

3-1-1947

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### Recommended Citation

Edens, W. J., "Farm management and production costs on 40 farms in northeast Mississippi" (1947).  
*MAFES Research Bulletins*. 412.  
<https://scholarsjunction.msstate.edu/mafes-bulletins/412>

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# Farm Management And Production Costs

ON 40 FARMS IN  
NORTHEAST MISSISSIPPI

By

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# Farm Management and Production Costs

## ON 40 FARMS IN NORTHEAST MISSISSIPPI

By W. J. EDENS<sup>1</sup>

This bulletin reports a study, by the cost account method, of 40 dairy and cotton farms in Northeast Mississippi for the calendar year 1944. The purpose of the study was to determine farm costs and farm management practices in their relation to production problems and incomes, especially on farms producing milk for sale, and with possible recommendations for adjustments. Attention in particular is given to the costs of producing milk and cotton in their relationship to types of farm organization, and profits derived from these major enterprises as well as from minor enterprises and the farm business as a whole.

Most of the farms in Northeast Mississippi produce cotton and a large number keep milk cows. Cotton has been the principal income crop since the area was first settled. Since the turn of the century, it has been demonstrated that a single row-crop enterprise as the main source of income involves considerable risk and does not give a return to the farm business as a whole comparable to that which is realized when income enterprises are more diversified. Consequently, farmers and various agricultural agencies have been endeavoring to find the best means and methods to be used in providing the most profitable combination of enterprises for farms in each of the naturally defined areas of the State.

Emphasis has been placed on more livestock production as well as improved practices in growing crops. For the past three decades, much attention has been given to dairying as a supplement to cotton production. Agricultural and various business and civic agencies have encouraged the establishment of milk processing plants such as cheese factories, creameries, and condenseries in many communities of the State with most of

the larger plants located in Northeast Mississippi. Fifty-seven of these plants have been established since 1912. At present, 31 are in operation with most of the fatalities having occurred among creameries. Nineteen of the 31 plants now in operation are located in the 11 counties constituting the Northeast Mississippi Milkshed Area.<sup>2</sup>

With the coming of these plants, the dairy cow population in the respective communities, or patronage areas, increased considerably. Many thought that this step in farm enterprise diversification would solve the one-crop system of farming. It has helped; but other problems have arisen such as low production per cow, unprofitable methods of feeding, high-cost transportation, low production during winter months making it difficult for milk plants to operate efficiently during that period, and dairy cattle diseases, and parasites. While some farmers appeared to be profiting by adding dairying to their business, others appeared to be deriving little benefits from milking cows along with the production of cotton.

### Method of Selecting Farms

Farms selected for this study were suggested by county agricultural agents, milk plant managers and their field men, county representatives of the Agricultural Adjustment Agency, and local representatives of the Soil Conservation Service. These agricultural leaders were requested by personal interview to suggest farmers who, they thought, were progressive in their farm operations, would be interested in making a study of their farm busi-

<sup>1</sup>Formerly Professor of Agricultural Economics, Mississippi State College; now President of Arkansas State College.

<sup>2</sup>Development of the Dairy Industry in Mississippi, by D. W. Parvin. Mississippi Agricultural Experiment Station Bulletin 422, July, 1945.

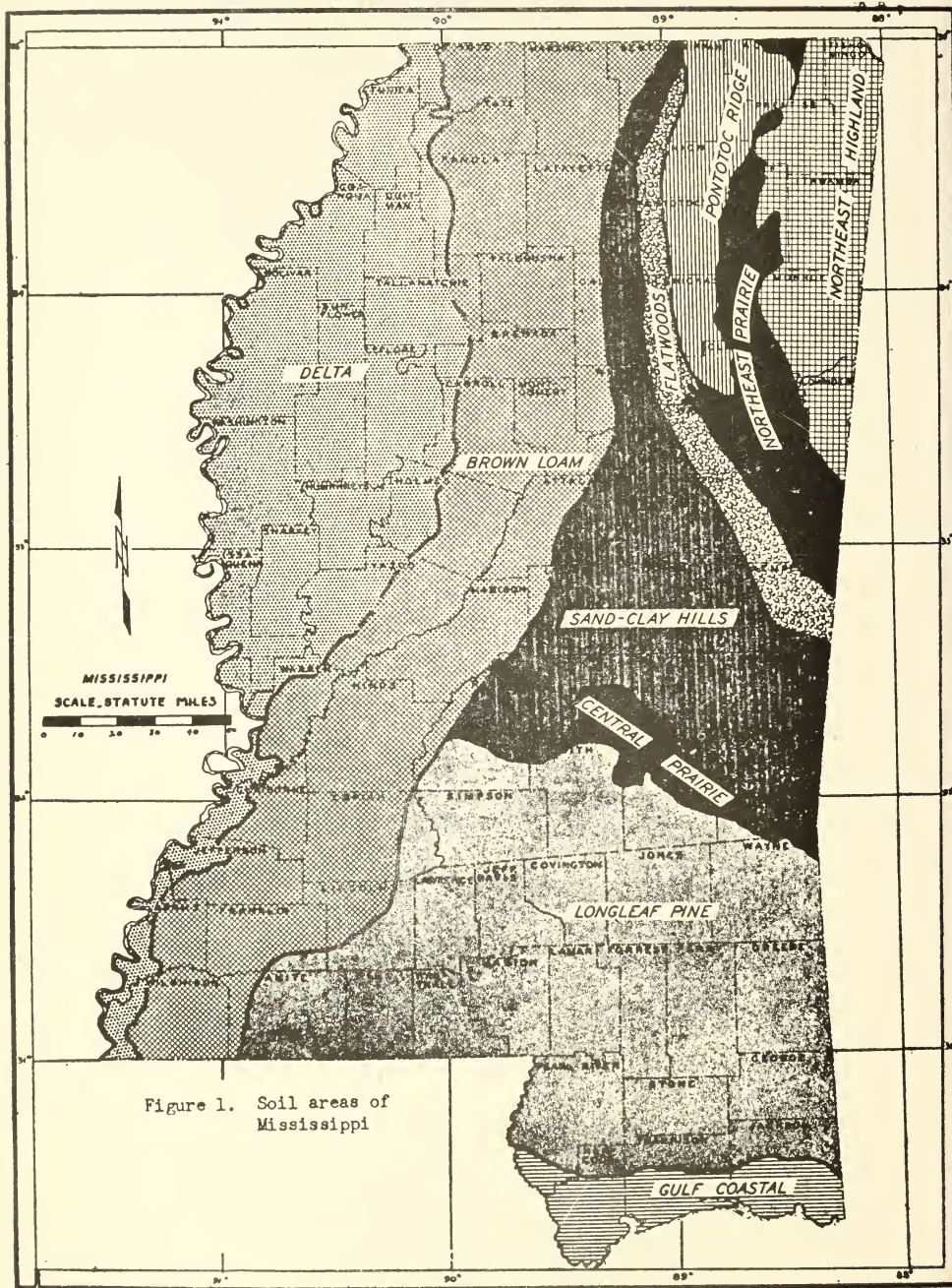


Figure 1. Soil areas of Mississippi

ness, and would be willing to keep the necessary records.

The enterprise organization of each farm was studied by means of the 1944 farm plan sheets made available by the several county AAA officers. Farms were then divided into three groups determined by the emphasis placed on the production of milk and cotton, and farm types were so designated. Farms with a large number of cows compared with the number of acres in cotton comprised one group, or **dairy-cotton** farms. A few farms in this group did not grow cotton after having planned to do so. Where the number of acres of cotton was large in proportion to the number of cows, the farm type was designated **cotton-dairy**. The farms having about the same number of cows as acres of cotton constituted the third type, or **dairy & cotton**. Of the 40 farms keeping records, 16 were dairy-cotton, 12 cotton-dairy, and 12 dairy & cotton. This manner of grouping was selected in order that comparisons could be made relative to cost factors and income for the various farm enterprises under different organization conditions.

Operators of the farms thus selected were interviewed on their farms where consent was obtained to keep the necessary records. The supervision of the keeping of the records was done by a member of the Experiment Station staff, and each farm was visited once every 4 weeks.

## Description of Farms Studied

### Land Utilization

The average amount of land per farm for the 40 farms was 170 acres (Table 1). Cropland accounted for 75 acres per farm, or 44 percent of total land. Open, tillable pasture land amounted to 43 acres per farm, representing 25 percent of all land; and open non-tillable pasture land amounted to 21 acres, or 12 percent. Thus, 81 percent of all land was open land. Woods pastured accounted for 8 percent

of the land per farm; woods not pastured, 5 percent; and the other land used for miscellaneous purposes, 5 percent. It will be noted that pasture land of all kinds amounted to 88 acres, or slightly more than one-half of the total average acreage per farm.

On farms where cotton was the major enterprise, 55 percent of the land was cropland. Where dairy cows were the major enterprise, 30 percent of the land was cropland; and where the two enterprises ranked about the same, 42 percent of the land was devoted to crops. It will be noted that where major emphasis was placed on dairy cows, slightly more than half of the total land was devoted to open pasture. Where cotton received major emphasis, only 30 percent of the farm acreage was used for open pasture land.

### Crop Acres

On the average, more acres of land were devoted to corn than to cotton. Corn and cotton acreages were about the same on cotton-dairy farms. Hay constituted the largest acreage of any crop (table 2). Other than cotton, cash crops were relatively unimportant on most farms. Two farms produced hay for sale and one raised watermelons and cantaloupes for the market. It will be noted that less than one-half acre per farm was used for growing silage crops. Only six farmers grew silage. These six farms grew an average of 2 acres per farm.

On farms where dairying was the major enterprise, 74 percent of the acres cropped was devoted to feed crops; on cotton-dairy farms, 69 percent; and on dairy & cotton farms, 69 percent. Acres of oats per farm averaged 6.8. However, only 14 of the 40 farms actually growing oats had an average of 19.4 acres per farm.

Hay was an important crop on most of the farms. Johnson grass predominated in the Northeast Prairie Area, but in

Table 1. Use of land on 40 farms and on different types of farms in Northeast Mississippi, 1944.

