720	50	2,320
Field size (acres)	91	108	10	250
Yield (cwt/acre)	59	60	36	72
Income (@ $8.75/cwt)	518	524	315	634
Selected operating costs				
Drying	53	53	32	64
Herbicides	51	55	9	96
Fertilizers	36	37	16	55
Repairs & maintenance	31	32	14	38
Seed	24	24	18	30
Diesel fuel	22	22	17	27
Operator labor	19	19	9	26
Custom fert/lime	18	19	8	36
Overhead labor	17	18	8	24
Custom harvest/haul	17	21	8	60
Custom spray	10	12	3	23
Interest on operating capital	8	9	6	12
Total operating cost	321	323	218	415
Income above operating costs	197	206	65	292
Machinery ownership cost	74	75	36	94
Operating + ownership cost	396	398	285	487
Land rent	70	72	25	100
Total specified cost	466	468	355	557
Income above specified costs	53	77	-81	146

In Table 11, the results for soybean production in the Upper Delta Area show that the average size of the total operation was 1,507 acres, with 1,456 in cropland. About 91% of the total cropland was rented. On average, there were 961 acres of soybeans planted on the sampled farms. The average soybean yield was 31 bushels per acre (irrigated yield averaged 39 bushels per acre and dryland yield averaged 24 bushels per acre). The average income was $186 per acre, the average total specified cost of production was $180 per acre, and the average net income was $6 per acre. The herbicide category was the largest operating cost item, followed by seed. Operator and overhead labor expense was estimated to be $10 per acre.

Of the 25 producers surveyed, 19 rented the selected fields. Eighteen cash rents ranged from $24 to $100, and 1 rent was share based. One producer indicated the crop was produced on Class I soil, 8 on Class II soils, 15 on Class III soils, and 1 on Class IV soils. Soil tests were performed on 3 operations. One applied lime, and 3 plan to lime in the future. All 25 fields were single cropped. Six producers had irrigation systems available in the field. The systems were 1 roll-out pipe and 5 flood. Six fields were land formed from 1984-1996 with cost ranging from $185 to $350 per acre. Eighteen operators purchased Catastrophic crop insurance, and 5 purchased Buy-up crop insurance.

In Table 12, the results for soybean production in the Lower Delta Area show that the average size of the total operation was 1,473 acres, with 1,450 acres in cropland. About 75% of the total cropland was rented. On average, there were 839 acres of soybeans planted on the sampled farms. The average soybean yield was 29 bushels per acre (irrigated yield averaged 36 bushels per acre, and dryland yield averaged 27 bushels per acre). The average income was $173 per acre, the average total specified cost of production was $159 per acre, and the average net income was $15 per acre. The herbicide category was the largest operating cost item, followed by seed. Operator and overhead labor expense was estimated to be $7 per acre.

Table 11. Farm characteristics and cost and return estimates from a sample of 25 soybean producers in the Upper Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	186	309	0	1,200
Rented acres in operation	1,349	1,960	0	7,500
Total acres in operation	1,507	1,926	22	7,500
Owned cropland acres	147	295	0	1,200
Rented cropland acres	1,321	1,923	0	7,500
Total cropland acres	1,456	1,895	22	7,500
Owned soybean acres	118	283	0	1,200
Rented soybean acres	843	1,094	0	4,500
Total soybean acres	961	1,085	22	4,500
Irrigated soybean acres	446	916	80	3,500
Field size (acres)	60	50	6	284
Soybean yield (bu/acre)	31	10	5	50
Income (@ $6.05/bu)	186	59	30	303
Selected operating costs				
Herbicides	30	15	7	58
Seed	23	6	12	40
Repairs & maintenance	14	2	3	19
Operator labor	5	1	1	16
Custom harvest/haul	5	3	1	24
Overhead labor	5	1	1	14
Diesel fuel	5	2	1	11
Interest on operating capital	3	1	2	5
Total operating cost	95	18	68	137
Income above operating costs	91	62	-76	207
Machinery ownership cost	41	13	6	67
Operating + ownership cost	136	23	95	173
Land rent	44	8	24	65
Total specified cost	180	24	139	231
Income above specified costs	6	57	-153	100

