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FACTORS RELATED *to* PRODUCTION *and* SALE *of* MILK *for* MANUFACTURE

AGRICULTURAL EXPERIMENT STATION
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FACTORS RELATED to PRODUCTION and SALE of MILK for MANUFACTURE

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FOR MANY YEARS agricultural leaders in Alabama have emphasized the importance of having more than one source of farm income. Cotton has long been the main source of farm income in east-central Alabama. However, this area is considered well adapted to close-growing forage crops, and for this reason both beef and dairy cattle have attracted considerable attention. Vegetables and truck crops also have provided an additional source of income.

Because dairying appeared to be a suitable source of supplementary income in east-central Alabama, a manufacturing milk company established a number of milk routes in that area in 1943. One of the better milk routes extended through parts of the Piedmont and Upper Coastal Plain farming areas and included parts of Russell, Lee, and Chambers counties, Figure 1. Four years later this route still did not have enough volume to make collection and hauling of milk self-supporting without a subsidy from the milk plant. A detailed study covering the 1947 operations of the route was made in March 1948.

The purpose of the study was to analyze some of the factors that influence farmers to produce milk for sale and factors that affect their volume of sales. Points given special attention were: (1) conditions under which farmers do and do not sell milk, (2) possibility of current condensery patrons producing more milk, and (3) probability of other farmers selling milk to the condensery.

The 95 farm records in this study were obtained by the survey method. Thirty-nine of the records were from patrons – farmers who sold milk to the condensery in 1947 and were selling when the records were obtained. Forty were from non-patrons – farmers on the route who were not selling milk to the condensery.

* Resigned.

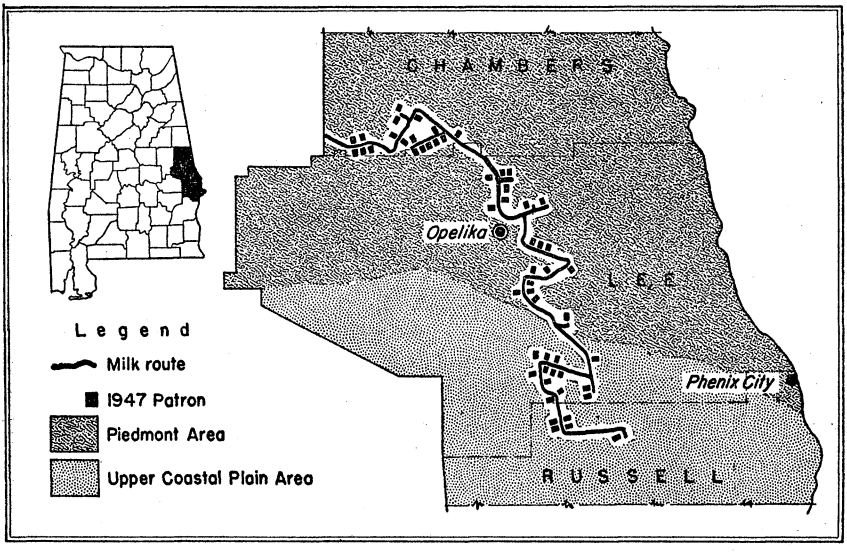

FIGURE 1. Location of patron farms along a selected milk route in east-central Alabama in 1947. The condensery is located 12 miles beyond the upper end of the route. The Columbus, Ga., market is immediately across the state line from Phenix City.

Nine records were from part-time patrons – farmers who had sold some milk in 1947 and intended to sell again. The other seven were from past patrons – farmers who had sold some milk in 1947, but did not intend to sell again. The part-time and past-patron records were taken to determine if possible why some farmers sell only part of the time and why others quit selling.

Established markets for cotton, milk, and beef cattle were available in Phenix City, Columbus, and Opelika. Fresh vegetables had to be sold to retail stores or individuals in Opelika, but there was an organized farmers' market available in Columbus.

There was some opportunity for off-farm employment for nearly all farmers on the milk route. Cotton mills and other industries in Columbus, Phenix City, and Opelika competed for farm labor.

HOW FARMS *of* PATRONS *and* NON-PATRONS DIFFER

Age of Operators and Size of Households. The average age of patrons was 52 years, while that of non-patrons was 48 years. Patrons ranged in age from 18 to 80 years, whereas non-patrons ranged from 21 to 77 years of age. In view of these wide varia-

tions, age of the operator can hardly be considered a factor of much importance in influencing production and sale of milk.