Land use	Average number of acres							
	40 farms		Dairy-cotton		Cotton-dairy		Dairy & cotton	
	Per farm	Pct. of total	Per farm	Pct. of total	Per farm	Pct. of total	Per farm	Pct. of total
Cropland	75	44.1	44	29.9	140	55.3	50	41.9
Open pasture, tillable	43	25.3	48	33.0	47	18.7	33	27.4
Open pasture, not tillable	21	12.4	27	18.4	28	11.0	8	6.5
Woods pastured	14	8.2	18	12.5	11	4.3	11	9.2
Woods not pastured	9	5.3	5	3.3	14	5.4	12	10.1
Other land	8	4.7	4	2.9	13	5.3	6	4.9
Total	170	100.0	146	100.0	253	100.0	120	100.0

Table 2. Crop acres on 40 farms and on different types of farms in Northeast Mississippi, 1944.

Crop	40 farms	Dairy-cotton	Cotton-dairy	Dairy & cotton	Number of farms growing crops
	Acres per farm	Acres per farm	Acres per farm	Acres per farm	
Cotton	17.2	4.4	39.9	12.1	32
Corn	21.8	12.2	39.4	16.9	37
Oats	6.8	5.5	8.0	7.3	14
Soybeans (seed)	.2	—	—	.5	1
Lespedeza (seed)	.1	—	—	.3	1
Johnson grass hay	10.7	5.6	28.2	—	8
Lespedeza hay	2.4	3.8	2.1	.9	11
Soybean hay	8.3	5.8	15.7	4.5	21
Other hay	5.2	3.8	4.6	7.5	18
Total hay	26.6	19.0	50.6	12.9	—
Sorghum, silage	.4	.5	.2	.6	6
Sorghum, syrup	.1	—	—	.3	3
Truck and garden	.7	.4	1.5	.5	40
Other crops	1.5	.1	2.0	2.2	—
Crop acres <sup>1</sup>	75.4	42.1	141.6	53.6	—
Double crop acres <sup>2</sup>	3.0	2.4	6.7	5.1	—
Land cropped	72.4	39.7	134.9	48.5	—
Idle	2.7	4.3	5.1	1.6	—
Total cropland	75.1	44.0	140.0	50.1	—

<sup>1</sup>Crop acres—Total acres of crops, includes double cropping.

<sup>2</sup>Double-cropping acres are included in the above crop acreages.

Table 3. Classes of livestock and their values on 40 farms in Northeast Mississippi, 1944.

Class	Number per farm	Value per farm	Percent of total
Dairy cows	14.2 <sup>1</sup>	\$981	47.3
Other cattle	10.9	399	19.2
Hogs	9.1	106	5.1
Hens	80.0	84	4.1
Workstock	4.4	497	23.9
Other <sup>2</sup>	2.4	9	.4
Total	—	2076	100.0

<sup>1</sup>Average for 5 inventories during the year

<sup>2</sup>Average for 39 farms.

the Pontotoc Ridge and Northeast Highland Areas, soybean acreage for hay was greatest. Lespedeza was next in importance. A considerable number of farms interplanted corn with soybeans and harvested the plants for hay or stocked them

down. Most of the farmers growing soybean hay, ground it before feeding it to dairy cows and other livestock.

#### Classes of Livestock

Dairy cows were the most numerous livestock on the average farm (table 3).

The average number of dairy cows per farm was 14, with a total value of \$981 per farm, or an average value of \$69 per cow. Milk cows constituted 47.3 percent of the total farm investment in livestock. The range in number of dairy cows for all farms was from 4 to 40. Only two farms milked less than 6 cows; 4 less than 7 cows; and 10 less than 10 cows. Nine farms milked 20 or more cows. Nineteen herds averaged 4,000 pounds per cow or more, and 8 had an average production of more than 5,000 pounds of milk per year. The range in the amount of milk produced per cow per year was from 2,200 pounds to 5,800 pounds with 4 herds producing less than 3,000 pounds per cow.

**Farm Investment**

The investment per farm amounted to \$10,743 (table 4). Cotton-dairy farms had the largest investment, as might be ex-

pected on account of larger cropland requirements. Dairy-cotton and dairy & cotton farms were more nearly equal in real estate investment and total investment.

The average investment in real estate for the 40 farms was 60.2 percent. On cotton-dairy farms the investment in real estate was 68 percent, while dairy-cotton and dairy & cotton farms had a real estate investment of 52.5 and 56.1 percent, respectively. Investment in livestock was lowest on cotton-dairy farms. The relative investments in feeds and equipment were about the same.

**Farm Receipts and Expenses**

Farm receipts are the total income from farm sources. They include money received or due from the sale of the current year's crops, sale of livestock and livestock products, sale of equipment and

Table 4. Average farm capital per farm for 40 farms and by types of farms in Northeast Mississippi, 1944.

Item	40 farms	Dairy-cotton	Cotton-dairy	Dairy & cotton	Per acre 40 farms
	dollars	dollars	dollars	dollars	dollars
Land .....	4,073	2,422	7,712	2,635	23.96
Buildings .....	2,257	2,116	3,022	1,680	13.28
Fences .....	136	153	142	107	.80
Total real estate .....	6,466	4,691	10,876	4,422	38.04
Livestock .....	2,076	2,336	2,025	1,778	12.21
Equipment .....	1,039	986	1,436	713	6.11
Feeds .....	1,029	849	1,429	868	6.05
Miscellaneous supplies .....	133	87	236	95	.79
Total .....	10,743	8,949	16,002	7,876	63.20

Table 5. Financial summary for 40 farms and by types of farms in Northeast Mississippi, 1944.

Item	40 farms	Dairy-cotton	Cotton-dairy	Dairy & cotton
	dollars	dollars	dollars	dollars
1. Farm investment .....	10,743	8,949	16,002	7,876
2. Farm receipts .....	5,930	5,145	8,334	4,573
3. Farm expenses .....	3,973	3,298	6,106	2,740
4. Farm income (2 minus 3) .....	1,957	1,847	2,228	1,833
5. Interest on investment at 5 percent .....	537	447	802	394
6. Labor income (4 minus 5) .....	1,420	1,400	1,426	1,439
7. Farm privileges .....	590	623	576	560
8. Labor earnings (6 plus 7) .....	2,010	2,023	2,002	1,999
9. Value operator's time* .....	557	557	557	557
10. Return on investment .....	1,400	1,290	1,671	1,276
11. Percent return on investment .....	13.0	14.4	10.4	16.2

\*The operator's labor was valued at current wages for a hired man without meals and lodging for 12 months. Unpaid family labor was valued at the same rate.



supplies, and any increase in the inventory value of the farm property. Farm receipts for the 40 farms averaged \$5,930 (see table 5).

Farm expenses represent the cost of operating the farm business, except for interest on investment and value of the operator's time. Farm expenses include all cash expenses for labor, feed, supplies, taxes, etc.; the value of unpaid family labor other than the operator's; the value of board furnished hired help; the cost of livestock and equipment purchased; and any decrease in the inventory value of farm property. Farm expenses, or farm business expenses, do not include family living expenses. The average farm expenses for 40 farms was \$3,973.

#### **Farm Returns**

Farm income, which is farm receipts less farm expenses, amounted to \$1,957 for the 40 farms as a whole. Deducting from farm income the amount of interest at 5 percent on the average investment, gives a labor income of \$1,420. Labor earnings are found by combining labor income and contributions made by the farm to family living, such as house rent and foods. This amounted to \$2,010 per farm.

Return on the average farm investment was \$1,400 or 13 percent. The operator's time may have been undervalued. If that were true, the percentage return on investment would be less in proportion to the increase of the value of the operator's time.

Farm receipts and expenses for the different types of farms varied directly with the size of the investment. However, it will be noticed that labor income did not vary much from one type to another. Causes for these differences and similarities will be discussed in following sections of this study.

### **Costs and Returns for Milk Production**

Milk was produced for sale on all

farms. About 12 percent of all milk produced was used on the farm. Practically all of the remaining 88 percent was sold to cheese plants and condenseries. A few farmers sold their milk to wholesale distributors.

The average number of milk cows per farm was 14. (See table 6). Milk produced per farm amounted to 55,991 pounds, or 3,931 pounds per cow. The family used 3,861 pounds of milk, and the average farm fed 2,729 pounds of milk to calves.

#### **Feed Costs**

Feed was the largest item of cost in the production of milk. The feed cost per herd for one year on all farms averaged \$1,109. Of this, concentrates amounted to \$608; roughage, \$372; and pasture, \$129. This total feed cost amounted to 59.6 percent of total milk production costs. On a per cow basis, this feed cost per year was \$78, and the feed cost to produce 100 pounds of milk was \$1.98.

The amount of feed per cow varied considerably, and much of this variation was due to whether there was available suitable land for hay and pasture production in the three soils areas in Northeast Mississippi — Black Prairie, Northeast Highland, and Pontotoc Ridge. The five farms feeding the least concentrates averaged 642 pounds per cow. The five farms feeding the most concentrates averaged 2,898 pounds per cow. The five farms feeding the least roughage averaged 969 pounds per cow, and the five farms feeding the most roughage averaged 5,157 pounds per cow. The capacity of milk cows, the knowledge of farmers relative to desirable feeding standards, and high feed costs were other factors contributing to the wide variation in the amounts of feed fed on various farms.

When concentrates fed per cow were increased, milk produced per cow increased (table 7). On the other hand, when roughage per cow was increased, there was a slight decrease in the amount of

Table 6. Production, disposal and costs of and returns for milk on 40 farms in Northeast Mississippi, 1944.

Item	Average per herd	Average per cow		Average 100 lbs. of milk	Propor- tion of total
		Amount	Value		
		hours or pounds	dollars	dollars	percent
Costs	dollars				
<b>Feeds:</b>					
Concentrates .....	608.37	1,516	42.71	1.09	32.7
Roughages .....	371.72	2,624	26.09	.66	20.0
Pasture .....	129.12	—	9.06	.23	6.9
Total feed .....	1,109.21	—	77.86	1.98	59.6
Man labor .....	507.35	145	35.62	.90	27.3
Horse labor .....	.15	—	.01	.00	.0
Buildings .....	34.47	—	2.42	.06	1.9
Equipment .....	18.05	—	1.27	.03	1.0
Depreciation on cows .....	82.71	—	5.81	.15	4.4
Interest .....	48.75	—	3.42	.09	2.6
Miscellaneous .....	59.83	—	4.20	.11	3.2
Gross farm costs .....	1,860.52	—	130.61	3.32	100.0
<b>Credits:</b>					
Manure .....	108.35	—	7.61	.19	—
Calves .....	28.82	—	2.02	.05	—
Total credits .....	137.17	—	9.63	.24	—
Net farm costs .....	1,723.35	—	120.98	3.08	—
Hauling charges .....	126.09	—	8.85	.25	—
Total costs .....	1,849.44	—	129.83	3.33	—
<b>Milk returns:</b>					
Milk sold .....	1,987.36	—	139.51	4.02	—
Milk used on farm .....	232.27	—	16.31	—	—
Total milk returns .....	2,219.63	—	155.82	—	—
Profit .....	370.19	—	25.99	.69 <sup>1</sup>	—
Labor returns .....	877.54	—	61.61	1.59 <sup>1</sup>	—

<sup>1</sup>Per 100 pounds sold.

