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## Problems in farm management and production costs on 40 farms in northeast Mississippi

W. J. Edens

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# Problems In Farm Management

And Production Costs

On 40 Farms In Northeast Mississippi

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MISSISSIPPI STATE COLLEGE  
Agricultural Experiment Station

CLARENCE DORMAN, Director

State College,

Mississippi



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## Farm Management and Costs of Production on 40 Farms in Northeast Mississippi

By W. J. EDENS:

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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 income, 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. It is hoped that the results of this study will stimulate farmers of the area to give more thought to the organization of their farms and to utilize more efficiently the land, capital, and labor under their management, and will serve as a means of facilitating the agricultural extension program of this State.

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 oc-

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<sup>1</sup>Professor of Agricultural Economics, Mississippi State College.



curred among creameries. Nineteen of the 31 plants now in operation are located in the 11 counties constituting the Northeast Mississippi Milkshed Area.<sup>1</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 the 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.

Since so many factors—size, rates of production, combination of enterprises, use of labor, farm practices—are responsible for determining the profit made by the farm business, it was thought that if a study were made of representative farms where milk was produced and sold to milk plants so that detailed attention could be given to those factors largely determining profits, much benefit might be derived for both farmers and milk plants.

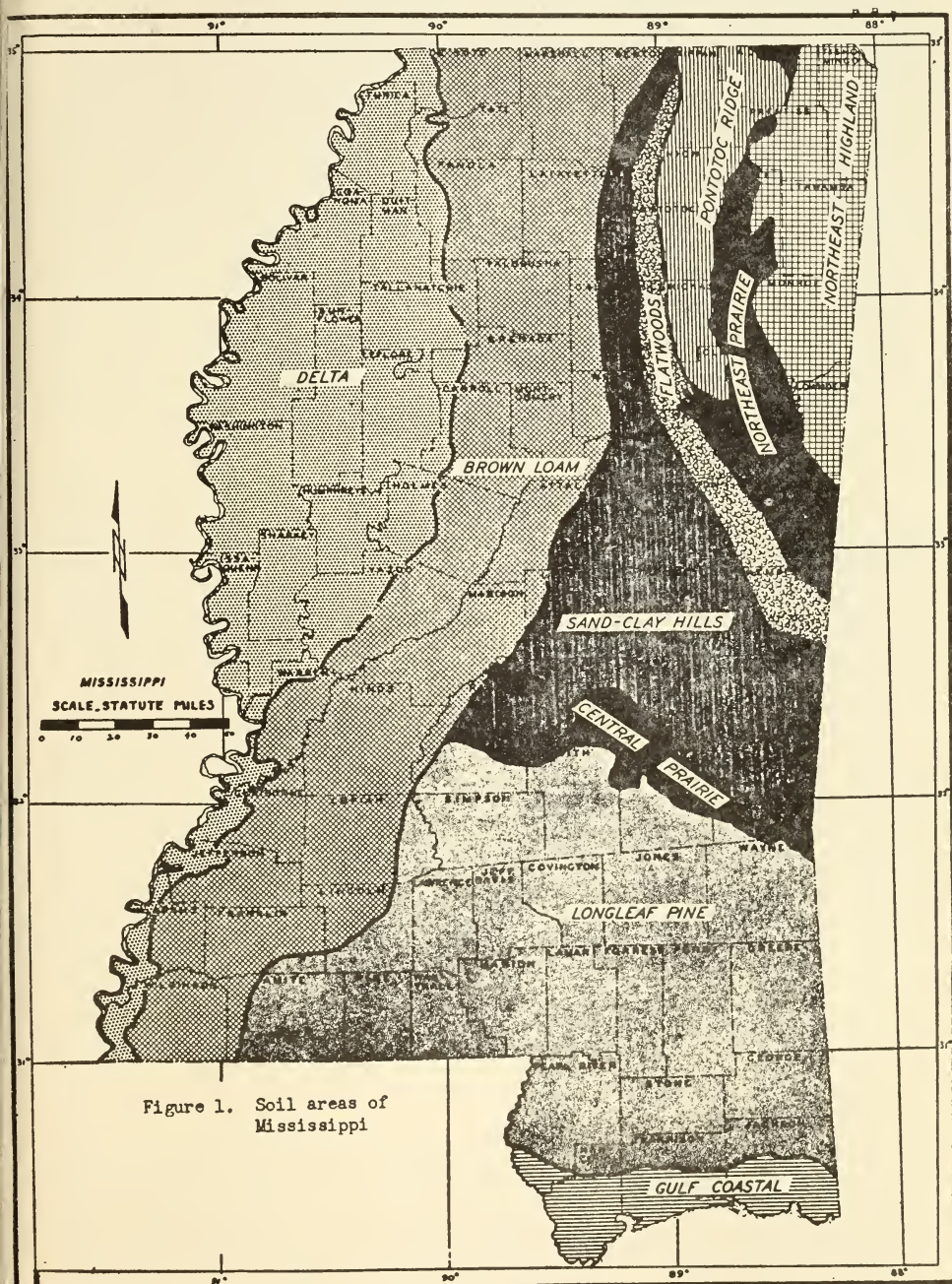
### Location of Farms Studied

Farms selected to cooperate in this study were located in Alcorn, Prentiss, Lee, Chickasaw, and Noxubee Counties, all of which are found in the three major soil areas of Northeast Mississippi, namely, Northeast Highlands, Northeast Prairie, and the Pontotoc Ridge. (See figure 1.) Though the Northeast Prairie Area separates the Northeast Highlands and Pontotoc Ridge Areas, the soils of all three areas are rather distinct.

The Northeast Highland Soil Area developed mostly from coastal plain deposits of sand, clay, and gravel. They are red or yellow wherever the drainage is good, and are generally quite sandy in texture. The rugged topography of parts of the area and poor solid management practices have contributed to severe erosion of the soil on many farms. The commonly occurring soils of the Northeast Highlands are Ruston, Savannah, Cuthbert, Paden, and Ocklocknee. The principal crops grown in this area are cotton, corn, oats, lespezeza, cowpeas, and soybeans. In addition to the field crops, pine timber affords a cash income in several locations.

The soils of the Northeast Prairie are derived from soft, chalky limestone and clays which are coastal plain deposits. Because of the nature of the parent material, the soils possess texture of the clay and heavy clay classes. The topography is gently rolling and sheet erosion has wrought great damage to much farm land. The soils are easily recognized by the dark and red colors, and vegetation of grass and post oak. The dark soils are Houston, Sumpter, and Trinity,

<sup>1</sup>Development of the Dairy Industry in Mississippi, by D. W. Parvin. Mississippi Agricultural Experiment Station Bulletin 422, July, 1945.





commonly called "Black Prairie", and the red soils are Oktibbeha and Montrose, commonly called "Post Oak Prairie." The crops grown are cotton, corn, oats and silage crops, and much livestock is fed. Johnson grass is well adapted to this area and is used for hay along with soybeans. Dallis grass and white and hop clovers, make excellent pastures in this area and contribute much to the production of livestock.

Soils of the Pontotoc Ridge Area have developed from marine deposits of sands and clays that are reddish in color, and naturally the soils are predominantly reddish in color. The texture varies from a sandy loam to clay. The topography is rolling to rough and rugged. Thus, the soils have suffered severe damage from accelerated erosion where protective measures have not been applied. The main soils are Greenville, Orangeburg, and Ruston, on uplands, and Hannahatchie and Ocklocknee. The principal crops are corn and cotton for row crops; lespedeza, soybeans, and cowpeas for hay. Pine timber also contributes to the income of the farmers.<sup>1</sup>

### 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 business, 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 organizational 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.

<sup>1</sup>The description of these three soil areas was taken largely from their description as set forth by the Mississippi State Department of Agriculture, 1942.

## Description of Farms Studied

### Land Utilization

The average amount of land per farm for the 40 farms was 170 acres. Table 1 shows how the total land for all farms as a whole and by types of farms was used. 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.

**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

### 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 shows the relative importance of crops grown. 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.

