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**Manufacturing milk producers in Cannon County, Tennessee :  
Problem A: Characteristics of Cannon County manufacturing milk  
producers and their farms : Problem B: Management practices of  
Cannon County manufacturing milk producers : Problem C:  
Factors influencing dairy management practice adoption by  
Cannon County manufacturing milk producers : three related  
special problems in lieu of thesis /**

Clayton F. Glenn  
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I am submitting herewith a thesis written by Clayton F. Glenn entitled "Manufacturing milk producers in Cannon County, Tennessee : Problem A: Characteristics of Cannon County manufacturing milk producers and their farms : Problem B: Management practices of Cannon County manufacturing milk producers : Problem C: Factors influencing dairy management practice adoption by Cannon County manufacturing milk producers : three related special problems in lieu of thesis /." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

Robert S. Dotson, Major Professor

We have read this thesis and recommend its acceptance:

Don O. Richardson, William M. Miller, Henry Andrews

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

December 1, 1968

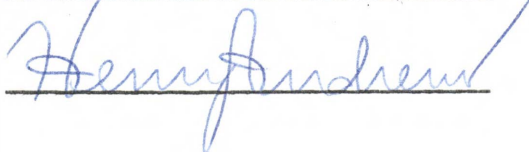
To the Graduate Council:

I am submitting herewith three related problems in lieu of thesis written by Clayton F. Glenn entitled: "Problem A: Characteristics of Cannon County Manufacturing Milk Producers and Their Farms; Problem B: Management Practices of Cannon County Manufacturing Milk Producers; Problem C: Factors Influencing Dairy Management Practice Adoption by Cannon County Manufacturing Milk Producers." I recommend that they be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.



Major Professor

We have read these problems  
and recommend their acceptance:



Accepted for the Council:

---

Vice Chancellor for  
Graduate Studies and Research

MANUFACTURING MILK PRODUCERS IN CANNON COUNTY, TENNESSEE:

PROBLEM A: CHARACTERISTICS OF CANNON COUNTY MANUFACTURING MILK PRODUCERS  
AND THEIR FARMS

PROBLEM B: MANAGEMENT PRACTICES OF CANNON COUNTY MANUFACTURING MILK  
PRODUCERS

PROBLEM C: FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION BY  
CANNON COUNTY MANUFACTURING MILK PRODUCERS

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Three Related Special Problems in Lieu of Thesis

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

---

by  
Clayton F. Glenn  
December 1968

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## ABSTRACT

### PROBLEM A: CHARACTERISTICS OF CANNON COUNTY MANUFACTURING MILK PRODUCERS AND THEIR FARMS

This survey-type study was one of three related problems concerning manufacturing milk production in Cannon County, Tennessee. The specific purpose was to determine the characteristics of Cannon County manufacturing milk producers, including those who annually produce in high, medium and low thirds in terms of butterfat. A random sample of 60 producers out of 120 was interviewed and comparative analysis was made in simple numbers and percents.

The findings revealed that the average Cannon County manufacturing milk producer in 1967 had the following characteristics: (1) was approximately 48 years of age; (2) had completed 8.5 years of schooling; (3) was generally friendly toward the interviewer; (4) reported a gross family income of \$6,759; (5) milked 14 cows and produced 5,198 pounds of milk and 218 pounds of butterfat per cow; (6) operated 195 total acres of farm with 83 acres in cropland; (7) did his own milking; (8) had no weighing devices for milk and feed; and (9) was found not to have a silo.

When the average high and low producers were compared, it was found that the former: (1) was slightly older; (2) was better known to the interviewer; (3) had 27 percent greater income; (4) had considerably higher per cow butterfat (193 pounds) and milk (4,421 pounds) 1967 production averages; and (5) had 23 acres more cropland.

Suggestions were made for further analysis of the data and for the use of findings in the planning of the dairy phase of the Cannon County Extension program.

PROBLEM B: MANAGEMENT PRACTICES OF CANNON COUNTY  
MANUFACTURING MILK PRODUCERS

This was the second of three related problems concerning manufacturing milk producers in Cannon County, Tennessee. The purpose of this section of the study was to determine the kinds of management practices that were and were not being used in 1967 by manufacturing milk producers in the county. A random sample of 60 producers was interviewed and then classified into high, medium and low third categories in terms of average per cow butterfat marketed. Data were analyzed in numbers and percents, and the management levels of dairymen were compared on the basis of practice diffusion ratings assigned.