Average number cows per herd.....	14	Milk produced per farm .....	55,991 lbs.
Average produced per cow.....	3,931	Milk sold per farm .....	49,401 lbs.
Pounds sold per cow.....	3,468	Personal use per farm .....	3,861 lbs.
		To calves per farm .....	2,729 lbs.

Table 7. Concentrates fed per cow related to various factors on 40 farms in Northeast Mississippi, 1944.

Concentrates per cow, pounds	Number of farms	Average concentrates per cow	Milk per cow	Cost per 100 lbs. milk	Roughage per cow
		pounds	pounds	dollars	pounds
Less than 1,500 .....	23	851	3,774	3.08	2,513
1,500-3,000 .....	15	2,020	4,347	3.78	3,112
3,000 and over .....	2	3,297	5,150	3.25	1,609

Table 8. Roughage fed per cow related to various factors on 40 farms in Northeast Mississippi, 1944.

Roughage per cow, pounds	Number of farms	Average roughage per cow	Milk per cow	Cost per 100 lbs. milk	Concentrates per cow
		pounds	pounds	dollars	pounds
Less than 1,500 .....	7	1,085	4,186	2.58	1,609
1,500-3,000 .....	20	2,280	4,085	3.22	1,347
3,000 and over .....	13	4,202	3,946	3.95	1,404

milk produced (table 8). The cost to produce milk increased as the amount of both concentrates and roughage fed per cow was increased.

Concentrates fed during the year to cows on dairy-cotton farms amounted to \$50.51 per cow, which was the highest value of the three types of farms (table 9). This could be expected on farms where farmers placed the most emphasis on the dairy enterprise. However, these same farms had the least roughage cost of \$23.70 per cow, compared with \$32.14

for cotton-dairy farms, and \$24.66 for dairy & cotton farms. Total feed costs were the greatest on dairy-cotton farms, next on cotton-dairy, and least on dairy & cotton farms.

The five farms producing milk at lowest cost, fed \$43.10 worth of feed per cow, and the five farms producing milk at the highest cost fed \$96.34 worth of feed. Since cows on high cost farms produced only 3,230 pounds each, this would indicate that the farm operators were at-

Table 9. Production, disposal, costs and returns of milk per cow by types of farms in Northeast Mississippi, 1944.

Item	Average 40 farms	Type of farm				Five low cost farms <sup>1</sup>	Five high cost farms <sup>1</sup>
		Dairy- cotton (16 farms)	Cotton- dairy (12 farms)	Dairy & cotton (12 farms)			
No. farms	40	16	12	12	5	5	
No. cows per farm	14	19	12	10	11	15	
Lbs. milk per farm	3931	3993	3413	4392	4633	3230	
Man hours per cow	145	148	158	124	124	179	
<b>Costs</b>							
<b>Feeds:</b>							
Concentrates	\$42.71	\$50.51	\$32.65	\$36.02	\$18.55	\$41.39	
Roughages	26.09	23.70	32.14	24.66	17.16	42.95	
Pasture	9.06	7.62	13.39	7.42	7.39	12.00	
Total feed	77.86	81.83	78.18	68.10	43.10	96.34	
Man labor	35.62	33.32	41.83	33.77	31.63	42.63	
Buildings	2.42	2.12	3.35	2.02	1.47	2.65	
Equipment	1.27	1.64	.97	.73	.49	1.45	
Depreciation on cows	5.81	2.88	7.64	10.59	8.16	12.51	
Interest	3.42	3.45	3.13	3.69	3.00	3.17	
Miscellaneous	4.20	3.82	5.03	4.14	1.96	4.88	
Horse labor	.01	.02	—	—	—	—	
Gross farm costs	130.61	129.08	140.13	123.05	89.81	163.63	
<b>Credits:</b>							
Manure	7.61	7.63	7.67	7.46	7.49	7.57	
Calves	2.02	1.56	2.52	2.54	2.17	2.47	
Total credits	9.63	9.19	10.19	10.00	9.66	10.04	
Net farm costs	120.98	119.89	129.94	113.05	80.15	153.59	
Hauling charges	8.85	8.98	7.61	10.02	11.61	6.80	
Total costs	129.83	128.87	137.55	123.07	91.76	160.39	
<b>Milk returns:</b>							
Milk sold	\$139.51	\$151.05	\$111.30	\$145.30	\$144.46	\$114.84	
Milk used on farm	16.31	13.62	19.03	19.47	24.44	12.87	
Total milk returns	155.82	164.67	130.33	164.77	168.90	127.71	
Profit	25.99	35.81	-7.22	41.70	77.14	-32.68	
Labor returns	61.61	69.12	34.61	75.47	108.77	9.95	

<sup>1</sup>The cost of producing 100 pounds of milk.

The cost of producing milk on dairy and cotton farms was lowest and profit per cow was highest. Dairy and cotton farms spent less for feeds, less than average for labor, and had the highest production per cow.

tempting to get high production out of cows of low efficiency.

### Man Labor Costs

The cost of labor per herd was \$507 (table 7). The average number of man hours spent on one cow per year was 145, and was valued at \$35.62. This amounted to 91 cents per 100 pounds of milk produced. The labor cost range for 100 pounds of milk was from 46 cents to \$1.65. The amount of labor used per cow for one year ranged from a low of 96 hours for the 10 lowest farms to a high of 209 hours per cow for the 10 farms requiring the greatest amount of labor. The average cost of labor per hour spent on milk cows on all 40 farms was 24.5 cents. The range for this man-hour cost was from 16.4 cents to 39.5 cents. In producing milk, man labor accounted for 27.3 percent of the gross farm cost to produce 100 pounds of milk. Consequently the efficient use of labor is an important factor in producing milk economically.

### Profit

Total milk returns per herd amounted to \$2,219. Net farm costs per herd plus hauling charges amounted to \$1,849. Thus the profit per herd was \$370 and per cow, \$25.99. The profit per 100 pounds of milk was the average price received (\$4.02) less the total cost per 100 pounds (\$3.33), and amounted to \$0.69.

### Labor Return

Assuming that profit on the enterprise is also a return to labor, the total return to labor would be profit on the enterprise plus man labor charges to the enterprise. The sum of \$370 (profit) and \$507 (labor charges) gives a labor return of \$877. This amounts to \$61.61 per cow, and \$1.59 per 100 pounds of milk sold.

Much of the labor used on the farms in this study was unpaid family labor. Oftentimes this labor may be used on an enterprise when the cost of production is relatively high, particularly where it is

convenient to engage in that enterprise, and still receive income that adds to the well-being of the farmer and his family. In case of the dairy enterprise, the farmer charges the cows with grain, hay, and other feeds at farm value (market value less transportation costs) instead of what they actually cost. Consequently, an enterprise may show a loss when its physical input costs are charged at farm value, yet the farmer can afford to go right along producing the enterprise and will be better off by doing so unless some alternative enterprise opportunity appears where by he can get more for his input costs or values.

Of the 10 farms that made minus incomes on dairy cows, only 3 made a minus labor return per cow. One farmer lost \$31 per cow, but his labor return per cow was \$30 and the labor per hour spent producing milk was \$0.17. Another farmer had a loss of \$4 per cow, yet his labor return per cow was \$51 and the return per hour spent on milk cows was \$0.32. If profit and loss had been computed on the basis of actual costs of producing feed on the farm, the return for labor would have been considerably more. Therefore, if a farmer receives the cost of production for 100 pounds of milk or a hundred pounds of cotton, that price includes the current wage rate for his labor and for all unpaid family labor. However, farmers are entitled to a fair profit above actual costs, as is expected in any other business, in order that they build up reserves for depression periods and for old age.

### Costs and Returns per Cow on Different Type Farms

A study of table 10 shows costs and returns for the dairy enterprise by types of farming on a per cow basis. The average costs and returns per cow for the 40 farms is repeated for comparative purposes.

The annual net cost to keep a cow for one year on dairy-cotton farms amounted

to \$120. The costs on cotton-dairy farms were \$130, and \$113 on dairy & cotton farms. The annual profit per cow was \$36 for dairy-cotton farms. There was a loss of \$7 per cow for cotton-dairy farms, and a gain of \$42 on dairy & cotton farms. It will be noticed that the profit was considerably greater on the farms where there was balanced emphasis on milk cows and cotton. Also, it will be noticed that cows on the dairy & cotton farms produced an average of 4,392 pounds of milk. That was a production of 400 pounds per cow above the dairy-cotton farms, and 1,000 pounds more than on cotton-dairy farms. Feed costs and net farm costs per cow were less than on the other two types of farms.

The differences between farm types pointed out in the preceding paragraph are favorable to those farmers who placed about the same emphasis on both cotton and milk cows in their farm program. Since, dairy & cotton farms used fewer man hours per cow, spent less for feed, and got a higher production from their cows, it would seem that their cows were more profitable because labor was used more efficiently and their cows were more efficient in converting feeds into milk.

Labor returns per cow were likewise greater on dairy & cotton farms. This return was 118 percent greater, or more than twice as great as the labor return on farms where emphasis was placed mainly on cotton. It was, however, only 9 percent greater than labor return per cow on farms placing major emphasis on the dairy enterprise.

## Cotton Production Costs and Returns

Cotton was produced on 32 of the 40 farms on which records were kept. An average of 21.8 acres of cotton was produced on each farm. Actual bales ginned per farm was 20.2 or nearly one bale per acre. The number of 500-pound bales produced per farm was 21.3. The aver-

age price received per pound of lint cotton for all farms was 21.21 cents, and the cost to produce one pound of lint was 13.28 cents.