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	Pct. of total	Acres per farm	Pct. of total	Acres per farm	Pct. of total	Acres per farm	Pct. of total	
Cotton .....	17.2	22.8	4.4	10.0	39.9	28.2	12.1	22.6	32
Corn .....	21.8	28.9	12.2	29.0	39.4	27.8	16.9	31.5	37
Oats .....	6.8	9.0	5.5	13.1	8.0	5.6	7.3	13.6	14
Soybeans (seed) .....	.2	.3	—	—	—	—	.5	.9	1
Lespedeza (seed) .....	.1	.1	—	—	—	—	.3	.6	1
Johnson grass hay .....	10.7	14.7	5.6	13.3	28.2	19.9	—	—	8
Lespedeza hay .....	2.4	3.2	3.8	9.2	2.1	1.5	.9	1.7	11
Soybean hay .....	8.3	11.0	5.8	13.8	15.7	11.1	4.5	8.4	21
Other hay .....	5.2	6.7	3.8	9.2	4.6	3.2	7.5	14.0	18
Total hay .....	26.6	35.3	19.0	45.1	50.6	35.7	12.9	24.1	—
Sorghum, silage .....	.4	.5	.5	1.2	.2	.1	.6	1.1	6
Sorghum, syrup .....	.1	.1	—	—	—	—	.3	.6	3
Truck and garden .....	.7	1.0	.4	1.0	1.5	1.1	.5	.9	40
Other crops .....	1.5	2.0	.1	.2	2.0	1.4	2.2	4.1	—
Crop acres .....	75.4	100.0	42.1	100.0	141.6	100.0	53.6	100.0	—
Double crop acres .....	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	—	—

1. Crop acres—Total acres of crops, includes double cropping.

2. Double-cropping acres are included in the above crop acreages.

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 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 shows the importance of all classes of livestock. 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.

**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	14.21	\$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

1. Average for 5 inventories during the year.

2. Average for 39 farms.

Other cattle<sup>1</sup> amounted to 11 head per farm and 19.2 percent of the total average investment in livestock. Other cattle consisted of bred heifers, steers, bulls, and calves. Hogs were of minor importance on more than 75 percent of all farms. A few farmers raised hogs for the market while all others grew hogs primarily for home consumption, selling the small surplus produced.

Most poultry flocks were for home use. However, a majority of the farms sold some eggs and a few sold young birds. Nine farms had more than 100 hens, and 4 had more than 150 hens.

Table 3 shows the importance of workstock. Next to milk cows, the largest investment in livestock was in the enterprise used for farm power.

### Farm Investment

The investment per farm amounted to \$10,743. The distribution of this investment is shown in table 4. Cotton-dairy farms had the largest investment, as might be expected on account of larger cropland requirements. Dairy-cotton and dairy & cotton farms were more nearly equal in real estate investment and total investment.

**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 shows the relative distribution of farm investment for all farms as well as for types of farms. The average investment in

<sup>1</sup>All cattle other than milk cows. Only one farm had beef cattle.



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.

On farms where dairy cows were the major enterprise and on farms where cows and cotton received about the same emphasis, the total investment per farm was approximately one-half of the investment on farms where cotton was the major enterprise. The percent return on investment for cotton-dairy farms was 10.4, on dairy-cotton farms 14.4 percent, and 16.2 percent on dairy & cotton farms.

**Table 5. Distribution of investment on 40 farms and by types of farming in Northeast Mississippi, 1944**

Item	Percent of investment			
	40 farms	Dairy-cotton	Cotton-dairy	Dairy & cotton
Land .....	37.9	27.1	48.2	33.5
Buildings .....	21.0	23.7	18.9	21.3
Fences .....	1.3	1.7	.9	1.3
Total real estate .....	60.2	52.5	68.0	56.1
Livestock .....	19.3	26.1	12.7	22.6
Equipment .....	9.7	11.0	9.0	9.1
Feeds .....	9.6	9.5	8.9	11.0
Miscellaneous supplies .....	1.2	.9	1.4	1.2
Total .....	100.0	100.0	100.0	100.0

### 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 supplies, and any increase in the inventory value of the farm property. Farm receipts for the 40 farms averaged \$5,930. (See table 6.)

**Table 6. 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 @ 5% .....	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.

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 and other measures of return to the farm operator are also shown in table 6. 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 farm privileges.<sup>1</sup> This amounted to \$2,010 per farm.

The operator's time was valued at current wages paid hired labor without board and lodging in Northeast Mississippi, as reported by the Bureau of Agricultural Economics. All operators were credited with 12 months of labor except one who spent some of his time off the 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.

## Methods Used in Determining the Costs of Producing Milk

All farm costs were determined by means of a set of accounts kept by each farmer. Records began with taking an opening inventory, January 1, 1944, and included transactions during the year pertaining to the farm business. The closing inventory was taken December 31. Daily labor records, feeding records, production records, cash records, and other records were kept. Methods used in keeping these records follow.

*Feed.* Feeds fed to dairy cows were both purchased and produced on the farm. Most concentrates were purchased, whereas, practically all roughages were grown by the farmer. Purchased feeds were charged at market price, and home-grown feeds were charged at farm price. Farm price was market price less the cost of transportation to the market.

The amount of feeds fed was recorded monthly. Once each month—usually the latter part of the month—the farmer determined the pounds of concentrates and roughages fed to his herd for one day, and multiplied these amounts by the number of days in the month.

<sup>1</sup>Farm privileges means contributions made by the farm to family living, such as house rent and foods.

If changes occurred in the kinds of feed fed during the month, or if the number of cows in the herd increased or decreased, this was taken into consideration in order not to overcharge or undercharge the proper amounts. The pasture cost was computed by determining the total pasture cost for all livestock and then allocating the proportionate part to the milk cows. This cost was estimated by the farmer.

*Pasture.* Pasture costs included interest on investment in pasture land, taxes, man and horse labor used on the pastures, and the cost of pasture fences. Crops grazed, such as oats, were charged at the rate of \$3.00 per month for each milk cow.

*Man labor.* The charge for man labor was the average cost per hour for all labor on the farm except that of cotton croppers. Cropper cotton labor was charged directly to the cotton enterprise. Thus, the cost per man hour for all enterprises other than cotton was the average cost per hour on the farm for all labor except labor spent on cotton by cropper tenants. In addition to cash wages, labor costs included the value of the operator's time, unpaid family labor, and the use of tenant houses. The average rate per hour was determined by dividing the total labor costs, less the value of the cropper's share of the cotton and seed, by the total hours of work less the hours spent on cotton by croppers. The total cost of man labor for milk cows was completed by multiplying the average farm labor hour rate by the total hours spent on milk cows. Hours of labor spent on cows included the time spent in milking, feeding, cleaning milk house, and washing utensils.

*Buildings.* The cows were charged with their proportionate part of the cost of maintaining building for the year. This cost included repairs, depreciation, interest on investment, insurance and taxes. The total expense for any building used entirely for milk cows was charged to the herd.

*Dairy equipment.* The investment in equipment for most herds was small. This cost included depreciation, repairs, and interest on investment.

*Depreciation on cows.* Depreciation on milk cows was determined by using the following formula: depreciation equals (value of cows at the beginning of year plus value of heifers freshening plus value of cows purchased) minus (value of cows at the end of year plus value of cows sold and any that died). This charge for depreciation accounts for both depreciation in the case of young cows and depreciation for old cows.

*Interest.* Milk cows were charged with interest at the rate of 5 percent on the average of the beginning and ending inventories values.

*Milk hauling.* Practically all farmers hired the hauling of their milk to the milk plants. Where the farmer hauled his own milk, man hours and the proportionate part of the truck, or car, costs used for handling the milk were estimated by the farmer.

*Miscellaneous costs.* Miscellaneous costs included such items as the proportionate part of truck or auto expense, electricity, sprays, disinfectants, veterinary services, medicines, etc.



## 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 7.) This average number of milk cows per herd was computed from the beginning and ending inventories and five other inventories during the year. 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.

A study of table 7 shows the amount of costs for the various items entering into the total costs for the average dairy herd as well as per cow and per 100 pounds of milk. This table also shows herd credits, such as manure and calves produced, and the returns from milk produced. Detail consideration is given to these items in the sections that follow.

**Table 7. 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
<b>Costs</b>	<b>dollars</b>				
<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>Returns</b>					
<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

Average produced per cow 3,931

Pounds sold per cow 3,468

Milk produced per farm 55,991 lbs.

Milk sold per farm 49,401 lbs.

Personal use per farm 3,861 lbs.

To calves per farm 2,729 lbs.

### Feed Costs

Feed was the largest item of cost in the production of milk. (See table 7.) 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.

Tables 8 and 9 show the relationships of concentrates and roughages fed per cow to milk produced per cow, and the cost to produce 100 pounds of milk. When concentrates fed per cow were increased, milk produced per cow increased. On the other hand, when roughage per cow was increased, there was a slight decrease in the amount of milk produced. The cost to produce milk increased as the amount of both concentrates and roughage fed per cow was increased.