Patrons usually had smaller families than non-patrons, averaging 3.8 persons per household as compared to 4.4 in the non-patron group. Colored families were larger than white in both patron and non-patron groups. In the colored-patron group, families averaged 4.4 persons, while the white averaged 3.6. In the non-patron group, colored families averaged 4.7, whereas white families averaged 4.2 persons.

Sixty-three per cent of the people in patron households and 50 per cent of those in non-patron households knew how to milk and were available. Off-farm employment competed to some extent for milking labor. This was particularly noticeable in non-patron households in the Piedmont Area. In this group, 50 per cent of the males over 12 years of age except those in school worked off the farm full time. In the same area, only 15 per cent of the males in the patron group worked full time off the farm.

Tenure of Operators. Stability of tenure seemed to be an important factor in determining whether an operator of a farm sold milk. A larger percentage of the patrons than non-patrons were farm owners, Table 1.

TABLE 1. TENURE OF PATRONS AND NON-PATRONS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Tenure	Patrons	Non-patrons
	Per cent	*Per cent*
Owners	69	50
Tenants	31	32
Croppers	0	18
TOTAL	100	100

Approximately the same percentage of patrons as non-patrons were tenants other than croppers. None of the patrons were croppers, but nearly one-fifth of the non-patrons sharecropped.

The patrons had lived on their present farms longer than the non-patrons, averaging nearly 19 years as compared to the non-patrons' 11 years. Patron owners had been on their farms 19 years and non-patron owners 14 years. Patron tenants other than croppers averaged 17 years, while non-patron tenants other than croppers averaged 7 years. Non-patron croppers averaged 8 years on their present farms. Even 7 or 8 years on the same farm, if assured, appears to be long enough for establishing a feed production system, and for making other adjustments necessary

for milk production. However, the assurance of a number of years on one farm may be lacking for many farmers, particularly for croppers and tenants.

Land Use. Patrons operated 11 acres more per farm in 1947 than did non-patrons. They averaged 18 acres more in crops, 5 acres more in open pasture, 31 acres more in pastured woods, and 43 acres less in unpastured woods, Table 2.

TABLE 2. LAND USE BY PATRONS AND NON-PATRONS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Land Use	Average acreage per farm		Percentage of farmers using some land as specified	
	Patrons	Non-patrons	39 patrons	40 non-patrons
	Acres	*Acres*	*Per cent*	*Per cent*
Crops	52	34	97	98
Idle cropland	35	36	62	45
TOTAL CROPLAND	87	70	—	—
Woods unpastured	25	68	38	38
Woods pastured	48	17	92	50
TOTAL WOODS	73	85	—	—
Open pasture	39	34	92	62
Other land	3	2	95	78
TOTAL OPERATED	202	191	—	—

The amount of land operated by patrons ranged from 6 to 957 acres; that operated by non-patrons ranged from 5 to 2,800 acres. Because of this variation within each group, a comparison was made of the proportion of operators using land in certain ways.

A larger percentage of patrons than non-patrons had (1) open pasture, (2) some idle cropland, and (3) pastured woods. If additional pasture were needed and if some cropland could not be cultivated, more grazing might have been obtained and more profit realized by developing this idle cropland into pasture, leaving the woodland for growing timber.

Cropping Systems. Patrons had an average of 10 acres or about 83 per cent more of forage crops than did non-patrons, Table 3. In addition, patrons had an average of 6 acres or 50 per cent more corn and 2 acres or 25 per cent more cotton than did non-patrons. A larger percentage of patrons than non-patrons raised each of the forage crops adapted to the area.

TABLE 3. CROPPING SYSTEMS OF PATRONS AND NON-PATRONS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Crop	Average acreage per farm		Percentage of farms having crop	
	Patrons	Non-patrons	39 patrons	40 non-patrons
	Acres	*Acres*	*Per cent*	*Per cent*
Alfalfa	1	1	10	2
Kudzu	5	2	49	20
Sericea	5	3	38	15
Small grains	4	2	54	25
Austrian winter peas or vetch	1	[1]	10	2
Clover	1	3	18	5
Oats and vetch	1	[1]	15	[2]
Other hay	4	1	33	10
TOTAL FORAGE CROPS	22	12	—	—
Cotton	10	8	62	52
Corn	18	12	87	85
Grain sorghum	1	1	26	12
Other crops[3]	4	3	—	—
TOTAL CROP USE	55	36	—	—
Double cropped	3	2	—	—
TOTAL CROPPED	52	34	—	—

[1] Less than 0.5 acre.
[2] Less than 0.5 per cent.
[3] Includes peanuts, Irish potatoes, sweetpotatoes, garden, orchard, etc.