### Man Labor

Man labor was the largest item of cost in producing cotton (table 10). The total man-labor cost for the average cotton enterprise on 32 farms in Northeast Mississippi was \$1,089. This labor cost was \$50 per acre of cotton grown, \$51 per 500-pound bale and seed, and \$40 per 500 pounds of lint. Man-labor cost per pound of lint was 8.04 cents, which constituted 60.5 percent of the total cost to produce one pound. Consequently, any steps taken by farmers to reduce the cost of producing cotton will necessarily include the consideration of man labor.

The man labor required to grow an acre of cotton amounted to 141 hours, and only 3 hours more were required to produce a 500-pound bale since production was so near one bale per acre. The range in hours required per acre of cotton on the 32 farms was from 63 to 176. Barring the fact that there were differences in yield per acre among farms, there still would be much room for increasing the efficiency of labor. And since this cost item is 60.5 percent of the total cost of production, farmers could well look to using available labor on the farm, as well as hired labor, to a more distinctive advantage.

### Total Costs of Producing Cotton

The average cost of producing the cotton enterprise on each of the 32 farms was \$1,800, which amounted to \$83 per acre. (See table 10). The cost to produce 500 pounds of lint was \$66, which gave a cost of 13.28 cents per pound for lint cotton. This return from one acre of cotton for lint and seed was \$104 and \$17.57, respectively. The total return from the enterprise per farm was \$2,646, thereby leaving a profit of \$846 for the cotton enterprise and \$38.90 per acre pro-

Table 10. Production, values, and average costs and returns per farm for cotton on 32 farms in Northeast Mississippi, 1944.

Item	Production:				Values: (Dollars received)			
	Total crop	One acre seed cotton	One 500-lb. bale and seed	500 lbs. of lint*	Total seed	Total lint*	Lint	
	dollars	dollars	dollars	dollars	dollars	dollars	Per lb.*	Percent of total
							cents	percent
Cotton acres.....	21.77							
Bales ginned.....	20.23							
Man hours per acre.....	141							
					Total seed cotton.....	2,646.14		
					Total lint.....	2,263.72		
					Total seed.....	15,438 lbs.	0.2121	
					500 lb. bales.....	21.34 lbs.		382.42
<b>Costs:</b>								
Land.....	67	3.08	3.14	2.47	53	14	0.50	3.7
Fertilizer.....	107	4.92	5.01	3.95	84	23	0.79	6.0
Manure.....	38	1.76	1.80	1.42	30	8	0.28	2.1
Seed.....	43	1.97	2.01	1.59	34	9	0.32	2.4
Man labor.....	1,089	50.02	51.02	40.18	857	231	8.04	60.5
Horse labor.....	195	8.95	9.13	7.19	153	41	1.42	10.8
Tractor.....	22	1.01	1.02	.81	17	5	0.16	1.2
Other equipment.....	54	2.48	2.53	1.99	43	12	0.40	3.0
Ginning.....	108	4.96	5.06	3.98	85	23	0.80	6.0
Miscellaneous.....	77	3.53	3.60	2.84	61	16	0.57	4.3
Total costs.....	1,800	82.68	84.32	66.40	1,417	382	13.28	100.0
<b>Returns:</b>								
Total lint.....	2,264	104.01	106.07	—	—	—	—	—
Total seed.....	382	17.57	17.92	—	—	—	—	—
Total.....	2,646	121.58	123.99	106.07	2,264	382	21.21	—
Gain.....	846	38.90	39.67	39.67	846	0	7.93	—

\*Cost of lint cotton is determined by the total costs of seed cotton minus total value (amount received) of seed.

Table 11. Acres in cotton, bales produced, and the costs and returns per acre for cotton on 32 farms in Northeast Mississippi, 1944.

Items	Average	Dairy-cotton	Cotton-dairy	Dairy and cotton	Five low-cost farms <sup>1</sup>	Five high cost farms <sup>1</sup>
Number of farms.....	32	8	12	12	—	—
Acres in cotton.....	21.8	9.1	39.9	12.1	12.10	13.90
500 lb. bales produced.....	21.3	6.0	40.3	12.6	13.83	10.77
500 lb. bales per acre.....	.98	.67	1.01	1.04	1.14	.78
Man hours per acre.....	141	112	151	120	113	122
<b>Costs:</b>						
Land.....	\$3.08	\$3.37	\$3.19	\$2.59	\$3.26	\$2.42
Fertilizer.....	4.92	2.39	5.32	4.83	5.33	4.61
Manure.....	1.76	3.03	.91	3.92	2.01	4.10
Seed.....	1.97	2.30	1.66	2.85	2.63	2.05
Man labor.....	50.02	28.15	53.68	48.89	37.42	44.55
Horse labor.....	8.95	7.88	9.18	8.71	6.23	9.95
Tractor.....	1.01	.62	1.08	.94	1.20	1.71
Other equipment.....	2.48	3.62	2.31	2.46	2.01	2.13
Ginning.....	4.96	3.56	5.05	5.36	5.80	3.95
Miscellaneous.....	3.53	1.96	3.86	3.25	2.52	5.37
Total costs.....	\$82.68	\$56.88	\$86.24	\$83.80	\$68.41	\$80.84
Cost per pound of lint, cents.....	13.28	13.31	13.55	12.42	8.24	17.17
<b>Returns:</b>						
Lint.....	\$104.01	\$17.27	\$106.42	\$112.38	\$122.11	\$84.94
Seed.....	17.57	12.44	17.86	19.16	21.32	14.28
Total returns.....	121.58	83.71	124.28	131.54	143.43	99.22
Profit.....	38.90	26.83	38.04	47.74	75.02	18.38
Labor return per acre.....	88.92	54.98	91.72	96.63	112.44	62.93

<sup>1</sup>Based on cost per pound of lint.

duced. With a cost per pound of lint at 13.28 cents and an average price of 21.21 cents received per pound, this gave a profit of 7.93 cents per pound of lint to the farmers growing cotton.

### Costs of Cotton Production on Different Type Farms

There was much variation in the acreage devoted to cotton production on the three types of farms (table 11). The range was from 9.1 acres per farm on dairy-cotton farms to 39.9 acres on cotton-dairy farms. Dairy & cotton farms produced 12.1 acres, which was only 3 acres more than was produced on dairy-cotton farms, and less than one-third of the acres grown on cotton-dairy farms. The number of acres produced on the five low-cost farms and the five high-cost farms was about the same, and approximately the same as was produced on dairy & cotton farms.

The items of cost in the production of cotton varied considerably in value for the three types of farms. Man labor per acre, the most important cost item, was least on dairy-cotton farms and the most on cotton-dairy farms, \$28 and \$54 respectively. This cost was \$49 per acre on dairy & cotton farms. Horse labor costs followed the same pattern. The low cost of man labor to produce an acre of cotton on dairy-cotton farms probably was due more to the smaller yield of cotton per acre than to more efficient use of labor on dairy & cotton farms.

Fertilizer costs varied from \$2.39 per acre on dairy-cotton farms to \$5.32 on cotton-dairy farms. The five farms producing cotton at the least cost per pound used \$5.33 worth of fertilizer per acre. The total cost of producing a pound of lint on the three types of farms did not vary much, but was least on dairy & cotton farms. (See table 12.) It will be seen that the cost of production per pound on the five low cost farms was only 8.24 cents, while on the five high cost farms,

the cost to produce one pound of lint was 17.17 cents.

### Cotton Returns on Different Type Farms

Total returns per acre of cotton was the smallest on dairy-cotton farms. (See table 12.) This is largely the reflection of a low yield per acre for this type of farming. The average return per acre for all types was \$122; for dairy-cotton, \$84; for cotton-dairy, \$124; and for dairy & cotton, \$132. Profits per acre were \$39, \$27, \$38, and \$48, respectively. The five farms producing cotton at the lowest cost per pound—8.24 cents—had a profit of \$75 per acre, whereas \$18.38 was the profit per acre on the five farms producing cotton at the highest cost per pound, which was 17.17 cents.

Considering returns and profits as a whole, it appears that the yield per acre was the most important factor determining the cost to produce a pound of cotton and the return the farmer got for his labor.

### Costs and Returns for Other Enterprises

#### Costs and Returns on Corn

Thirty-seven of the 40 farms keeping records produced corn. Acres per farm averaged 25.3 and the production per acre was 23.3 bushels. On the average, 27.8 man hours and 26.7 horse hours of labor were required per acre.

The total average cost per farm for the corn enterprise was \$563, or \$22.23 per acre. (See table 12). With a production of 23.3 bushels per acre, this resulted in a cost of 95.5 cents per bushel. Again, as can be seen, the largest item of cost was labor. Man labor cost amounted to 35 percent of the total cost to produce a bushel of corn. Horse labor accounted for 28.3 percent. It will be recalled that the proportionate part of the total cost to produce one pound of cotton was 60.5 percent for man labor and 10.8 percent

Table 12. Costs and returns for corn on 37 farms in Northeast Mississippi, 1944.

Item	Quantity per acre	Value per farm dollars	Value per acre dollars	Per bushel	
				Value cents	Percent of total percent
<b>Costs:</b>					
Land .....	—	81.39	3.21	13.8	14.5
Fertilizer .....	—	20.95	0.83	3.5	3.7
Manure .....	—	7.69	0.30	1.3	1.4
Seed .....	—	9.54	0.38	1.6	1.7
Man labor .....	27.8 hrs.	197.07	7.78	33.4	35.0
Horse labor .....	26.7 hrs.	159.18	6.29	27.0	28.3
Tractor .....	3.5 hrs.	41.62	1.64	7.0	7.4
Other equipment .....	—	28.92	1.14	4.9	5.1
Miscellaneous .....	—	16.68	0.66	2.8	2.9
Total costs .....	—	563.06	22.23	95.5	100.0
<b>Returns:</b>					
Corn .....	23.3 bu.	714.00	28.19	121.0	—
Profit .....	—	150.94	5.96	25.5	—
Acres per farm .....	25.3		Cost per bushel .....		\$0.96
Return per hour of labor .....	\$0.49		Value per bushel .....		\$1.21

for horse labor. In the case of corn, horse labor has assumed a larger part of the cost. Again it will be noticed that the land cost to produce a bushel of corn was 13.8 cents. This amounts to 14.5 percent of the total cost to produce a bushel of corn, whereas the land cost to produce a pound of cotton was 0.5 cent, or 3.7 percent of the total cost to produce a pound.