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

Concentrates per cow, pounds	Number of farms	Average concen- trates per cow pounds	Milk per cow pounds	Cost per 100 lbs. milk dollars	Roughage per cow pounds
Less than 1,500	23	851	3,774	3.08	2,518
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 9. 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	Concent- rates per cow
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

Feed costs varied considerably according to type of farming. Table 10 shows the cost items for the production of milk on all farms,

dairy-cotton farms, cotton-dairy farms, and dairy & cotton farms, as well as for the five lowest cost<sup>1</sup> farms and the five highest cost<sup>1</sup> farms.

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. 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 these farm operators were attempting to get high production out of cows of low efficiency.

### Man Labor Costs

Labor used to produce milk was furnished primarily by members of the operator's family. A few farmers hired some labor for the dairy enterprise, paying cash wages, a part of the milk check, or by allowing the helper so much milk for family use. Farm labor was very scarce in 1944 and, consequently, high priced. Due to this fact, labor costs were relatively higher than other fixed costs as buildings, equipment, depreciation on cows, and interest charges.

The cost of labor per herd was \$507 as shown in 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 costs 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.

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<sup>1</sup> Based on the cost to produce 100 pounds of milk.



Table 10. 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 high cost farms
		Dairy- cotton (16 farms)	Cotton- dairy (12 farms)	Dairy & cotton (12 farms)	Five low cost 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>Returns</b>						
<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

## 1. 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.

**Building Costs**

Milk cows were charged with building costs on the basis of the proportionate part of the barn used by the cows. This cost amounted to \$34.47 per herd for the year, or \$2.42 per cow. The building cost per 100 pounds of milk produced was \$0.06.

**Equipment Costs**

Equipment cost per herd amounted to \$18.05. The cost per cow for one year was \$1.27, and the cost per 100 pounds of milk produced was \$0.03.

**Depreciation Costs**

The depreciation on the average herd of cows was \$82.71. This amounted to \$5.81 per cow, or 15 cents per 100 pounds of milk pro-

duced. This cost accounted for 4.4 percent of the total gross farm cost of producing milk.

### Interest Cost

Interest cost at 5 percent on the average investment in the herd amounted to \$48.75. This was equivalent to \$3.42 per cow and about \$0.09 per 100 pounds of milk produced.

### Miscellaneous Costs

Miscellaneous costs were \$59.83 per herd, or \$4.20 per cow. This cost amounted to about \$0.10 per 100 pounds of milk produced.

### Gross Farm Costs

The gross farm costs per herd for the year was \$1,860. Thus, the average gross cost to keep a cow for one year was \$130.61, and this amounted to \$3.32 per 100 pounds of milk produced. The range of cost for keeping a cow for one year on the entire 40 farms was from \$73 to \$257. The range in cost of producing 100 pounds of milk was from \$1.77 to \$5.56.

### Credits

Each cow was credited with 5 tons of manure since this was the estimated amount that was saved per cow. The manure was valued at \$1.50 per ton. Credit for calves produced amounted to \$2.00 per cow. Total credits were \$137.17 for each herd or \$9.63 per cow. This credit amounted to \$0.24 per 100 pounds of milk produced.

### Net Farm Costs

Net farm costs are gross farm costs less total credits. Net farm costs amounted to \$1,723 per herd as shown in table 7. This gave a net cost of \$121 per cow and \$3.08 per 100 pounds of milk produced.

### Hauling Charges

Charges for hauling milk to the milk plant for the year amounted to \$126 per herd, \$8.85 per cow, and about \$0.025 per 100 pounds of milk. When adding this cost to net farm costs, it gives a cost of \$3.33 per 100 pounds of milk delivered at the plant.

### Returns For Milk Sold

The amount of milk sold per farm was 49,401 pounds, or 3,468 pounds per cow. This amount of milk delivered at the milk plant sold for \$1,987. Thus the average price received for 100 pounds of milk by the farms was \$4.02. This price per 100 pounds was slightly above the average milk plant price for the area due to several of the farms producing grade A milk for army camps and for starter milk at cheese plants. This better grade of milk sold at a premium.

### Milk Used on the Farm

Milk used for personal purposes per farm amounted to 3,861 pounds per herd, and milk fed to calves was 2,729 pounds per farm. Thus the total amount of milk used on each farm had a farm value of \$232.

### Profit

Profit was determined by deducting farm costs and hauling charges (total costs) from total milk returns. 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.

What a farmer receives for his labor is of paramount importance to him. He has opportunities to use his labor in various ways and that combination of ways which gives the greatest return for the farm business as a whole, is the one he is continually seeking. These ways of using labor, of course, take form in the various enterprises conducted on the farm.

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 whereby 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 return 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 enter-



prise 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. The pounds of concentrates fed per cow on dairy & cotton farms were about the same as fed on the other types of farms. The roughage fed per cow was from 200 to 400 pounds less per cow. Pasture conditions on dairy & cotton farms were somewhat better than on dairy-cotton farms and about the same as on cotton-dairy farms.

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.

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## 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 average 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.

A study of table 11 shows the amount of cost items for the average cotton enterprise on 32 farms. The average cost of each item is shown for the total cotton enterprise, one acre of seed cotton, one 500-pound bale and seed, 500 pounds of lint, total lint, total seed, the cost of producing one pound of lint, and the proportionate part each item of cost was of the total cost of producing one pound of lint. Items of cotton cost are discussed in the following paragraphs.

## Man Labor

It will be observed, table 11, that man labor was the largest item of costs in producing cotton. 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.

**Table 11. Production, values, and average costs and returns per farm  
for cotton on 32 farms in Northeast Mississippi, 1944**

Cotton acres, 21.77 Bales ginned, 20.23 Man hours per acre 141		Production:			Values: (Dollars received)			
		Total seed	cotton	26,109 lbs.	Total seed	cotton	2,646.14	
		Total lint		10,671 lbs.	Total lint		2,263.72	
		Total seed		15,438 lbs.	Lint per pound		0.2121	
		500 lb. bales		21.34 lbs.	Total seed		382.42	
Item	Total crop	One acre seed cotton	One 500-lb. bale and seed	500 lbs. of lint*	Total lint*	Total seed	Lint	
							Per lb.*	Percent of total
Costs:								
	dollars	dollars	dollars	dollars	dollars	dollars	cents	percent
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
Returns:								
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.

### Horse Labor

Labor performed by workstock held the second place in magnitude of cost. Horse labor used to produce cotton averaged \$195 per farm or \$8.95 per acre. The cost of horse labor to produce one pound of lint cotton was 1.42 cents, or 10.8 percent of the total cost to produce one pound.

### Land

Land costs (interest on investment, taxes, improvements) per farm for the cotton enterprise on 32 farms in Northeast Mississippi was \$67. This amounted to \$3.08 per acre and \$3.14 per 500-pound bale and seed. The land cost per 500-pound bale of lint was \$2.47, and the average cost per pound of lint was 0.5 cent. This one-half cent land cost per pound of lint was 3.7 percent of the total cost to produce a pound of lint. The average value per acre of land only for the 32 farms was \$23.96. Total farm investment per acre was \$63.20.

### Fertilizer

All but six of the 32 farms used fertilizer in the production of cotton. Fertilizer costs for cotton were \$107 per farm or \$4.92 per acre. This was considerably more than the cost of land per acre. The fertilizer expense per pound of lint was 0.79 cent, or 6 percent of the total cost of 13.28 cents to produce a pound of lint.

### Manure

Twenty-six of the 32 farms growing cotton applied manure in its production. The amount used was very small, since the average value of manure applied per acre on farms growing cotton was only \$1.76 or \$38 per farm. Thus the manure cost per pound of lint cotton was 0.28 cent. This was 2.1 percent of the total cost of producing one pound of lint.

### Cottonseed

Cottonseed for planting cost \$43 per farm and \$1.97 per acre of cotton. This expense amounted to 0.32 cent per pound of lint and 2.4 percent of the cost of producing one pound of lint.

### Tractor Expense

Tractor expense for producing cotton averaged \$22 per farm for the farms growing cotton. Seventeen of these farms owned tractors. Since the average cost per hour for operating tractors was 49 cents, it is readily seen that the tractors were used only for a few hours on the cotton enterprise. When tractors were used, it was principally for plowing early in the year.



### Other Equipment

Other equipment consisted of all equipment on farms except tractors. This cost averaged \$54 per farm or \$2.48 per acre for the equipment used in producing cotton. Equipment cost per pound of lint amounted to 0.40 cent, or 3 percent of the total cost to produce one pound of lint.