Approximately one-half of the patrons grew kudzu and small grains and over one-third grew lespedeza sericea. In contrast less than one-fourth of the non-patrons raised these crops. Few farmers raised alfalfa. However, alfalfa production was a recent development from research by the Alabama Agricultural Experiment Station, and was just coming into use as a hay and grazing crop in the area in 1947.

On the basis of color, white farmers, generally, were supplementing their income from cotton with income from other enterprises, while colored farmers, in the main, were still depending on cotton for income. In the Piedmont Area, white patrons planted 14 per cent of their crop areas in cotton, as compared to 32 per cent planted by colored patrons. In the same area, white non-patrons planted 22 per cent in cotton, while colored non-patrons planted 48 per cent. The white patrons in the Piedmont Area had an average of 36 acres in forage crops, whereas colored patrons averaged 6 acres. White non-patrons had an average of 8 acres of forage crops as compared to less than one acre on colored non-patron farms. Similar comparisons could not be made for

the Upper Coastal Plain Area because no colored farmers in the area studied were selling milk.

Livestock on Farms. The range in number of dairy cows maintained by patrons was from 1 to 14, with an average of nearly 6, Table 4. Patrons also had an average of nearly two dairy heifers and two dairy heifer calves. Fifty-seven per cent of the animal units on farms of patrons were dairy animals. Only 62 per cent of the non-patrons kept dairy cows, with an average of one cow for all non-patron farms. Only 3 of the 40 non-patrons had any beef cattle; these had a total of 164 head. Beef cattle may have been competing with dairy cattle on a few farms, but apparently the competition was less than that from off-farm employment.

TABLE 4. AVERAGE NUMBER OF LIVESTOCK ON FARMS OF PATRONS AND NON-PATRONS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Kind of livestock	Average number per farm		Percentage of operators keeping each type	
	Patrons	Non-patrons	39 patrons	40 non-patrons
	Number	*Number*	*Per cent*	*Per cent*
Dairy cows	5.8	1.0	100	62
Dairy heifers (1 year and over)	1.7	0.2	77	22
Dairy heifer calves (less than 1 year)	1.8	0.2	90	32
Dairy bulls	0.4	0.1	46	5
Beef cattle	1.8	4.1	26	8
Beef calves	0.9	1.4	69	32
Workstock	1.9	1.0	85	60
Hogs	3.2	1.9	85	88
Chickens	44.0	16.9	90	88
Animal units[1]	12.5	7.1		

[1] Different kinds of animals were converted into animal units on the basis of relative amounts of feed consumed by different classes of livestock. Roughly one animal unit is one cow, one horse, five hogs or 100 chickens; adapted from Forster, G. W., Farm Organization and Management. Revised Edition. Prentiss-Hall. 1946. pp. 172-174.

White patrons kept approximately seven dairy cows per farm. Colored patrons averaged 3.4 dairy cows per farm. Colored non-patrons did not have any beef cattle and they had only slightly more than two animal units of livestock per farm. Many in the colored non-patron group had neither the livestock nor the feed for a livestock program. All patrons maintained an average of 12.5 animal units on 22 acres of forage crops, 18 acres of corn, and 5 acres of other crops or an average of 3.6 acres per animal

unit. Non-patrons maintained an average of 7.1 animal units on 12 acres of forage crops, 12 acres of corn, and 4 acres of other crops or 3.9 acres per animal unit.

Had non-patrons chosen milk as an added source of income, it would have been necessary to have increased feed or reduced other types of livestock.

Production and Sale of Milk. Patrons produced an average of 17,600 pounds of milk per farm in 1947, Table 5. Production of non-patron farms averaged 4,100 pounds of milk. Patrons sold an average of 14,000 pounds of milk per farm – 13,700 to the condensery and 300 pounds to neighbors or local consumers. It appeared that the milk produced in excess of farm needs was sold, most of it going to the condensery. Thus, increased milk sales must come from increased production and not from diverting milk from other uses.