The total return per farm from the corn enterprise was \$714, or \$28.19 per acre. The average farm value per bushel was \$1.25. With a cost of 95.5 cents per bushel, this gave the farmers a profit of \$151 for the corn enterprise, \$5.96 per acre, and 25.5 cents per bushel. The labor return per hour spent on corn was \$0.49.

### Costs and Returns for Hogs

Thirty-eight of the 40 farms produced hogs. Only a few farmers produced for the market. Sales by others were for the purpose of disposing of a small surplus produced.

It cost \$12.41 gross to produce 100 pounds of live pork. Of this amount 83.5 percent was for feed. On an average, 306 pounds of corn valued at \$7.54, 82 pounds of other feed valued at \$2.66,

and pasture valued at 16 cents constituted the kinds, amounts, and values of feeds fed to produce this 100 pounds of live pork. It required 5.8 hours of man labor per 100 pounds of pork valued at \$1.46 which represented 11.8 percent of the total cost to produce 100 pounds of pork.

Considering credits of manure and miscellaneous credits which amounted to \$0.38 per 100 pounds, the net cost to produce 100 pounds was \$12.03. The value per 100 pounds of live pork produced was \$12.53, which left a profit of \$0.50 per 100 pounds. This small profit on producing hogs was due to the unfavorable hog-corn ratio in Northeast Mississippi in 1944.

### Workstock Costs

Workstock was used on all farms and there was an average of 4.3 head per farm. Each head of workstock worked 462 hours, or 46 work days of 10 hours each during the year. The average cost for all farms was 22.9 cents per hour.

Feed amounted to \$88 per head which was 78.1 percent of total costs. Two thousand seventy-six pounds of concentrates, principally corn, were fed per head at a cost of \$52. Roughage fed per head



amounted to 2,263 pounds valued at \$30. Pasture was charged at actual cost or \$6.47 per head. Man labor to care for one head of workstock for a year was 35.8 hours, which cost \$9.89. Costs other than feed and man labor amounted to \$14.95. A manure credit of \$7.50 per head was deducted from total gross costs per head of \$113, which resulted in a net cost of \$106 to keep one head of workstock for a year.

Since workstock worked only 46 days per head during the year, some attention should be given to utilizing workstock labor more efficiently.

## Factors That Affect Costs and Returns

### Size of Business

Size is an important factor that affects all business enterprise and particularly is this true of farming. Farm income and the family standard of living are largely determined by this factor. The size of a farm business can be measured in several ways. Number of acres operated, capital investment, crop acres, amount of labor used, number of units comprising the major enterprises such as acres of cotton, number of milk cows in the herd, are measures commonly used. The more desirable measure to use in determining the size of a farm business depends a great deal on the type of farming followed.

Some of the measures used to show the size of the 40 farm businesses are shown in table 13. Acres per farm for all farms averaged 170, with a total investment of \$10,743. Cotton-dairy farms had more total acres, cotton acres, crop acres, and a larger investment than the dairy-cotton or dairy & cotton farms. This could be expected since emphasis was placed on cropping. As a whole, cotton-dairy businesses were the largest, dairy-cotton farms next, and the dairy & cotton farms the smallest.

When considering the size of business

in the Northeast Prairie, Northeast Highland, and Pontotoc Ridge Soil Areas, it will be noticed that the Prairie farms ranked highest in all measures (table 13). The Northeast Highland Area was next in all measures and the Pontotoc Ridge Area was the lowest in all measures.

**Man work units.** Since man labor is a common denominator of all farms, table 14 was constructed to show the relation of man work units per farm to and among other important factors. As the man work units (10 hours of production from work performed by one man) per farm increased, the number of cows increased, acres of cotton increased very pronouncedly, and labor income increased.

**Acres of cotton.** Acres of cotton per farm varied considerably. (See table 15.)

Labor requirements increased per 500-pound bale produced as the acres of cotton per farm increased on farms that grew more than 10 acres. Under increasing mechanization conditions the reverse of this relationship would be expected. However, practically all of the cotton production on the 32 farms was performed by man and horse labor. Thus it would appear that labor is being used less efficiently on the larger farms. The same relationship exists when considering cotton-dairy farms alone.

Larger farms have more cropper tenants, and according to data presented in table 15, such labor is not as efficient as the labor furnished by the operator, members of his family, and the small amount of labor hired during the year on the smaller farms. Labor income increases as the size of the cotton enterprise increases, but labor income does not necessarily reflect efficient use of cropper labor on farms when considering the size of the business.

### Labor Efficiency

Using labor to the best advantage is one of the most important problems with

Table 13. Size of farm business by type of farms and in major soil areas of Northeast Mississippi, 1944.

Item	All farms	Type of farm			Soil area		
		Dairy-cotton	Cotton-dairy	Dairy & cotton	N. E. Prairie	N. E. High-land	Pontotoc Ridge
		Average per farm					
Number of cows .....	14	19	12	10	17	13	7
Acres of cotton .....	21.8	9.1	39.9	12.1	29	14	11
Crop acres .....	75.4	42.1	141.6	53.6	94	54	49
Total acres operated .....	170.0	146.0	253.0	120.0	206	141	109
Total man work units .....	494	508	594	377	561	442	373
Investment .....	\$10,743	\$8,949	\$16,002	\$7,876	\$12,800	\$9,083	\$7,871

Table 14. Man work units related to various factors on 40 farms in Northeast Mississippi, 1944.

Man work units per farm	Number farms	Work units per farm	Milk cows	Acres of cotton	Labor income
Below 300 .....	6	270	11	10.0	\$1,097
300 - 499 .....	15	380	10	14.8	1,289
500 - 699 .....	15	584	18	20.6	1,325
700 - 899 .....	2	748	19	38.0	2,492
900 and over .....	2	1,099	28	84.0	3,016
Total .....	40	494	14	21.8	1,419

Table 15. Acres of cotton per farm related to labor requirements and returns on 32 farms in Northeast Mississippi, 1944.

Acres of cotton	Number farms	Acres per farm	Man hours per 500 lb. bale	Labor income
Below 10.0 .....	9	6.1	152	\$1,169
10 - 19.9 .....	11	14.1	120	1,532
20 - 29.9 .....	6	23.7	125	1,622
30 and over .....	6	57.5	158	1,906

Table 16. Man hours per cow related to various factors on 40 farms in Northeast Mississippi, 1944.

Man hours per cow	Number farms	Hours per cow	Milk per cow	Cost per 100 lbs. milk	Labor returns per hour
		hours	pounds	dollars	dollars
Less than 100 .....	5	86	3,920	2.81	0.73
100 - 149 .....	19	125	4,332	3.07	0.56
150 - 199 .....	12	167	3,575	3.70	0.30
200 and over .....	4	262	4,385	4.27	0.18
Total .....	40	145	3,931	3.34	0.47

which farm operators deal. Labor requirements are much greater for some enterprises than for others, and at the same time, the demands on all farms for labor is highly seasonal, particularly for crops. Labor requirements for crops constitute the largest cost item in their production. For cotton, this cost amounts to 60.5 percent of the total expenses of growing the crop. Labor requirements for corn, hay, and other crops were somewhat less, but still were the highest single cost item.

**Man hours per cow.** The amount of labor used per cow ranged from 86 hours to 262 hours, and the average amount of

man labor per cow was 145 hours for the 40 farms. (See table 16.) There was practically no relationship between hours used per cow and the amount of milk produced per cow. However, as man hours expended per cow increased, the cost to produce 100 pounds of milk increased, and the labor return per hour decreased. Thus the labor used per cow should be kept at a minimum in keeping with the ability of the cow to produce milk.

**Man hours per acre of cotton.** The labor used per acre of cotton varied very much also. Seven farms averaged only

77 man hours per acre while a like number of farms averaged 168 hours. As the man hours per acre increased, the pounds of cotton produced per acre increased, which was unlike the relationship of labor expended per cow and the milk produced per cow. However, as the pounds of cotton per acre and labor per acre increased, the cost to produce an acre of cotton increased. Unlike the application of labor to cows, as labor on cotton per acre increased, the cost to produce one pound of lint decreased and the labor return per hour increased up to 150 hours per acre and then decreased. Consequently, a farmer should be very careful about increasing the hours of labor used per cow and the labor used per acre of cotton above 150 hours under conditions similar to those on the 40 farms in Northeast Mississippi.

### Rates of Production

**Types of farming and rates of production.** Farms placing the most emphasis on cotton (cotton-dairy farms) kept cows which had the lowest production, or 3,400 pounds each (table 17). Farms where major emphasis was placed on the dairy enterprise (dairy-cotton farms) kept cows that produced an average of 4,000 pounds

each. And farms which placed about the same emphasis on both dairy and cotton enterprises kept milk cows that produced an average of 4,400 pounds of milk each.

There was little relationship between the amount of milk produced per cow and the size of herd or the amount of concentrates fed per cow. Roughages fed per cow decreased as milk production increased and labor used per cow followed the same trend. It will be noticed that where there was a balance between number of cows and acres of cotton per farm that labor per cow was the lowest and milk production per cow was the highest. This made for more profitable milk production as shown in table 18.

The cost to keep a cow for one year decreased by types of farming as the production per cow increased among the types. Cost per cow was \$148 on cotton-dairy farms, \$138 on dairy-cotton farms, and \$133 on dairy & cotton farms. Cost of producing 100 pounds of milk on dairy & cotton farms was the lowest, amounting to \$2.83. The cost on dairy-cotton and cotton-dairy farms per 100 pounds of milk was \$3.27 and \$4.09, respectively. Farmers who placed major emphasis on producing cotton and minor

Table 17. Types of farming in Northeast Mississippi related to milk production per cow and other dairy factors on 40 farms, 1944.

Type of farming	Number of farms	Size of herd	Milk per cow	Feed per cow		Man hours per cow
				Concentrates	Roughages	
	No.	No.	lbs.	lbs.	lbs.	hrs.
Cotton-dairy .....	12	12	3,413	1,242	2,858	158
Dairy-cotton .....	16	19	3,993	1,737	2,637	148
Dairy & cotton .....	12	10	4,392	1,314	2,319	124
All types .....	40	14	3,931	1,516	2,624	145

Table 18. Types of farming in Northeast Mississippi related to milk production per cow, costs and returns on 40 farms in Northeast Mississippi, 1944.