### Ginning

The expense of ginning averaged \$108 per farm and \$4.96 per acre of cotton. This cost averaged \$5.06 per 500-pound bale. This charge was fairly standard in all communities. Ginning cost was 0.80 cent per pound of lint and 6 percent of the total cost to produce one pound of lint. This cost per pound of lint was twice that of farm equipment and almost twice the cost of land. As an expense of production, ginning came next in importance after man and horse labor costs.

### Miscellaneous Costs

Miscellaneous costs amounted to \$3.53 per acre and 0.57 cent per pound for lint. This expense was 4.3 percent of the total cost of producing one pound of lint.

### 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 11.) 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 lime 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 produced. 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

Table 12 shows the average amount of cotton produced per farm for 32 farms in Northeast Mississippi as well as the amounts produced on dairy-cotton, cotton-dairy, and dairy & cotton farms. Items of cost of production are also given. There was much variation in the acreage devoted to cotton production on the three types of farms. 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.

**Table 12. 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.

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.

Table 13. Costs and returns for corn on 37 farms in Northeast Mississippi, 1944

Item	Quantity per acre	Value per farm	Value per acre	Per bushel	
				Value	Percent of total
		dollars	dollars	cents	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

The total average cost per farm for the corn enterprise was \$563, or \$22.23 per acre. (See table 13.) 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 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.

Table 14 shows that 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.

**Table 14. Costs and returns for hogs on 38 farms in Northeast Mississippi, 1944**

Items	Quantity per 100 lbs. liveweight	Value per lb. produced	Percent of total
<b>Cost:</b>			
		<b>dollars</b>	<b>percent</b>
Corn .....	306 lbs.	7.54	60.8
Pasture .....		0.16	1.3
Other feed .....	82 lbs.	2.66	21.4
Total feed .....	388	10.36	83.5
Man labor .....	5.8 hrs.	1.46	11.8
Horse labor .....		0.16	1.3
Buildings .....		0.05	.4
Interest .....		0.26	2.1
Miscellaneous .....		0.12	.9
Total costs .....		12.41	100.0
<b>Credits:</b>			
Manure .....		0.37	---
Miscellaneous .....		0.01	---
Total credits .....		0.38	---
Net cost .....		12.03	---
Value produced .....		12.53	---
Profit .....		0.50	---

### 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.

Table 15 shows the items of cost included in keeping workstock for one year. 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.

Table 15. Workstock costs on 40 farms in Northeast Mississippi, 1944

Items	Quantity per head	Values per farm	Value per head	Proportion of total	
		dollars	dollars		
Costs:					
Concentrates .....	2076 lbs.	226.00	52.22	46.1	
Roughage .....	2263 lbs.	129.00	29.79	26.3	
Pasture .....		28.00	6.47	5.7	
Total feed .....		383.00	88.48	78.1	
Man labor .....	35.8 hrs.	43.00	9.89	8.7	
Buildings .....		13.00	2.89	2.6	
Equipment .....		7.00	1.58	1.4	
Depreciation .....		14.00	3.29	2.9	
Interest .....		24.00	5.58	4.9	
Miscellaneous .....		7.00	1.61	1.4	
Total costs .....		491.00	113.32	100.0	
Credits:					
Manure .....		32.00	7.50	6.6	
Net costs .....		459.00	105.82	93.4	
Average head per farm.....		4.3	Hours worked per head.....		462
Cost per hour.....		22.9 cents			

## 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 16. 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 16). The Northeast Highland Area was next in all measures and the Pontotoc Ridge Area was the lowest in all measures.

Table 16. 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. Highland	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

*Man work units.*<sup>1</sup> Since man labor is a common denominator of all farms, table 17 was constructed to show the relation of man work units per farm to and among other important factors. As the man work units per farm increased, the number of cows increased, acres of cotton increased very pronouncedly, and labor income increased. Costs and returns and the efficiency in the use of labor are not shown in this table because the averages for these important casual factors were found to be significantly different for the three types of farming; namely, dairy-cotton, cotton-dairy, and dairy & cotton.

*Number of cows.* When considering the relation of the number of milk cows per farm to production, costs and returns, the relationships were not altogether consistent. (See table 18.) The five smallest herds had the highest production per cow, the lowest cost per 100 pounds of milk, and the highest return per hour of labor. However, it should be pointed out that after getting away from these small herds, man hours per cow did decrease, and the labor return per hour spent on cows increased, as the number of milk cows in the herd increased.

Table 17. 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

<sup>1</sup>/ A man work unit is 10 hours of production from work performed by one man.



Table 18. Size of herd related to various factors on 16 dairy-cotton farms in Northeast Mississippi, 1944

Number of cows	Number of farms	Cows per farm	Cost per 100 lbs. milk	Man hours per cow	Labor return per hour	Milk per cow
	number	number	dollars	hours	dollars	pounds
7 - 12.....	5	10	2.80	137	0.63	4,460
13 - 18.....	4	15	3.30	167	0.37	3,425
19 - 24.....	4	23	3.40	148	0.40	3,950
25 and over...	3	32	3.40	134	0.60	4,066
Total.....	16	19	3.27	148	0.47	4,000

The same relationship was obtained when all 40 of the farms were likewise considered. A larger number of cases would no doubt show a more direct relationship between the size of herd and other important factors.

*Acres of cotton.* Acres of cotton per farm varied considerably. (See table 19.)

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 19, 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.

Table 19. 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

### Labor Efficiency

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

*Work units per man available on farms.* The amount of labor

accomplished per man varied from farm to farm, and as the available man equivalent per farm increased, the units worked per man available decreased. (See table 20.) Also, as the available man equivalent per farm increased, the acres of cropland per farm increased. Farms with an average of 38 acres of cropland had an average of 1.63 man equivalent of labor available.

Since the amount of work accomplished per man available for work on the farm decreased as the size of business (measured by crop acres) increased, farmers operating large acreages should give more attention to using more efficiently the labor they have available under their management. It will be noticed that the acres of cropland per man did not vary much whether on a small farm or a large farm, yet the cost to produce an acre of cotton, or a pound of cotton, was greater as the size of farm business increased, and as the labor performed per man available decreased. The fact that larger farms had the most tenants, and since it was on these farms that labor was used less efficiently, this would tend to explain the unfavorable relationship of cropland per man and the greater cost of producing cotton on the larger farms.

*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 21.) 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. While feed is the most expensive cost item in the production of milk, the labor cost ranks next and much careful attention should be given to its use.

Table 20. Relation of man work units accomplished per man available to various factors on 40 farms in Northeast Mississippi, 1944

Units worked per man available	Num- ber farms	Average units worked per man available	Man equi- valent	Acres crop- land per farm	Acres crop- land per man equi- valent	Cost per acre of cotton	Total cost per lb. of lint	Man labor cost per pound of lint
						dollars	cents	cents
Less than 100	9	73	7.75	150	19.3	96	15.23	9.3
100 - 149	12	124	3.37	60	17.8	90	13.90	7.6
150 - 199	6	170	2.95	54	18.3	64	12.65	6.5
200 - 249	6	220	2.34	54	23.1	56	9.54	4.3
250 and over	7	310	1.63	38	23.3	48	11.43	5.2

1/ Man work units accomplished per man available was determined by dividing the total hours of productive work accomplished per farm by the man equivalent of labor found on the farm. The operator and man cropper tenants were considered as one man each available for 12 months of work. Family labor of the operator and family labor of the man cropper were converted to the equivalent of man labor.

Table 21. Man hours per cow related to various factors on 40 farm 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

*Man hours per acre of cotton.* The labor used per acre of cotton varied very much also. (See table 22.) 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. The part of his total time as operator of the farm that should be devoted to the entire dairy enterprise is another problem and should be considered in the organization of the entire farm business.

Table 22. Man hours per acre of cotton related to various factors on 32 farms in Northeast Mississippi, 1944

Man hours per acre	Num- ber farms	Average man hours per acre	Pounds of lint per acre	Cost per per acre	Cost per pound of lint	Profit per acre	Labor return per hour
		hours	pounds	dollars	cents	dollars	cents
Less than 100.....	7	77	286	\$57	16.5	\$15	55
100 - 149.....	17	120	527	86	12.7	47	72
150 - 199.....	7	168	532	84	12.1	49	61
200 and over.....	1	218	573	91	13.5	52	45
Total.....	32	126	477	79	13.4	---	---

### Rates of Production

Again the reader might be reminded that the 40 farms keeping records in 1944 were divided into three groups or types: (1) dairy-cotton farms where there was a relatively high number of milk cows per farm compared with acres in cotton; (2) cotton-dairy farms where the reverse of (1) above was true; and (3) dairy & cotton farms where the number of milk cows and acres in cotton per farm were about the same.