Table 12. Farm characteristics and cost and return estimates from a sample of 40 soybean producers in the Lower Delta, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	381	844	0	3,150
Rented acres in operation	1,093	2,331	0	10,500
Total acres in operation	1,473	2,591	20	10,950
Owned cropland acres	358	778	0	3,150
Rented cropland acres	1,093	2,331	0	10,500
Total cropland acres	1,450	2,569	20	10,950
Owned soybean acres	234	525	0	2,400
Rented soybean acres	605	1,419	0	7,054
Total soybean acres	839	1,561	18	7,054
Irrigated soybean acres	120	385	30	2,000
Field size (acres)	85	126	2	400
Soybean yield (bu/acre)	29	29	10	60
Income (@ $6.05/bu)	173	176	61	363
Selected operating costs				
Herbicides	31	32	4	76
Seed	25	25	13	40
Custom harvest/haul	13	17	2	55
Repairs & maintenance	9	10	2	16
Custom spray	4	6	3	20
Operator labor	4	4	1	8
Interest on operating capital	3	3	2	6
Overhead labor	3	3	1	7
Diesel fuel	3	3	1	9
Total operating cost	96	97	50	182
Income above operating costs	77	89	-50	240
Machinery ownership cost	24	27	0	61
Operating + ownership cost	119	120	58	182
Land rent	39	40	12	75
Total specified cost	159	159	97	239
Income above specified costs	15	47	-90	192

Table 13. Farm characteristics and cost and return estimates from a sample of 27 soybean producers in the Brown Loam area, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	394	688	0	4,200
Rented acres in operation	947	1,197	0	4,500
Total acres in operation	1,292	1,329	99	5,700
Owned cropland acres	183	279	0	1,200
Rented cropland acres	727	1,079	0	4,500
Total cropland acres	893	1,035	16	4,125
Owned soybean acres	102	137	0	715
Rented soybean acres	358	505	0	2,400
Total soybean acres	460	509	16	2,452
Irrigated soybean acres	35	128	500	500
Field size (acres)	38	30	4	110
Soybean yield (bu/acre)	24	7	10	40
Income (@ $6.05/bu)	148	42	61	242
Selected operating costs				
Herbicides	30	15	9	56
Seed	21	5	13	35
Repairs & maintenance	13	2	5	17
Custom harvest/haul	6	7	2	35
Operator labor	5	1	3	8
Fertilizers	5	9	6	26
Overhead labor	4	1	3	7
Interest on operating capital	3	1	2	5
Diesel fuel	3	1	2	5
Total operating cost	94	16	68	131
Income above operating costs	54	47	-56	142
Machinery ownership cost	29	5	14	40
Operating + ownership cost	123	16	93	162
Land rent	34	6	24	50
Total specified cost	157	16	127	192
Income above specified costs	-9	44	-115	78

Table 14. Farm characteristics and cost and return estimates from a sample of 41 soybean producers in the Coastal Plains and Black Belt, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	380	392	0	2,000
Rented acres in operation	346	460	0	1,700
Total acres in operation	716	559	107	2,217
Owned cropland acres	153	256	0	1,400
Rented cropland acres	312	454	0	1,675
Total cropland acres	460	522	40	1,930
Owned soybean acres	82	106	0	500
Rented soybean acres	212	292	0	1,105
Total soybean acres	293	313	30	1,280
Irrigated soybean acres	0	0	0	0
Field size (acres)	22	25	3	120
Soybean yield (bu/acre)	24	5	13	35
Income (@ $6.05/bu)	147	30	79	212
Selected operating costs				
Herbicides	28	12	7	67
Seed	25	8	12	55
Fertilizers	14	15	16	41
Repairs & maintenance	13	2	10	20
Operator labor	5	2	3	11
Overhead labor	5	1	2	10
Custom harvest/haul	4	1	2	8
Interest on operating capital	4	1	2	8
Diesel fuel	3	1	1	7
Total operating cost	105	27	58	189
Income above operating costs	43	41	-111	123
Machinery ownership cost	29	5	20	48
Operating + ownership cost	134	29	83	238
Land rent	35	5	22	45
Total specified cost	168	29	117	272
Income above specified costs	-21	43	-194	52

Of the 40 producers surveyed, 25 rented the selected fields. Twenty-four cash rents ranged from $20 to $75, and 1 rent was share based. Three producers indicated the crop was produced on Class I soils, 14 on Class II soils, 12 on Class III soils, and 11 on Class IV soils. Soil tests were performed on 3 operations. One applied lime, and 3 plan to lime in the future. Only 2 producers had a doublecrop system. Five irrigation systems available for use in the field were 1 center pivot and 4 flood. Thirty-five operators purchased Catastrophic crop insurance, and 2 had Buy-up crop insurance. Seven fields were land formed from 1965-1995 for $65 to $300 per acre.