Type of farming	Number of farms	Milk per cow	Cost of feed and pasture per cow	Cost per cow per year	Cost of 100 lbs. milk	Profit per cow	Labor returns per hour on cows
Cotton-dairy .....	12	3,413	78	148	4.09	—7	0.22
Dairy-cotton .....	16	3,993	82	138	3.27	36	0.47
Dairy & cotton .....	12	4,392	68	133	2.83	42	0.61
All types .....	40	3,931	78	139	3.34	26	0.42

Table 19. Milk produced per cow related to various factors on 40 farms in Northeast Mississippi, 1944.

Pounds per cow	Number farms	Milk per cow lbs.	Feed cost per cow dollars	Cost per 100 lbs. milk dollars	Profit per cow dollars	Labor return per cow dollars
Below 3,000 .....	4	2,575	76	4.51	-15.75	14
3,000 - 3,999 .....	17	3,529	64	3.33	12.94	51
4,000 - 4,999 .....	11	4,409	81	3.13	42.91	78
5,000 - 5,999 .....	8	5,438	100	3.11	44.13	85
Total .....	40	3,931	78	3.34	26.00	62

emphasis on producing milk lost an average of \$7 per cow. Dairy-cotton farms made a profit of \$36 per cow, and dairy & cotton farmers made \$42 on each cow kept. Likewise, the return per hour for labor used on milk cows was highest on dairy & cotton farms, amounting to \$0.61. Labor return per hour for this enterprise on dairy-cotton and cotton-dairy farms was \$0.47 and \$0.22, respectively.

**Milk per cow.** A study of the dairy enterprise on farms in Northeast Mississippi finds, as in similar studies elsewhere, that low producing cows are not profitable and that as production per cow increases, profits per cow increase.

Cows producing less than 3,000 pounds of milk per year showed a loss of \$15.75 per year, whereas cows producing an average of 5,438 pounds netted the farmer \$44. (See table 19.) Only four farms had cows producing below 3,000 pounds. The yearly cost to keep a cow increased as the amount of milk per cow increased. It cost \$124 per year to keep a cow producing an average of 2,575 pounds, and it cost \$175 to keep a cow that averaged 5,438 pounds. Thus the cost to produce approximately an extra 3,000 pounds of milk above the average production of the low producing cows was \$51. That is the same as stating that farmers who kept cows that produced above 5,000 pounds, produced the last 3,000 pounds of milk at a cost of \$1.70 per hundred.

Feed costs per cow increased as production increased, but the cost to produce 100 pounds of milk decreased. Profit

per cow increased as production per cow increased. The cost to produce milk with a cow producing 5,000 pounds was 31 percent less than with a cow producing 2,500 pounds, and the labor return per cow was 500 percent greater for 5,500-pounds production cows.

Cost to produce 100 pounds of milk was \$4.51 for farmers having cows that produced 2,575 pounds annually. Whereas, the cost was \$3.11 per 100 pounds on farms having cows that averaged 5,438 pounds. Labor returns per hour spent on milk cows increased as the milk produced per cow increased. Again, it might be pointed out that though the farmers with the lowest producing cows made a minor profit per cow, they had a labor return of \$14 per cow. Assuming the farmer could not use his labor more profitably on some other enterprise, and though his cows were low producers, his cows did pay all expenses other than labor and gave the farmer a return of \$14 per head as part payment for the labor he spent on them during the year. Labor return per cow was \$85 where cows averaged producing above 5,000 pounds of milk.

**Pounds of cotton per acre.** The production of cotton per acre ranged from 196 pounds to 837 when considering all farms. Seventy-five percent of all farms growing cotton had an average yield above 400 pounds per acre and 44 percent of the farms producing cotton had a yield above 500 pounds. (See table 20.)

As production per acre increased, man hours and total cost per acre increased.

Table 20. Pounds of lint per acre related to various factors on 38 farms in Northeast Mississippi, 1944.

Pounds of lint per acre	Number farms	Average pounds per acre	Man hours per acre	Total cost per acre	Cost per pound of lint	Profit per acre	Labor return per hour
		pounds	hours	dollars	cents	dollars	cents
Below 300 .....	5	242	76	47	16.0	15	48
300 - 399 .....	3	332	96	67	16.7	15	53
400 - 499 .....	10	436	137	72	12.6	37	62
500 - 599 .....	7	573	139	92	12.7	51	76
600 - 699 .....	5	616	138	99	12.3	58	87
700 plus .....	2	798	161	114	10.9	83	93

Table 21. Types of farming related to various factors in producing cotton on 32 farms in Northeast Mississippi, 1944.

Type of farming	Acres per farm	Yield 500-lb. bales	Cost per acre	Cost per pound of lint	Profit per acre	Labor return per hour
	number	number	dollars	cents	dollars	cents
Dairy-cotton .....	9.1	6.1	57	13.3	27	49
Cotton-dairy .....	39.9	40.3	86	13.5	38	61
Dairy & cotton .....	12.1	12.6	84	12.4	48	81
All types .....	21.8	21.3	83	13.3	39	63

Likewise, profit per acre and labor return per hour increased. The farmers who produced above 770 pounds per acre received nearly one dollar per hour for their labor used on cotton.

### Types of Farming

The yield of cotton per acre varied considerably on the 32 farms producing it. Table 21 shows this variation by types of farming. Cotton-dairy farms grew four times the average of cotton as was grown on dairy-cotton farms and a little more than three times the amount grown on dairy & cotton farms. The yield per acre was slightly more than a bale per acre on both cotton-dairy and dairy & cotton farms, whereas the yield was only two-thirds bale per acre on dairy-cotton farms.

The cost of producing a pound of cotton varied little between types of farms, but varied considerably between individual farms. The cost per pound on dairy-cotton and cotton-dairy farms was 13.3 and 13.5 cents, respectively. The cost to produce a pound of cotton on dairy & cotton farms was 12.4 cents, or one cent less than for the other farm types. The

range in cost to produce a pound of cotton on the 32 farms was from 6.67 cents to 21.16 cents. Seventy-five percent of the farms produced cotton at a cost range from 10 to 16 cents per pound with an average cost of 13.3 cents for all farms.

Labor returns per hour spent on cotton averaged 63 cents for the 32 farms. Low yields per acre undoubtedly account for the low labor return on dairy-cotton farms. On the other hand, yields were approximately the same for cotton-dairy and dairy & cotton farms. Yet, the returns per hour of labor on dairy & cotton farms was 33 percent higher than on dairy-cotton farms. This difference was due largely to the fact that the cotton-dairy farms used 31 hours more labor per acre, or 26 percent more than was used by dairy & cotton farms.

### Combination of Enterprises

The combination of crops and animal enterprises for 39 farms and for the three types of farming in Northeast Mississippi are shown in table 22. The most important crop enterprises were cotton, corn, and hay. Corn and hay were grown for livestock feed. Hay was a cash crop on

Table 22. Combination of enterprises by types of farming and as related to labor income on 39 farms in Northeast Mississippi.

Enterprise	Number farms reporting enterprise	Average for 39 farms	Acres or head		
			Dairy-cotton	Cotton-dairy	Dairy & cotton
<b>Crops:</b>					
Cotton .....	32	13.8	4.4	30.0	12.1
Corn .....	37	19.5	12.2	33.0	16.9
Oats .....	14	5.6	5.5	3.7	7.3
Johnson grass hay .....	8	3.9	5.6	5.6	.0
Lespedeza, hay .....	11	2.4	3.8	2.1	.9
Soybeans, hay .....	21	8.0	5.8	15.7	4.5
Other hay .....	18	5.2	3.8	4.6	7.5
Total hay .....	—	19.5	19.0	28.0	12.9
Silage .....	6	0.4	0.5	0.6	0.6
Other crops .....	—	2.5	0.5	3.4	3.8
Crop acres <sup>1</sup> .....	—	61.3	42.1	98.7	53.6
<b>Animals:</b>					
Dairy cows .....	40	14	19.0	10	10
Other cattle .....	39	11	13	8	10
Hogs .....	34	9	8.0	9	9
Hens .....	40	80	53.0	116	84
Workstock .....	40	4	3.0	5	4

<sup>1</sup>Crop acres include double cropped acres.

two farms. Cotton and milk cows are the major income enterprises.

Generally, a farmer receives the most of his income from the farm enterprise on which he spends the most of his labor. The average farm had 14.2 milk cows, on which 205 ten-hour days of productive work were spent. Also, farms producing cotton had an average of 21.8 acres in that crop on which 307 ten-hour days of productive work were spent. Thus 49 percent more labor was used on the cotton enterprise than on the dairy enterprise for all farms.

All farms produced milk for the market. Only 32 farms produced cotton. Therefore, for eight farms, the sale of milk was the only source of cash income except for miscellaneous sales of surplus stock, eggs and feed, which contributed considerably to labor income on some farms. All of the farms sold surplus livestock such as calves and heifers, eggs, hens, hogs, and a few sold some hay and corn. Labor income for eight farms in the dairy-cotton farm group not produc-

ing cotton was 73 percent of average labor income for the entire group of dairy-cotton farms. In other words, farms including cotton in their farm program along with milk cows in this type of farming had a larger labor income. However, profit per herd on the eight farms depending on cows for their cash income was \$883, or 33 percent above the average herd profit of \$665 for dairy-cotton farms; and more than twice as much profit per herd as for the 40 farms, which was \$370.

**Type of farming related to enterprise profits.** Farms placing major emphasis on cotton lost \$7 per cow annually and \$89 per herd. But they made a profit of \$38 per acre on cotton and a profit of \$1,516 on the cotton enterprise. (See table 23.) Farms placing about the same emphasis on both milk cows and cotton received the greatest return per cow and per acre of cotton. Labor income was slightly higher than for the other types of farming—dairy-cotton and cotton-dairy. Since the dairy & cotton farms were slightly smaller than dairy-cotton farms, and only about 50 percent as large

Table 23. Types of farming related to enterprise profits in Northeast Mississippi, 1944.

Type of farming	Profit on		Profit per		Labor income
	Dairy enterprise	Cotton enterprise	Milk per cow	Acre of cotton	
Dairy-cotton .....	\$665	\$ 246	\$36	\$27	\$1,400
Cotton-dairy .....	—89	1,516	—7	38	1,426
Dairy & cotton .....	435	581	42	48	1,439
All farms .....	370	850	26	39	1,419

Table 24. Soil crop adaptation related to various factors on 40 farms in Northeast Mississippi, 1944.