TABLE 5. AVERAGE ANNUAL PRODUCTION AND DISPOSITION OF MILK BY PATRONS AND NON-PATRONS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Item	Unit	39 patrons	40 non-patrons
Percentage of operators producing milk	*Pct.*	100	60[1]
Milk used at home	*Lb.*	3,600	3,700
Milk sold	*Lb.*	14,000	400
MILK PRODUCED	*Lb.*	17,600	4,100

[1] One non-patron owned a dairy cow during part of 1947, but did not produce any milk.

Non-patrons produced approximately 11 pounds of milk per day practically the year-round except for a small decline in the fall quarter. Milk production reported by patrons varied from a low of 36 pounds per day during the first quarter of 1947 to a high of 61 pounds during the second quarter.

The average portion of total production used at home by patrons varied from 22 per cent in the first quarter to 16 per cent in the second quarter. The amount of milk used at home by patrons was practically the same as that produced by non-patrons. However, when consideration is given to the fact that only 60 per cent of the non-patrons produced milk, it appears that the non-patrons who produced milk used more milk at home than did patrons.

White patrons in the Piedmont Area sold more milk per farm than did any of the other groups during the last 3 quarters of

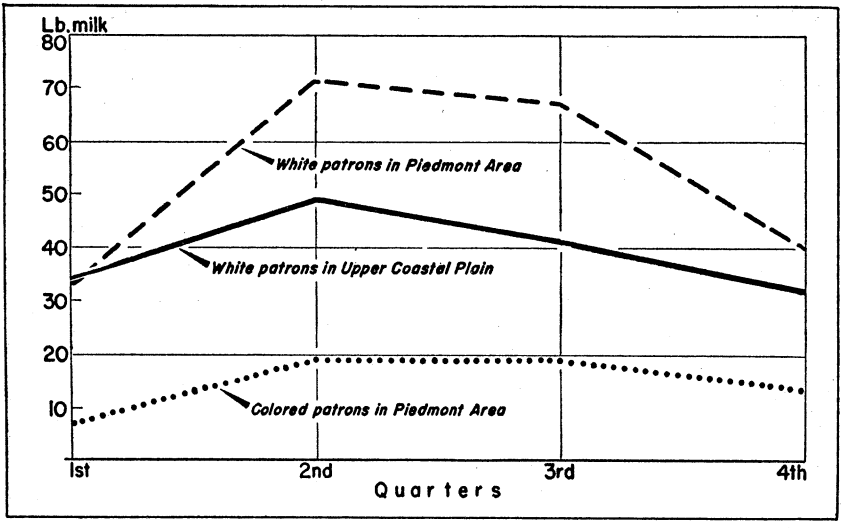

FIGURE 2. Average number of pounds of milk sold per day by quarters by white and colored patrons in the Piedmont Area and by white patrons in the Upper Coastal Plain Area on a selected milk route in east-central Alabama, 1947.

the year, Figure 2. Their sales fluctuated widely during different seasons of the year. Relatively speaking, seasonal variation in sales was least in the white-patron group of the Upper Coastal Plain Area. During each quarter, the colored patrons in the Piedmont Area sold less milk per farm to the condensery than did any other group. There were no colored patrons in the Upper Coastal Plain Area.

DIFFERENCES *in* PATRON FARMS

Households producing milk in 1947 ranged in size from one to nine persons. The household with only one person produced 12,988 pounds of milk, while the one with nine people produced 12,761 pounds of milk. This illustrates the apparent lack of any definite relationship between the size of household and the amount of milk produced.

Operators between the ages of 46 and 60 years produced more milk per farm than did either younger or older operators. This age group produced 20,600 pounds of milk per farm, which was 6,000 pounds more than that of the younger age group and 3,800 pounds more than that of the older age group.

Among white or colored patrons, there was no significant difference in milk production between owners and tenants. White

owners produced 20,300 pounds of milk per farm, while the white tenants produced 24,400 pounds of milk. Colored owners produced 9,900 pounds of milk per farm, whereas the colored tenants produced 8,000 pounds. Under similar tenure arrangements, white farmers produced more milk per farm than colored farmers.

Number of Milk Cows on Farms. The number of milk cows on farms of patrons ranged from 1 to 14. Average production per cow was approximately 3,000 pounds of milk, which varied little among herds of different sizes, Table 6. On an average, approximately 1⅔ acres of forage crops and 3⅓ acres of open pasture were required for each milk cow on the patron farms surveyed. In addition, some concentrates and hay were purchased, but the amounts bought did not appear to have any relation to the amount of milk produced. On the average, 600 pounds of milk was produced for each acre devoted to forage crops and open pasture used by the dairy cattle.