In Table 13, the results for soybean production in the Brown Loam Area show that the average size of the total operation was 1,292 acres, with 893 acres in cropland. About 81% of the total cropland was rented. On average, there were 460 acres of soybeans planted on the sampled farms. The average soybean yield was 24 bushels per acre. The average income was $148 per acre, the average total specified cost of production was $157 per acre, and the average net income was a loss of $9 per acre. The herbicide category was the largest operating cost item, followed by seed. Operator and overhead labor expense was estimated to be $9 per acre.

Of the 27 producers surveyed, 15 rented the selected fields. Nine cash rents ranged from $25 to $50, and 6 rents were share based. Two producers indicated that the crop was grown on Class I soils, 16 on Class II soils, and 9 on Class III soils. Soil tests were performed on 4 operations. Eleven applied lime, and 19 plan to lime in the future. Three fields were doublecropped. No fields were land formed. Fourteen operators purchased Catastrophic crop insurance, and 2 had Buy-up crop insurance.

In Table 14, the results for soybean production in the Coastal Plains and Black Belt Areas show that the average size of the total operation was 716 acres, with 460 acres in cropland. About 68% of the total cropland was rented. On average, there were 293 acres of soybeans planted on the sampled farms. The average soybean yield was 24 bushels per acre. The average income was $147 per acre, the average total specified cost of production was $168 per acre, and the average net income was a loss of $21 per acre. The

herbicide category was the largest operating cost item, followed by seed. Operator and overhead labor expense was estimated to be $10 per acre.

Of the 41 producers surveyed, 21 rented the selected fields. Seven cash rents ranged from $22 to $40, and 14 rents were share based. Two producers indicated that the crop was grown on Class I soils, 35 on Class II soils, and 4 on Class III soils. Soil tests were performed on 10 operations. Seventeen applied lime and 30 plan to lime in the future. The most common application rate was 1 to 1.5 tons per acre every 3 years. Only 5 fields were doublecropped. Two fields were land formed at $100 per acre. Twelve operators purchased Catastrophic crop insurance, and 8 had Buy-up crop insurance.

Wheat Costs and Returns

In Table 15, the results for wheat production in Mississippi show that the average size of the total operation was 2,345 acres, with 2,176 acres in cropland. About 84% of the total cropland was rented. On average, there were 392 acres of wheat planted on the sampled farms. The average wheat yield was 49 bushels per acre. The average income was $110 per acre, the average total specified cost of production was $160 per acre, and the average net income was a loss of $50 per acre. The fertilizer category was the largest operating cost item, followed by seed. Operator and overhead labor expense was estimated to be $7 per acre.

Of the 43 producers surveyed, 30 rented the selected fields. Twenty-five cash rents ranged from $25 to $60, and 5 rents were share based. Three producers indicated that the crop was grown on Class I soils, 26 on Class II soils, 11 on Class III soils, and 3 on Class IV soils. Soil tests were performed on 8 operations. Three operators applied lime, and 9 plan to lime in the future. The most common planting system was doublecropping used by 33 producers. The most common rotation was soybeans-wheat-soybeans. Ten fields had irrigation facilities available. The most predominant was the center pivot. Thirty-one operators bought Catastrophic crop insurance, and 8 purchased Buy-up crop insurance. Seven fields were land formed from 1961 to 1998 at costs ranging from $50 to $700 per acre.

Table 15. Farm characteristics and cost and return estimates from a sample of 43 wheat producers in Mississippi, 1998.

Item	Avg.	Std. Dev.	Min.	Max.
Owned acres in operation	443	640	0	2,500
Rented acres in operation	1,927	2,019	0	10,000
Total acres in operation	2,345	1,967	260	10,000
Owned cropland acres	384	569	0	2,200
Rented cropland acres	1,818	1,897	0	9,010
Total cropland acres	2,176	1,824	125	9,010
Owned wheat acres	127	303	0	1,350
Rented wheat acres	265	348	0	1,860
Total wheat acres	392	429	50	1,860
Field size (acres)	95	81	8	315
Wheat yield (bu/acre)	49	12	6	75
Income (@ $2.25/bu)	110	26	14	169
Selected operating costs				
Fertilizers	25	8	13	60
Seed	22	5	11	34
Custom harvest/haul	14	10	1	35
Repairs & maintenance	9	4	1	15
Custom fert/lime	8	4	3	20
Herbicides	6	8	2	25
Interest on operating capital	4	1	2	7
Operator labor	4	2	1	9
Overhead labor	3	1	1	7
Custom spray	3	3	3	11
Diesel fuel	3	1	1	5
Total operating cost	102	20	56	149
Income above operating costs	8	27	-68	85
Machinery ownership cost	21	10	0	37
Operating + ownership cost	122	18	73	182
Land rent	37	8	9	60
Total specified cost	160	18	103	212
Income above specified costs	-50	25	-120	20