Soil crop adaptation	Number farms	Lint cotton		Corn		Return per hour of labor on cotton	Labor income
		Per acre	Cost per pound	Per acre	Cost per bushel		
Good .....	22	lbs. 517	cents 12.42	bu. 26	dols. 0.95	cents 73	dols. 1,709
Fair .....	14	407	15.05	26	1.10	61	1,076
Poor .....	4	424	15.17	14	1.41	54	1,033

as cotton-dairy farms, it appears that much attention should be given to the desirability of organizing farms so that major emphasis is placed on both the cotton and dairy enterprises in the area of this study.

Weather conditions were very favorable in Northeast Mississippi to cotton production in 1944 and only fair for feed crops and pastures. These conditions should be considered when making an appraisal of the results of this report. The fact that cotton-dairy farms with a larger investment did not make a large labor income was due to the loss they sustained on their dairy herds and to using farm labor less efficiently.

### Soil Crop Adaptation

Growing a crop on the type of soil to which it is best adapted usually gives the highest labor returns. Progressive farm operators give much thought to placing crops in their farm layouts so that this relationship exists. On 22 farms the adaptation of crops to soils on which they were grown was "good"; on 14 farms, "fair"; and on 4 farms it was "poor" (table 24.) The adaptation of crops to soils on the farm as a whole was used as a basis for the above classification.

The rate of production was highest where soil crop adaptation was good. It

cost 12.42 cents to produce a pound of lint cotton where adaptation was good, 15.05 cents where it was fair, and 15.17 cents where adaptation was poor. The cost to produce a bushel of corn was 94 cents where soil crop adaptation was good, \$1.10 where it was fair, and \$1.41 where soil crop adaptation was poor. The cost of producing cotton per pound was 23 percent greater on farms with poor soil crop adaptation than on farms when the soil crop adaptation was good. It cost 50 percent more to produce corn on farms where the soil crop adaptation was poor than where the soil crop adaptation was good. Also, it will be observed that labor return per hour spent on cotton was 73 cents where soil crop adaptation was good, 61 cents where it was fair, and 54 cents on farms where it was poor. Labor income was highest on farms where soil crop adaptation was good and lowest on farms with poor soil crop adaptation.

### Milk Production by Seasons

Seasonal fluctuation of the production of milk was tremendously great on a large majority of the farms. Since few farmers grow winter pastures and with many feeding lightly in the winter, milk production is piled up from April to September. In fact, 64 percent of the milk produced by 571 cows on 40 farms was produced from April to September.

This great fluctuation in milk production during the year affects very little the efficient operation of the farm business as they are now organized, since the labor spent on a cow varies only a small amount from season to season. On the other hand, milk processing plants are faced with a very difficult problem. Since their equipment, which represents a relatively large investment, is used only for processing whole milk, these plants are forced to carry equipment and labor necessary for capacity production for less than 6 months during the year and then operate much under capacity for a large portion of the year. Should the milk plants in the area shut down during their slack season, there would be no market outlet for farmers producing milk, which would be disastrous to the dairy business. Yet most dairy farmers permit their cows to virtually shut down in production during the winter months and expect milk plants running at one-fourth capacity or less to continue operation.

**Seasonal production related to costs and returns.** Thirteen farms milked cows that produced for sale during the months of January, February, and March, only 146 pounds each per month. That was less than  $\frac{1}{2}$  gallon daily per cow. For the 40 farmers as a whole, the average daily amount sold per cow in the months of January, February, and March was only 7.3 pounds of milk. That was less than 1 gallon per day. Cows producing above 5,000 pounds for sale during the year averaged 11.6 pounds of milk per day in the first quarter of the year and reached a production of slightly less than 2 gallons per day in the months of July, August, and September—their highest producing quarter. Milk sold per cow, on the average, was 1.3 pounds per day less than was produced. This amount was consumed by the family or by calves. Cows producing less than 5,000 pounds of milk sold per year reached their peak of

daily production in the second quarter of the year.

The trend of milk sold monthly per cow in each of the quarters of the year, as well as the labor return per hour for labor used on milk cows is shown in figure 2. Increase in production for the second quarter of the year was rather abrupt. The increase for cows produced below 3,000 pounds sold annually was approximately 90 percent, and over 100 percent for cows producing from 3 to 4 thousand pounds. This increase in the springtime was not as great for cows above the 4,000-pound mark. It is shown further that production per cow declined gradually from the second quarter to the third quarter, except when more than 5,000 pounds were sold per cow, and then dropped precipitously in the fourth quarter, reversing the movement in the spring months.

### Farm Practices

Practices followed in feeding cows varied from farm to farm giving varying results. Records of these methods of feeding show that the combination of feeds and the capacity of cows to convert feed materials into milk play a greater part in profitable milk production than do mere quantities of feed. A few farmers feed for winter production and many feed to keep their cows alive until spring grass comes. Others feed for winter production and then practically quit feeding when the cows begin to get a few nibbles of grass in the spring. A few dairymen are beginning to provide winter grazing by planting oats, or other winter crops. All indications point to the need for a more detailed study of feeding practices by dairymen under actual farm conditions.

**Producing milk for the winter market.** Farmers milking cows that have a relatively high production in the winter when compared with those having a low production in the winter months, produce milk more cheaply and receive the largest return per cow.



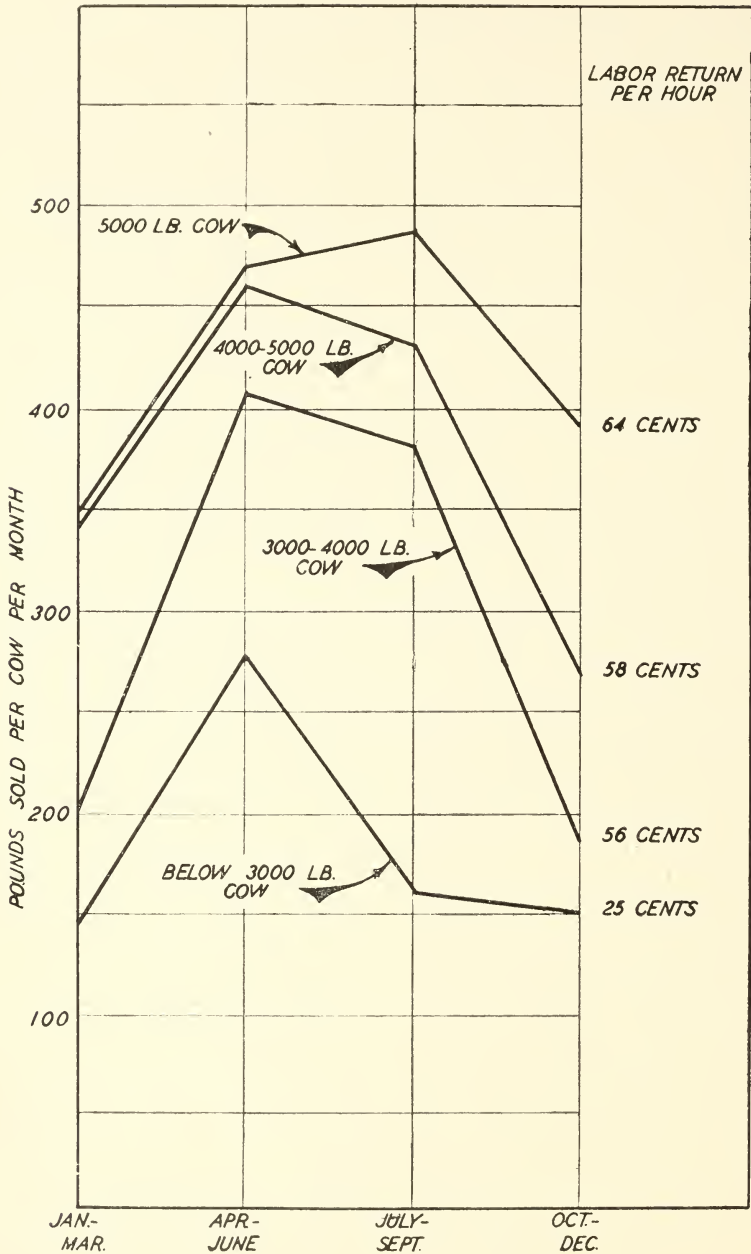


Figure 2. Pounds of milk sold monthly per cow in each quarter of year and labor return per hour spent on cows producing different amounts of milk on 40 farms in Northeast Mississippi, 1944.

When winter production was relatively high, the average production per cow for January was 392 pounds, or 13 pounds per day. Low winter producers gave less than  $\frac{1}{2}$  gallon of milk per day, which indicates that the low producers were practically dry.

The yearly per day cost of keeping the average cow on the five farms where production of milk was low in winter months was \$0.29. The yearly per day market value of the milk produced on these same farms was 3.72 cents per pound. With a cow producing 4 pounds per day, the daily value of milk per cow was 14.88 cents. Thus the average cow on the five farms where winter production was low was kept at a loss of about 15 cents per day during January. The loss per day would have been greater if the daily cost had been determined for the month of January. This unfavorable situation continued through February and on into the spring months until production increased sufficiently to equal cost of production. In the fall months, production dropped to the point where daily costs per cow for the months of October, November, and December were greater than the daily value of milk produced.

On the other hand, the yearly per day cost to keep the average cow on the five farms where production of milk was relatively high per cow in the winter months was 39.7 cents. The yearly per day market value of the milk produced on those same farms was 3.85 cents per pound, and with a cow producing 13 pounds of milk per day in January, the daily value of milk produced was 50.1 cents. Therefore, the average cow on the five farms where winter milk production was relatively high was kept at a gain of 10.4 cents per day. This gain was above all costs including labor.

### Summary

This study was based on farm records kept by 40 farmers in 5 counties of North-east Mississippi for the year 1944. Farms

were selected in the Black Prairie, North-east Highland, and Pontotoc Ridge soil areas, and were further selected on the basis of emphasis placed on milk cows and cotton.

The average acreage per farm was 170 with cropland amounting to 44 percent. Open, tillable pasture amounted to 25 percent of all land, and open non-tillable land represented 12 percent.

Milk cows were the most numerous livestock on the average farm with 14 head each. The range in number was from 4 to 40.