TABLE 6. RELATION OF NUMBER OF COWS TO MILK PRODUCTION AND TO OTHER FACTORS, 39 PATRON FARMS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Item	Unit	Number* of cows on farm		
		1 to 3	4 to 7	8 and over
Farms in group	*No.*	14	13	12
Milk produced per dairy cow	*Lb.*	3,175	3,109	2,919
Forage crops per animal unit (Available per dairy cow)	*Acre*	1.7	1.6	1.9
Open pasture per animal unit (Available per dairy cow)	*Acre*	2.5	3.3	3.3
Concentrates purchased per dairy cow	*Lb.*	769	595	918
Hay purchased per dairy cow	*Lb.*	345	501	219
Dairy cows per farm	*No.*	2	6	10
Milk sold per farm	*Lb.*	4,593	14,604	24,409
Milk produced per farm	*Lb.*	7,371	18,414	28,828

* Average of beginning and ending inventory numbers.

Combination of Factors Favorable to Milk Sales. It has been shown that ownership of land and a high proportion of the farm in forage crops and pasture were conditions favorable for milk production. The relationships of some of the more important factors favorable to milk sales are summarized in Table 7.

Approximately, 21 per cent of all owners and 16 per cent of all tenants on the route in 1947 sold milk. Of the white owners who operated less than 100 acres, only 15 per cent sold milk. Forty per cent of the white owners who operated more than 100 acres and who had also 20 or more acres in forage crops sold

TABLE 7. PERCENTAGE OF TOTAL FARMERS ON THE ROUTE WHO WERE PATRONS OF THE CONDENSERY AND AVERAGE SALES OF THOSE WHO WERE PATRONS ON A SELECTED MILK ROUTE, EAST-CENTRAL ALABAMA, 1947

Group	Total farmers on the route[1]	Patrons in group		Milk sold per patron in group
	Number	*Number*	*Per cent*	*Pounds*
All owners	127	27	21	15,700
All tenants	77	12	16	10,200
All croppers	35	0	0	----------
TOTAL	239	39	16	14,000
White owners who operated less than 100 acres	47	7	15	8,300
White owners who operated 100 acres or more but had less than 20 acres in forage crops	43	8	19	16,400
White owners who operated 100 acres or more and had 20 acres or more in forage crops.	25	10	40	21,600

[1] Since only a 20 per cent sample was taken of the non-patrons, the total numbers were derived by adding to the number of patrons five times the number of non-patrons in each group.

milk. In contrast, only 19 per cent of the white owners who operated more than 100 acres but who did not have 20 acres in forage crops sold milk. Furthermore, those who had 20 or more acres in forage crops sold 21,600 pounds of milk per farm, which was 50 per cent more than the average for all patrons on the route. The proportion of this group that sold milk was two and one-half times as large as the proportion of all farmers on the route who sold milk.

OTHER CONDITIONS RELATED *to* SALE *of* MILK

Ninety per cent of the patrons stated that they were contacted by another person before they began selling milk. Persons influencing patrons to start selling milk to the condensery included the plant representative, truck driver, county and assistant agents, other agricultural workers and sellers.

Reasons Given for Selling Milk. Seventy-seven per cent of the patrons thought they were "making money" selling milk. This was probably their principal reason for selling. In response to the question, *"Why are you selling milk to the condensery?"*, 38 per cent of the patrons gave "have more milk than needed on farm" as one reason. Most of these patrons were among the 77 per cent

who thought they were making money, since selling a surplus rather than wasting it should certainly make money. Thirty-eight per cent of the patrons also gave "a convenient market" as a reason. Three operators indicated they were selling to the condensery until facilities for producing Grade A milk could be built. Other reasons given were "only market available" and "provides an income."

Reasons Farmers Sold Milk Only Part of Year. "Dry cows" and/or "not enough milk" were given as the chief reasons for stopping milk sales by part-time patrons (farmers who had sold some milk in 1947 and intended selling again). Other reasons included "off-the-farm work," "failure to follow a planned breeding program," and in one instance, "lack of feed."