*Types of farming and rates of production.* In table 23 the types of farms were listed according to the pounds of milk produced per cow. Farms placing the most emphasis on cotton (cotton-dairy



farms) kept cows which had the lowest production, or 3,400 pounds each. 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.

**Table 23. 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

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 24.

**Table 24. 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 hr. on cows
		lbs.	dollars	dollars	dollars	dollars	dollars
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

The cost to keep a cow for one year decreased by types of farming as the production per cow increased among the types. (See table 24.) 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 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 25.) 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. (See table 26.) 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.

**Table 25. Milk produced per cow related to various factors on 40 farms in Northeast Mississippi, 1944**

Pounds per cow	Number farms	Milk per cow	Feed cost per cow	Cost per 100 lbs. milk	Profit per cow	Labor return per cow
		lbs.	dollars	dollars	dollars	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

Feed costs per cow increased as production increased, and 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.

**Table 26. Milk produced per cow related to various factors on 40 farms in Northeast Mississippi, 1944**

Pounds per cow	Number farms	Average pounds per cow	Pounds of concentrates per cow	Pounds of roughage per cow	Man hours per cow	Size of herd	Yearly cost per cow
		lbs.	lbs.	lbs.	hours	no.	dols.
Below 3,000	4	2,575	1,425	3,097	147	22	\$124
3,000 - 3,999	17	3,529	978	2,449	148	13	126
4,000 - 4,999	11	4,409	1,633	2,793	137	14	147
5,000 - 5,999	8	5,438	2,022	2,885	145	14	175
Total	40	3,931	1,516	2,624	145	14	\$139

Concentrates fed per cow increased as production increased. Likewise, the cost to keep a cow for one year increased. There was no relationship between production per cow and man hours used per cow.

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.

*Milk per cow by types of farming.* The highest producing cows were not found on farms that placed major emphasis on keeping milk cows, but were found on the dairy & cotton type of farm. (See table 27.) Concentrates fed per cow producing milk at various levels varied considerably among the three types of farms. However, the general trend was an increase in the feeding of concentrates per cow as the production increased. There was less relationship of this trend among cotton-dairy farms.

It will be noticed that on cotton-dairy farms it was only when milk production reached the 5,000-pound mark that these farmers received a profit per cow. The cost of 100 pounds of milk increased as production per cow increased for dairy & cotton farms, which is inconsistent with each of the other types of farms and when all 40 farms are likewise considered. This may be due to the feeding of considerably more concentrates to the cows producing above the 3,000-pound level on the dairy & cotton farms. Also, it is quite possible for the cost to produce 100 pounds of milk to increase as production increased, but at a lesser rate and thereby show a favorable return.

Table 27. Milk per cow by types of farming related to various factors on 40 farms in Northeast Mississippi, 1944

Pounds per cow	Number farms	Average pounds per cow	Concentrates per cow	Yearly cost per cow	Cost per 100 lbs. milk	Profit per cow	Labor return per hour
		pounds	pounds	dollars	dollars	dollars	dollars
<b>Dairy-cotton farms</b>							
Below 3,000.....	2	2,600	1,626	\$115	\$4.08	\$4.00	\$0.19
3,000 - 3,999.....	5	3,500	919	120	3.21	15.00	0.32
4,000 - 4,999.....	6	4,317	1,321	136	2.92	56.00	0.72
5,000 - 5,999.....	3	5,133	2,720	165	3.10	41.00	0.57
Average.....	--	4,000	1,737	138	3.27	36.00	0.47
<b>Cotton-dairy farms</b>							
Below 3,000.....	2	2,550	1,223	133	4.94	—35.00	—0.01
3,000 - 3,999.....	7	3,471	1,164	142	3.82	— 4.00	0.30
4,000 - 4,999.....	1	4,500	2,521	240	5.05	—17.00	0.15
5,000 - 5,999.....	2	5,650	1,218	176	3.04	42.00	0.63
Average.....	--	3,400	1,242	148	4.09	— 7.00	0.22
<b>Dairy &amp; cotton farms</b>							
Below 3,000.....	0						
3,000 - 3,999.....	5	3,640	776	110	2.76	53.00	0.57
4,000 - 4,999.....	4	4,525	1,879	140	2.97	79.00	0.61
5,000 - 5,999.....	3	5,600	1,861	185	3.15	92.00	0.64
Average.....	--	4,400	1,314	133	2.83	42.00	0.61
Average all groups.....	--	3,900	1,516	139	3.34	26.00	0.42

*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 28.)

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

Table 28. Pounds of lint per acre related to various factors on 38 farms in Northeast Mississippi, 1944

Pounds of lint per acre	Num- ber 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

*Pounds of cotton per acre by types of farming.* 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. (See table 29.) It was previously pointed out that man labor was the greatest cost item in the production of cotton amounting to 60 percent of total costs. This cost is shown by types of farming as related to pounds of cotton per acre for land, man labor and other factors.

Where there was much emphasis placed on producing cotton (cotton-dairy farms), both land and labor costs increased as production increased up to where the average production was 604 pounds per acre, and then decreased as production went higher. This relationship was not obtained for the other types of farms. A larger number of cases might have given the same relationship. The lack of a sufficient number of farms in each class interval or grouping, should be considered before attempts are made to draw conclusions.

The total cost to produce one pound of lint cotton on dairy & cotton farms decreased rather definitely as the yield per acre increased. This trend was not as consistent on the other two types of farms. The relation between increased yields per acre and labor returns per hour spent on cotton was fairly direct.

Table 29. Pounds of cotton per acre by types of farming related to various factors on 40 farms in Northeast Mississippi in 1944

Pounds per acre	Num- ber farms	Aver- age pounds per acre	Man hours per acre	Cost per pound		Cost per acre	Cost per pound	Profit per acre	Labor re- turns per hr.
				Land	Man labor				
		pounds	hours	cents	cents	dols.	cents	dols.	dols.
<b>Dairy-cotton farms</b>									
Below 300	4	241	82	1.55	6.57	45	15.3	17	.45
300 - 399	—	—	—	—	—	—	—	—	—
400 - 499	3	442	172	.26	7.40	72	12.0	39	.49
500 - 599	1	582	100	.19	3.09	101	13.7	41	.63
600 - 699	—	—	—	—	—	—	—	—	—
700 plus	—	—	—	—	—	—	—	—	—
Average	—	334	112	.81	6.55	57	13.3	27	.49
<b>Cotton-dairy farms</b>									
Below 300	—	—	—	—	—	—	—	—	—
300 - 399	1	337	76	.36	7.62	68	16.1	16	.64
400 - 499	5	433	129	.39	7.67	73	13.1	35	.62
500 - 599	3	577	170	.90	9.05	99	14.2	45	.70
600 - 699	1	604	144	.92	9.81	120	15.7	37	.77
700 plus	2	799	161	.33	6.44	114	10.9	83	.93
Average	—	505	151	.50	8.45	86	13.5	38	.61
<b>Dairy &amp; cotton</b>									
Below 300	1	242	54	.94	8.39	58	18.6	6	.59
300 - 399	2	330	105	.33	9.03	67	17.0	14	.47
400 - 499	2	433	104	.39	7.53	70	12.3	40	.80
500 - 599	3	567	120	.28	5.85	82	10.9	60	.87
600 - 699	4	620	136	.38	7.06	94	11.5	63	.90
700 plus	—	—	—	—	—	—	—	—	—
Average	—	520	120	.37	7.27	84	12.4	48	.81
Average all groups	—	490	141	.50	8.04	83	13.3	39	.63

Dairy-cotton farmers received less for their labor when using it on cotton than did cotton-dairy and dairy & cotton farms. Low yields were partially responsible for this. Dairy & cotton farms received a labor return of 81 cents; cotton-dairy farms, 61 cents; and dairy-cotton farms, 49 cents for each hour spent in producing cotton. It should be noticed that the return per hour for labor used producing cotton was greater for those farms where there was a fairly well balanced emphasis on dairying and cotton. Likewise, this type of farming produced cotton at the lowest cost and received the highest profit per acre of cotton raised.

### Types of Farming

The yield of cotton per acre varied considerably on the 32 farms producing it. Table 30 shows this variation by types of farming. Cotton-dairy farms grew four times the acreage 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.

Table 30. 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

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 31. The most important crop enterprises were cotton, corn, and hay. Corn and hay were grown for livestock feed. Hay was a cash crop on two farms.