CONCLUSIONS

Income from crop sales, selected production costs, and net income were estimated for a sample of farms that produced a major crop in 1998. In this study, net income does not include a deduction for general farm overhead or management, and government payments are not added as a source of income. Based on the average values from the producer surveys, the least expensive crops to produce on a per-acre basis in 1998 were soybeans and wheat, followed by corn, and then rice and cotton. Lower Delta cotton, Upper and Lower Delta rice, and Upper and Lower Delta soybeans were the only crops with positive average net incomes.

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Appendix Table 1. Number of surveys taken by county and crop, Upper Delta, 1998.

County – code number	Corn	Cotton	Soy-beans	Rice	Total
Bolivar – 011	3	3	13	17	36
Carroll – 015	2	0	0	0	2
Coahoma – 027	0	1	0	3	4
Grenada – 043	1	0	1	0	2
Leflore – 083	8	11	3	2	24
Panola – 107	1	0	0	0	1
Quitman – 119	1	2	0	1	4
Sunflower – 133	8	11	5	3	27
Tallahatchie – 135	1	0	1	7	9
Tunica – 143	4	3	2	4	13
Total	29	31	25	37	122

Appendix Table 2. Number of surveys taken by county and crop, Lower Delta, 1998.

County – code number	Corn	Cotton	Soy-beans	Rice	Total
Holmes – 051	2	4	2	0	8
Humphreys – 053	6	9	10	2	27
Issaquena – 055	6	5	7	2	20
Sharkey – 125	8	3	10	9	30
Warren – 149	0	0	2	0	2
Washington – 151	6	9	7	12	34
Yazoo – 163	3	4	2	1	10
Total	31	34	40	26	131

Appendix Table 3. Number of surveys taken by county and crop, Brown Loam, 1998.

County – code number	Corn	Cotton	Soy-beans	Total
Adams – 001	0	1	0	1
Attala – 007	0	4	0	4
Benton – 009	4	0	2	6
Calhoun – 013	0	0	1	1
Carroll – 015	2	0	0	2
DeSoto – 033	1	0	1	2
Hinds – 049	4	1	1	6
Holmes – 051	2	2	2	6
Madison – 089	2	4	0	6
Marshall – 093	3	1	5	9
Panola – 107	1	4	1	6
Rankin – 121	0	3	1	4
Scott – 123	0	0	1	1
Tallahatchie – 135	3	5	4	12
Warren – 149	1	1	2	4
Yazoo – 163	5	5	6	16
Total	28	31	27	86

Appendix Table 4. Number of surveys taken by county and crop, Coastal Plains and Black Belt, 1998.

County – code number	Corn	Cotton	Soy-beans	Total
Alcorn – 003	1	2	1	4
Calhoun – 013	1	5	2	8
Chickasaw – 017	3	4	0	7
Choctaw – 019	0	1	0	1
Clay – 025	0	0	2	2
Itawamba – 057	2	0	2	4
Lawrence – 077	1	0	0	1
Lee – 081	2	0	4	6
Lowndes – 087	2	1	1	4
Monroe – 095	6	4	4	14
Montgomery – 097	0	1	0	1
Newton – 101	1	0	0	1
Noxubee – 103	13	0	6	19
Pontotoc – 115	0	0	8	8
Prentiss – 117	0	2	0	2
Tippah – 139	4	0	2	6
Tishomingo – 141	0	0	2	2
Union – 145	0	0	5	5
Webster – 155	0	1	1	2
Winston – 159	0	1	0	1
Yalobusha – 161	0	1	1	2
Total	36	22	41	99

Appendix Table 5. Number of surveys taken by county and crop, Mississippi, 1998.

County – Code Number	Wheat
Benton – 009	1
Bolivar – 011	10
Coahoma – 027	3
DeSoto – 033	2
Holmes – 051	1
Humphreys – 053	4
Issaquena – 055	1
Lowndes – 087	1
Monroe – 095	1
Panola – 107	2
Prentiss – 117	1
Quitman – 119	1
Sharkey – 125	4
Sunflower – 133	2
Tallahatchie – 135	4
Tunica – 143	1
Washington – 151	3
Yazoo – 163	1
Total	43

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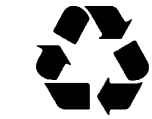

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