While the foregoing were given as reasons for selling milk only a part of the year, greater emphasis on other farm enterprises appeared to be a more basic explanation. For instance, part-time patrons, on the average, had more land in row crops than patrons. In fact, they had twice as much cotton and corn acreage as patrons, but less than one-half as much open pasture. Both patrons and part-time patrons operated farms of about the same acreage and had the same number of animal units per farm. The part-time patrons, however, had more workstock but less beef cattle. While they had feed to maintain several head of cattle, part-time patrons did not have enough open pasture to support large herds. They kept dairy cows to supplement farm income, but did not consider the enterprise sufficiently profitable to justify year-round milk production.

Reasons Farmers Stopped Selling Milk. "Unprofitable" and/or "some other enterprise more profitable" were the major reasons given for stopping milk sales by past patrons (farmers who had sold some milk in 1947 but who did not intend to resume selling). Other reasons given were "cows went dry," "do not like to work with milk," and "lack of feed."

Past patrons, on the average, had more land in crops, less idle cropland, more open pasture, and slightly larger farms than did patrons. Past patrons kept an average of 5 dairy cows and 11 head of beef cattle per farm. These farmers with a large acreage in pasture seemed to prefer beef cattle.

Additional Farmers Plan to Sell Milk. Nine non-patrons, or 22 per cent of the 40 non-patrons interviewed in this study, said

that they planned to sell milk in the near future. Since the 40 visited was a 20 per cent sample, it was estimated that about 45 of the 200 non-patrons on the route would become patrons in the future. Such an increase would be more than twice the number of patrons who sold milk to the condensery in 1947.

The intentions of the nine non-patrons were based on conditions existing when the records were taken. Whether the volume of milk sold would be more or less doubled would depend upon the effort spent in promoting feed and milk production, the comparative prices of milk and other farm products, the opportunities for off-farm employment, and other similar factors.

SUMMARY

A detailed study was made of a selected milk route in east-central Alabama. Points given special attention in the study were (1) the conditions under which farmers do and do not sell milk, (2) the possibility of getting more milk from present patrons of the condensery, and (3) the probability of other farmers selling milk to the condensery.

The 95 farm records of 1947 operations were obtained by the survey method. Thirty-nine were from patrons of the condensery; 40 were from non-patrons; 9 were from part-time patrons; and 7 were from past patrons.

Apparently, age of operator, number of people in the household, number of milkers in the family, and years lived on the present farm had very little influence on whether a farmer produced milk for sale. However, ownership of farm, fairly large farm business, number of milk cows, and use of land for forage crops and pasture were associated with greater volume of milk production.

A larger percentage of the patrons than of the non-patrons had (1) open pasture, (2) some idle cropland, and (3) pastured woods. Patrons had 10 acres more of forage crops, 6 acres more of corn, and 2 acres more of cotton per farm than non-patrons. Also a larger percentage of patrons than non-patrons raised each of the forage crops adapted to the area.

The quantity of milk produced and sold per farm by patrons was related to several factors. Under similar tenure arrangements, white farmers produced more milk per farm than did colored farmers. Operators between the ages of 45 and 60 sold more milk than did any other age group. Also, total production of milk was

directly related to (1) production of milk per cow, (2) size of farm, and (3) acreage in forage crops.

Patrons produced milk as a source of supplementary income. The part-time patrons placed most of their emphasis on cotton production. Part-time patrons kept dairy cows to supplement the farm income, but they did not consider the enterprise profitable enough to justify year-round milk production under existing conditions.

Nearly all patrons were contacted before they began to sell milk. Seventy-seven per cent of the patrons thought they were "making money" selling milk. Thirty-eight per cent gave "have more milk than needed on farm" as a reason for selling milk to the condensery. The same percentage gave "a convenient market" as a reason. Most past patrons said that they quit selling milk because it was "unprofitable" and/or "some other enterprise was more profitable." They had enough pasture for a small herd of beef cattle; therefore, they shifted to beef because they believed it to be the more profitable enterprise.

Many of the non-patrons had neither the feed nor the cows for milk production. Nine of the 40 visited said that they planned to sell milk in the near future. If this happens it should mean that about 45 of the 200 non-patrons on the route would start selling milk. Even greater sales are desirable. However, the large increase in volume needed awaits expanded production of forage crops and pasture.

ACKNOWLEDGMENT

This study was made possible by the cooperation of the farmers living on the selected milk route and officials of the condensery. The writer is especially indebted to the superintendent of the milk plant for his help and suggestions and to the truck driver for his cooperation and help in locating the farmers who sold milk in 1947.