Cotton and milk cows are the major income enterprises on farms in Northeast Mississippi, and anything affecting these two enterprises plays an important role in determining the well-being of farmers in this area. The most profitable combination of cotton and milk cows and contributing enterprises constitutes a question that has not been satisfactorily answered in the area under study.

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.



**Table 31. 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	Dairy-cotton	Cotton-dairy	Dairy & cotton	Labor income	
						Upper 1/3 all farms	Lowest 1/3 all farms
acres or head							
Crops:							
Cotton .....	32	13.8	4.4	30.0	12.1	19.6	7.6
Corn .....	37	19.5	12.2	33.0	16.9	28.5	17.2
Oats .....	14	5.6	5.5	3.7	7.3	12.8	2.3
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	23.5	19.5
Silage .....	6	0.4	0.5	0.6	0.6	0.2	0.2
Other crops .....	—	2.5	0.5	3.4	3.8	1.1	0.4
Crop acres <sup>1</sup> .....	—	61.3	42.1	98.7	53.6	85.7	47.2
Animals:							
Dairy cows .....	40	14	19.0	10	10	16	13
Other cattle .....	39	11	13	8	10	13	9
Hogs .....	34	9	8.0	9	9	11	8
Hens .....	40	80	53.0	116	84	90	58
Workstock .....	40	4	3.0	5	4	5	3

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

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 producing 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 32.) 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 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.

Table 32. 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

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 larger labor income was due to the loss they sustained on their dairy herds and to using farm labor less efficiently.

*Combination of enterprises on high and low income farms.* A comparison of enterprises on farms found in the upper one-third labor income group (\$2,444) and the lowest one-third labor income group (\$416) of the farms under study is also given in table 31. Crop acres were 85.7 for the upper income group and 47.2 acres for the low income group with an average of 61.3 acres for all farms. Thus, the size of business looms up as an important factor affecting income. Cotton acreage in the upper one-third income group was more than twice as great as in the lowest one-third income group, whereas milk cows were only three less in the low income group than in the upper income group. Forty-one percent of the crop acreage on the low income farms was in hay and 27 percent was in hay on the upper income group.

*Combination of enterprises on high and low cost farms.* The combination of enterprises on farms producing cotton and milk at the highest and lowest costs per pound of lint and per 100 pounds of milk are shown in table 33. The 10 farms producing cotton at the lowest cost, or 9.44 cents per pound, had 14.3 acres in cotton, and the 10 high-cost farms—16.99 cents per pound—had 16.3 acres in cotton. The difference in acreage was not significant. However, acres of cotton produced on the highest-milk-cost farms (\$4.51 per 100 pounds) were twice as many as were found on the 10 farms producing milk at the lowest cost, or at \$2.30 per 100 pounds.

The difference in the emphasis placed on milk cows and other livestock on high and low cost farms for both cows and cotton (table 33) was of little significance, which means that the difference in milk costs due to other factors such as the capacity of cow, feeding practices, time of calving, pasture per cow, efficient use of labor, and emphasis placed on other enterprises. The fact that the 9 farms producing milk at the highest cost had twice the acreage of cotton as was found on the 10 farms producing milk at the lowest cost, bears out earlier findings that milk was produced less efficiently on farms giving major emphasis to cotton.

**Table 33. Combination of enterprises on 39 farms related to combination of enterprises on high and low cost farms in Northeast Mississippi, 1944**

Enterprise	Average for 40 farms	10 farms producing cotton at lowest cost (9.44 cents)	10 farms producing cotton at highest cost (16.99 cents)	10 farms producing milk at lowest cost (\$2.30)	9 farms producing milk at highest cost (\$4.51)
Acres or head					
<b>Crop:</b>					
Cotton .....	17.2	14.3	16.3	11.4	21.0
Corn .....	21.8	18.9	22.6	19.9	29.7
Oats .....	6.8	.7	10.3	1.0	4.0
Johnson grass hay .....	10.7	7.9	0.3	.....	6.6
Lespedeza hay .....	2.4	0.9	1.3	0.9	6.0
Soybean hay .....	8.3	4.4	6.6	1.8	11.7
Other hay .....	5.2	6.9	7.4	3.7	5.4
Silage .....	.4	0.3	0.6	.3	0.2
<b>Animals:</b>					
Dairy cows .....	14	10.7	12.2	11.0	13
Other cattle .....	11	9.4	10.5	7.6	11
Hogs .....	9	8.9	8.3	13.3	7
Hens .....	80	103.9	95.4	66.5	90
Workstock .....	4	2.8	4.2	3.9	4
Lint per acre, lbs. ....	490	507	393	414	524
Milk per cow, lbs. ....	3931	4260	3890	4470	3811

The number of milk cows on the 10 farms producing cotton at the lowest cost and the 10 farms producing cotton at the highest cost were practically the same. Likewise, acres per farm in cotton were about the same. However, the 10 farms producing cotton at the lowest cost, produced an average of 114 pounds per acre more than on the 10 farms producing cotton at the highest cost. The farms producing cotton at the lowest cost kept cows that produced more milk by 370 pounds than was the production per cow on farms producing cotton at the highest cost.

The 10 farms producing milk at the lowest cost kept cows that averaged 4,470 pounds of milk each, whereas the average production per cow on the 9 highest cost farms was 3,811 pounds—an annual difference of 659 pounds. On the other hand, the yield of cotton was greatest per acre on farms with the highest milk production costs. This again points out the fact that milk was produced less efficiently on farms placing the most emphasis on cotton. Also, it has been shown that labor is used less efficiently on farms with a large acreage of cotton.

### Soil Fertility

Detail soil maps for each of the 40 farms in this study were furnished by the Soil Conservation Service of Mississippi and the Bureau of Plant Industry. These maps were used to study in detail the soil types on each farm. A staff member of the Experiment Station Soils Department assisted in this work by making a visit to each farm to study the types of soils with special emphasis on the fertility and adaptability of crops to the soils on which they were being grown. Farms were then classed as high, medium, and low in fertility for the purpose of finding relationships between farms of different fertility levels and the costs of production and income.



*Soil fertility related to costs and returns.* Half of the farms in the Black Prairie Area were classed high in fertility. One-half of the farms in the Northeast Highland Area were low in fertility, and 85 percent of the farms in the Pontotoc Ridge Area also were classed low in fertility.

For the areas as a whole, the cost to produce one pound of cotton increased as soil fertility decreased. (See table 34.) The difference in costs between farms of high fertility and low fertility was approximately two cents per pound. With a market price of 20 cents for cotton, a spread of 2 cents per pound amounts to \$10 per bale. Interest at 5 percent on an investment of \$200 amounts to \$10. Consequently, a farmer can afford to pay considerably more for land of high fertility when purchasing land for the purpose of growing cotton. The rate of cotton production was greater on farms of high soil fertility, as would be expected. This, of course, was a major factor in influencing the smaller cost of producing a pound of cotton on these farms.

Table 34. Relation of soil fertility to the cost of producing cotton and income on 32 farms in Northeast Mississippi, 1944

Soil fertility	Number farms	Number of farms in			Cost to produce one lb. of lint	Return per hour of labor	Labor income per farm	Production per acre
		Prairie Black	N. E. Highland	Pontotoc Ridge				
High.....	13	11	1	1	cents 12.58	cents 70	dollars 1,712	pounds 508
Medium.....	5	3	2	0	11.97	63	1,970	436
Low.....	14	4	3	7	14.67	68	1,038	462

*Soil fertility related to various factors.* The foregoing soil fertility cost relationship for the 32 farms were the same for the Black Prairie Area except that the difference between cost of producing a pound of cotton on high and low fertility farms was greater. (See table 35.) In the Pontotoc Ridge and Northeast Highland Areas, the same general relationship existed. However, the value of these findings is limited by the few farms in this study located in the Northeast Highland Area and in the better grades of land in the Pontotoc Ridge Area.

Table 35. Relation of soil fertility to the cost of producing cotton and income on 32 farms in 3 soil areas of Northeast Mississippi, 1944

Soil fertility	Number farms	Cost of one pound of lint	Labor return per hour	Labor income	Lint produced per acre
		cents	cents	dollars	pounds
Black Prairie					
High .....	11	12.78	65	1,798	493
Medium .....	3	12.50	54	1,877	349
Low .....	4	16.35	53	1,228	374
Northeast Highland					
High .....	1	13.86	94	1,807	633
Medium .....	2	11.19	79	1,299	566
Low .....	3	11.20	86	1,546	677
Pontotoc Ridge					
High .....	1	9.08	90	668	552
Medium .....	0	-----	---	3,684	-----
Low .....	7	15.9	68	796	421



Farms high in fertility produced an average of 508 pounds of lint cotton per acre, but both medium and low fertility farms produced well above 400 pounds per acre. (See table 36.)