The average investment per farm was \$10,743. Total real estate investment amounted to \$38 per acre and livestock, equipment, feeds, and miscellaneous supplies amounted to \$25.20, which gave a total farm investment of \$63.20 per acre. Average farm receipts amounted to \$5,930; farm expenses were \$3,973, and the average labor income was \$1,420 per farm.

Milk was produced for sale on all farms. There was an average of 14 milk cows per farm with an annual production each of 3,931 pounds. The feed cost was 59.6 percent of the total cost of producing 100 pounds of milk. Man labor amounted to 27.3 percent. The net farm cost to keep a cow for one year was \$120.98, and the net farm cost to produce 100 pounds of milk was \$3.08. With an average hauling charge of 25 cents per 100 pounds, the cost of 100 pounds delivered at the plant was \$3.33.

The cost of producing milk delivered at the plant on dairy-cotton, cotton-dairy, and dairy & cotton farms was \$3.27, \$4.09, and \$2.83, respectively. Similarly the profit per cow was \$36, —\$7, and \$42. The average cost to keep a cow for 1 year on dairy-cotton farms was \$120; on cotton-dairy farms, \$130; and \$113 on dairy & cotton farms. (Price received at plant.) It will be noticed that costs were least and labor returns were highest on dairy & cotton farms.

Thirty-two farms produced cotton averaging 21.8 acres and 20.2 bales ginned per farm. The average price received per pound of lint cotton was 21.21 cents, and the cost to produce one pound of lint was 13.28 cents. Man labor constituted 60.5 percent of the total cost to produce 1 pound of lint. An average of 141 hours of man labor was required on the 32 farms to grow 1 acre of cotton. On dairy-cotton farms, 112 hours of man labor were required to produce 1 acre of cotton. On cotton-dairy farms, 151 hours were required, and dairy & cotton farms required 120 hours. The cost to produce a pound of lint cotton on dairy-cotton, cotton-dairy, and dairy & cotton farms was 13.31 cents, 13.55 cents, and 12.42 cents, respectively.

The cost to produce a bushel of corn was 95.5 cents; 100 pounds of live pork, \$12.41; and the cost to keep one head of workstock for a year was \$105.82.

Cotton-dairy farms had more total acres, cotton acres, crop acres, and a larger investment than the dairy-cotton or dairy & cotton farms. Farms in the Black Prairie soil area ranked highest in all measures of size of farm business. The Northeast Highland came second and the Pontotoc Ridge Area was third.

As the man work units per farm increased, the number of cows increased, acres of cotton increased, and labor income increased. Labor returns per hour of labor increased as the number of cows in the herd increased. In general, as the acres in cotton per farm increased, the man hours of labor required to produce one bale increased. This seems to be due to the fact that as the size of the farm increased, the number of sharecroppers per farm increased, which indicates that sharecropper labor was used less efficiently. Also, as the man equivalent available for work on the farms increased, the units worked per man decreased. With man labor constituting 60.5 percent of the cost of producing a pound of lint cotton, the efficient use of labor is of

vital importance. Labor requirements per cow were lowest on dairy & cotton farms.

Cotton-dairy farms kept the lowest producing cows and dairy & cotton farms kept the highest producers. There was little relationship between the amount of milk produced per cow and the size of the herd. Cows producing less than 3,000 pounds of milk per year showed a loss of \$15.75 per head, whereas cows producing above 5,000 pounds netted the farmers \$44 each. The average annual production per cow for the 40 farms was 3,931 pounds, and production per cow on dairy & cotton farms was 4,392; on dairy-cotton farms, 3,993 pounds; and on cotton-dairy farms, 3,413 pounds. Farmers keeping cows that produced above 5,000 pounds produced the last 3,000 pounds of milk at a cost of \$1.70 per hundred when compared with production per cow of less than 3,000 pounds. Labor returns per hour spent on milk cows increased as the milk produced per cow increased, and the annual labor return per cow was \$85 where production averaged above 5,000 pounds.

The production of lint cotton per acre ranged from 196 pounds to 837 pounds. Seventy-five percent of the farms producing cotton had an average yield of about 400 pounds per acre, and 44 percent had a production above 500 pounds per acre. All types of farming showed an increase in man hours required per acre, total costs per acre, and profit per acre as the pounds of cotton produced per acre increased. The yield was slightly more than a bale per acre on both cotton-dairy and dairy & cotton, and only 2/3 bale per acre on dairy-cotton farms.

The principal combination of farm enterprises on farms was cotton, milk cows, corn and hay. Cotton and milk cows were the major income enterprises. Farms placing major emphasis on cotton lost \$7 per milk cow, but made a profit of \$38 per acre on cotton. Farms placing

about the same emphasis on both cotton and milk cows received the greatest return per cow and per acre of cotton. Farms producing milk at the highest cost produced twice the acreage of cotton that was produced on low cost farms. Variations in the proportionate combinations of enterprises on farms producing cotton and milk at a high cost and a low cost (table 23) was not significant, except for the difference in cotton acreage, which would indicate that differences in costs were due more to such factors as capacity of cows, feeding practices, pasture per cow, quality of seed, amount of fertilizer used, soil fertility, labor efficiency and the managerial ability of the farmer.

The cost to produce one pound of cotton increased as soil fertility decreased. The cost relationship was the same for each of the soil areas.

The rate of crop production was highest where soil-crop adaptation was good. The cost of producing cotton per pound was 23 percent greater on farms with poor soil-crop adaptation than on farms where soil-crop adaptation was good. It cost 50 percent more to produce corn on farms where the soil-crop adaptation was poor than where it was good; and labor income was highest on farms where soil-crop adaptation was good, and lowest on farms with poor soil-crop adaptation.

Sixty-four percent of the milk produced by 571 cows on 40 farms was produced from April to September, inclusive, or in one-half of the year. The daily average amount of milk sold per cow in the months of January, February, and March

was 7.3 pounds, or less than 1 gallon. Milk production per month for the 571 cows increased 117 percent from January to May, and decreased 50 percent from July to November. Cows producing below 3,000 pounds of market milk per year, and dropping very low in winter production, produced milk at a cost of \$3.88 per 100 pounds with a labor return of 25 cents per hour. Cows producing from 4,000 to 5,000 pounds of market milk annually produced at a cost of \$3.41 per 100 pounds and gave a labor return of \$0.58 per hour.

On five farms where milk production was lowest per cow in January, the average amount produced daily by each cow was 4 pounds—less than 1/2 gallon. These same cows reached their peak production of 14 pounds of milk per day or 1.6 gallons in May. On five farms where winter production was relatively high, the average daily production per cow in January was 13 pounds. Low winter producers were kept at a loss of 15 cents per day in January, and relatively high winter producing cows were kept at a gain of 10.4 cents per day. Profit per cow was three times as great and labor returns per hour were twice as great, on farms where winter production per cow was relatively high.

The cost to produce one acre of cotton was greater where share-croppers were used, but this was due principally to the high cost of labor which was paid with one-half of the cotton crop and to less efficient use of this labor available on the larger farms.

In summary, the findings of this study appear to suggest the following recommendations:

**Keep high producing cows.** Cows with a production below 3,000 pounds gave an annual labor return of \$14. On farms where production was above 5,000 pounds, the return was \$85 per cow.

**Grow cotton on soils of high fertility.** The cost to produce cotton on farms of high soil fertility was 12.58 cents per pound, whereas the cost was 14.67 cents on farms of low soil fertility, or a cost spread of nearly 2 cents. This spread of cost between high and low fertility farms was nearly 4 cents per pound in the Black Prairie

area. On land that produced between 700 and 800 pounds of lint per acre, the profit on each acre was \$83. On land that produced between 200 and 300 pounds of lint, the profit per acre was only \$15.

**Use labor more efficiently.** Cows on which 125 hours were spent gave a labor return of \$0.56 per hour, and cows on which more than 200 hours were spent gave a labor return of only \$0.18 per hour.

The average cost to grow a pound of lint was 13.28 cents. Labor amounted to 8.04 cents of this cost, or 60.5 percent of the total cost to produce a pound of lint cotton. On farms where the average labor performed per man available was less than 100 days during the year, the man labor cost to produce 1 pound of lint cotton was 9.3 cents. Where the days of labor per man were 250 and above, the man labor cost was 5.2 cents per pound.

**Place major emphasis on both cotton and dairy enterprises.** There is a definite place for both cotton and milk cows in the organization of farms in Northeast Mississippi. This combination of enterprises permits more efficient use of labor and farm by-products, and cotton and dairy cows supplement each other by giving the farmer a higher return per hour for his labor.

Labor return per hour spent on milk cows on dairy & cotton farms was \$0.61. On dairy-cotton farms the returns were \$0.47 per hour and on cotton-dairy farms it was only \$0.22 per hour. On dairy & cotton farms labor returns per hour spent on cotton was \$0.81, whereas it was \$0.49 and \$0.61, respectively, on dairy-cotton and cotton-dairy farms.

**Grow crops on soils to which they are best adapted.** On farms where soil-crop adaptation was good, the cost to produce a pound of cotton was 12.42 cents, and the cost to produce a bushel of corn was \$0.94. Where soil-crop adaptation was poor, the cost was 15.17 cents per pound for cotton and \$1.41 per bushel of corn.

**Feed cows for winter production.** Low winter producers gave a labor return of \$0.35 per hour. Relatively high winter producers returned \$0.72 per hour.

**Breed for winter production.** Cows bred to calve in the late fall are available for their best flow of milk in the winter months as well as in the spring and early summer months.

**Reduce costs by increasing rates of production.** Farms that produced cotton at the lowest cost had the highest yields, or 1.14 five-hundred pound bales per acre, and farms producing cotton at the highest cost had the lowest yields or 0.78 five-hundred pound bale per acre.

Cows producing less than 3,000 pounds of milk annually, produced it at a cost of \$4.51 per 100 pounds, and cows producing more than 5,000 pounds produced it at a cost of \$3.11 per 100 pounds, or a difference of \$1.40.

**Large farms should use available labor more fully.** Days of work (10-hour days) per man on farms with more than three man equivalents available averaged less than 125 for the year. Days of work per man on farms with 1.6 man equivalents available averaged 310.

**Keep only workstock needed.** The net cost to keep one head of workstock for a year was \$106.

**Use workstock more efficiently.** The average head of workstock was used only 46 ten-hour days during the year.