Profit per acre of cotton decreased as soil fertility decreased. Farms of low fertility spent more for fertilizer per acre than did farms of medium fertility, yet received less profit per acre. Labor income was inconsistent in its relationship to soil fertility; however, labor income on farms of low fertility was much less than labor income on farms of medium and high fertility.

Table 36. Relation of soil fertility to various factors on 32 farms growing cotton in Northeast Mississippi, 1944

Soil fertility	Number farms	Pounds cotton per acre	Cost per pound of lint	Fertilizer cost per acre of cotton	Profit per acre	Labor income	Farm investment per acre
			cents	dollars	dollars	dollars	dollars
High .....	13	508	12.58	6.97	45	1,712	76
Medium .....	5	436	11.97	3.85	40	1,970	74
Low .....	14	462	14.67	5.57	37	1,038	67

### 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. Table 37 shows the relationship of the adaptation of crops to soils on the 40 farms in this study. 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". The adaptation of crops to soils on the farm as a whole was used as a basis for the above classification.

Table 37. 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		
		lbs.	cents	bu.	dols.	cents	dols.
Good .....	22	517	12.42	26	0.94	73	1,709
Fair .....	14	407	15.05	26	1.10	61	1,076
Poor .....	4	424	15.17	14	1.41	54	1,033

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. This variation in the amount of milk produced per cow from season to season, or from winter to summer, is due primarily to the seasonality of pasture production and breeding practices as well as to feeding practices. 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, or in just 50 percent of the year. Figure 2 shows the monthly trend of total milk sold on the 40 farms as well as the trend for the monthly butterfat test.

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. (See table 38.) That was less than  $\frac{1}{2}$  gallon daily per cow. For the 40 farms 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

Table 38. Pounds of milk sold monthly per cow in each quarter of year and costs and labor returns for 571 cows on 40 farms in Northeast Mississippi, 1944

Pounds of milk sold per cow	No. of cows	No. of farms	Pounds sold monthly per cow				Cost per 100 lbs. milk	Labor returns per hr. on cows
			January-March	April-June	July-September	October-December		
Below 3,000	198	13	146	276	262	151	\$3.88	\$0.25
3,000 - 3,999	227	18	203	410	380	181	2.99	0.56
4,000 - 4,999	112	7	341	461	430	272	3.41	0.58
5,000 - 5,999	34	2	350	471	485	392	2.99	0.64
Total	571	40	219	377	355	201	2.83	0.42

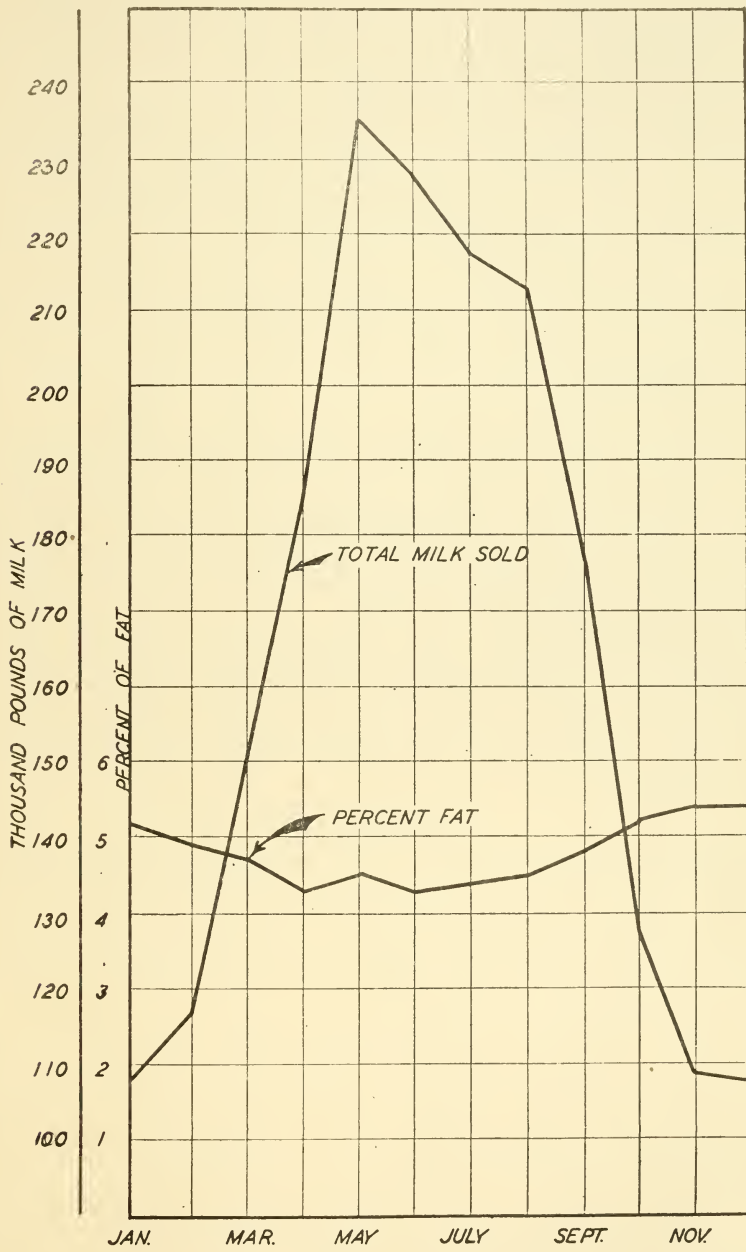


Figure 2. Total milk sold and butterfat test by months for 571 cows on 40 farms in Northeast Mississippi, 1944.

—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.

Figure 3 shows 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. Increase in production for the second quarter of the year was rather abrupt. The increase for cows producing 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.

Figure 2 shows the monthly trend of total milk sold on the 40 farms as well as the trend for the monthly percent butterfat test. This monthly trend of milk sold coincides closely with pasture conditions. It should be noticed that cows producing from 340 to 350 pounds of salable milk monthly in January, February, and March, which is approximately 1.3 gallons per day, gave a labor return of more than twice as much per hour as was given by cows producing an average of 146 pounds per month.

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 \$0.25 per hour. Cows producing from 4,000 to 5,000 pounds of market milk annually produced it at a cost of \$3.41 per 100 pounds and gave a labor return of \$0.58 cents per hour.

### Farm Practices

Practices followed by farmers in operating their businesses are very important in the effect upon costs and income and the profitability of the farm as a whole. Farmers often follow different practices and get practically the same results. If the results are good, then both practices may be good under the given conditions. However, if farmers are using poor practices, results obtained very seldom give pleasure and profit in the business.

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 may 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.



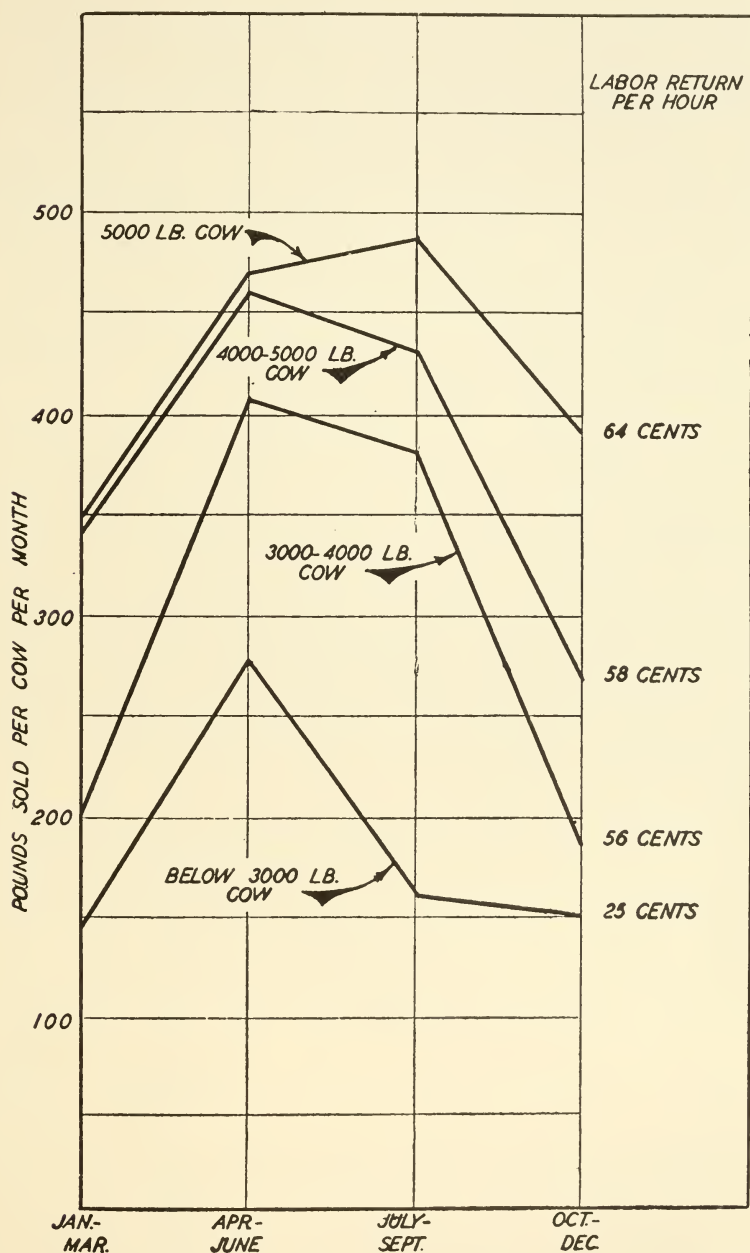


Figure 3. Pounds of milk sold monthly per cow in each quarter of year and labor return per hour spent on cows producing different amounts of milk on 40 farms in Northeast Mississippi, 1944.

*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. Line graphs of monthly production per cow when production was low and when relatively high in winter months are shown in figure 4.

Low winter producers had an average production of only 121 pounds in January, or 4 pounds per day. Their production was 165 and 158 pounds, respectively, for November and December, and 160 pounds for February. Their peak production of 425 pounds per month was reached in May. Production for low winter producers almost doubled in the 2-month period of September and October.

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

Table 39. Rate of production in winter related to feed, labor, cost, and profit

Item	Low winter production per cow	Relatively high winter production per cow
Cows per herd.....	14	12
Production per cow, lbs.....	3,227	4,960
Concentrates per cow, lbs.....	865	1,543
Roughage per cow, lbs.....	2,335	2,039
Man hrs. per cow, hrs.....	163	123
Feed and pasture costs per cow, dollars.....	53	77
Cost of cow per year, dollars.....	112	144
Profit per cow, dollars.....	16	54
Labor return per hour, cents.....	35	72
Cost per 100 lbs. milk, dollars.....	3.29	2.76

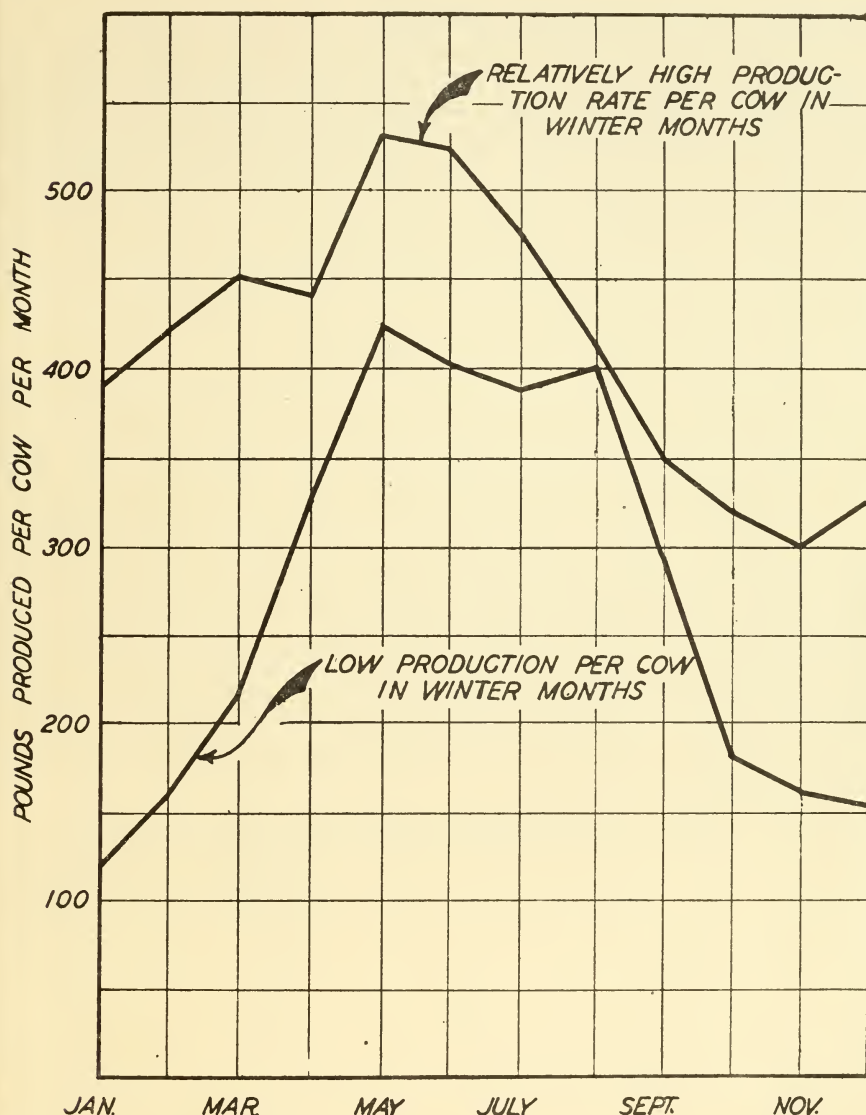


Figure 4. Five farms with very low winter milk production per cow, and five farms with relatively high winter production per cow related to various factors, 1944.

Milk production per month for 571 cows increased 117 percent from January to May and decreased 50 per cent from July to November. This fluctuation in milk makes it very difficult for milk plants to operate efficiently throughout the year. Also, it creates a problem for milk truckmen. Since more winter production usually results in higher profit per cow, farmers need to consider more seriously the problem of seasonal production.

was relatively high was kept at a gain of 10.4 cents per day. This gain was above all costs including labor.

On farms where winter production per cow was low, the amount of milk produced per cow during the year was 1,733 pounds less than the amount produced by cows relatively high in winter production. (Figure 3.) Concentrates fed per cow were considerably less on the low-winter production farms. They did feed, however, a little more roughage per cow than was fed on high winter production farms. Profit per cow was three times greater and labor returns per hour used on cows was twice as great on farms where winter production per cow was relatively high. Also, the cost to produce 100 pounds of milk was 53 cents less on those farms. The foregoing shows that it was much more profitable to keep cows producing relatively high in the winter months as well as during summer.

*Cotton production with and without sharecroppers.* Thirty-two of the 40 farms on which records were kept produced cotton. Eight of these farms did not have sharecroppers. The work was done by the operator and members of the family, by swapping labor with neighbors, and by hiring a small amount of cash labor in rush periods.

Farms with sharecroppers produced nearly four times as many acres of cotton as were produced by farms without sharecroppers. (See table 40.) The cost to produce one acre of cotton was greater where sharecroppers 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 on the larger farms. 1944 was a very favorable year for producing cotton in Northeast Mississippi, and the half of the cotton crop going to the tenant as payment for his labor explains to a large extent the difference in cost per acre. Labor on farms without croppers was valued at the current rate paid labor without lodging and meals.

Table 40. Farms with sharecroppers and farms without sharecroppers related to various factors, Northeast Mississippi, 1944

Factors	Eight farms with sharecroppers	Eight farms without sharecroppers
Acres of cotton per farm.....	31	8
Lint cotton per acre, lbs.....	569	459
Cost per acre, dollars.....	94	64
Cost per pound of lint, cents.....	13.06	10.67
Profit per acre, dollars.....	50	51
Man hours per acre of cotton, hours.....	162	131
Man hours cost per pound, lint, cents.....	8.34	5.66
Labor return per hour on cotton, cents.....	71	67
Soil fertility.....	High to medium	Medium
Crop adaptation.....	Good	Good to fair
Labor income* dollars.....	\$2,021	\$1,019

\*It should be kept in mind that all of these farms produced milk for the market.

Labor returns per hour spent on cotton for sharecropper farms were slightly above the labor returns on farms where there were no sharecroppers. The larger yield on farms with sharecroppers contributed to this difference. Farms with sharecroppers had soils with higher fertility and better soil-crop adaptation, all of which was a contributing factor affecting labor returns.



## Summary

This study was based on farm records kept by 40 farmers in 5 counties of Northeast Mississippi for the year 1944. Farms were selected in the Black Prairie, Northeast 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 33) 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  $\frac{1}{2}$  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 sharecroppers 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.



## Recommendations

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.