Findings revealed that most manufacturing milk producers in Cannon County in 1967 were using the following practices: (1) two of the six practices related to breeding and herd replacement; (2) only one of the four practices related to record keeping and use; (3) two of the seven practices related to feeding and feed production; (4) two of three practices related to health and sanitation; and (5) two of the three other practices related to general management that were listed.

A comparison of the high and low producers showed that high producers: (1) had higher ratings on 17 of 23 separate practices studied; (2) tended to feed a slightly higher protein ration; (3) had

10 percent fewer who had hay ground; and (4) more often provided salt and minerals both free choice and in the ration.

Also it was noted that: (1) younger dairymen tended to have a slightly higher practice diffusion rating than older ones; (2) farmers with dairying as a major source of income scored higher than other farmers in regard to practice diffusion ratings; (3) the practice diffusion ratings tended to increase with increase in gross family income; and (4) dairymen who were better educated tended to manage better.

Suggestions were made for the use of findings and for additional research.

PROBLEM C: FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION  
BY CANNON COUNTY MANUFACTURING MILK PRODUCERS

This was the third of three related problems concerning manufacturing milk producers in Cannon County, Tennessee. The purpose here was to try to determine what factors, other than those identified earlier, had influenced manufacturing milk producers to adopt or reject recommended dairy management practices. Data from interviews with 60 randomly selected producers in the county served as a basis for analysis and interpretations. Comparisons were made after dividing the group into high, medium and low thirds according to average 1967 butterfat production per cow.

Of the things liked most by manufacturing milk producers, "the regular income" was rated first by 83 percent of the dairymen interviewed.



"Confinement" was the greatest dislike mentioned by the producers.

Respondents felt that recommended production practices most often are not adopted because the owner was physically unable to provide necessary supervision and management, the farmer expects to move away from the farm, dairymen don't have technical knowledge needed, expect to sell dairy herd, and because more rewarding activities claim the owner's time and money.

The milk plant field man was most frequently mentioned as a source of advice by 85 percent of the dairymen. Sixty percent of the dairymen interviewed sought advice from the county agent. Radio was listed by nearly all dairymen as a source of additional useful information. Seventy-seven percent of the dairymen rated farm magazines as their second most frequently reported source of additional information. High producers were found to be seeking more advice than the low.

Suggestions were made for the use of the findings of the study in future extension work related to dairying in Cannon County.

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PROBLEM A: CHARACTERISTICS OF CANNON COUNTY MANUFACTURING  
MILK PRODUCERS AND THEIR FARMS

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A Special Problem in Lieu of Thesis

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

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by  
Clayton F. Glenn  
December 1968



## CHAPTER I

### INTRODUCTION

#### I. THE SITUATION AND NEED FOR THE STUDY

In the four year period, 1964-67, dairying ranked third in importance as a source of agricultural income in Tennessee (22:1).<sup>\*</sup> Annual receipts averaged about 93 million dollars for the period of 1964-67. Also, there were approximately 348,000 dairy cows in Tennessee in 1967. Average milk production per Tennessee cow that year was only 6,160 pounds, while the average American cow was producing 8,821 pounds (14:1). Some research (21:1) suggests that manufacturing milk production per cow of less than 5,500 pounds is unprofitable, and that cows producing below that amount should be culled and replaced.

There are 1,028 farms in Cannon County with the average size farm being 131.7 acres and of this number 625 had milk cows in 1967. The agriculture of the county is rather diversified, a little more than 75 percent of the agricultural income coming from the sale of livestock and livestock products and one-fourth coming from the sale of crops. Dairying is the largest single source of agricultural income in the county. The dairy business is made up of 16 Grade A dairy farms and 609 producers of manufacturing milk (10:3).

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<sup>\*</sup>Numbers in parentheses refer to numbered references in the bibliography; those after the colon are page numbers.

Manufacturing milk production started on the increase in 1935 when Armour Creameries located a cheese plant in Woodbury, Tennessee. Two field men were assigned to Cannon and surrounding counties to establish routes and work with producers on recommended management practices leading to high production.

This plant reached a high of 1,300 patrons during 1954. There was a decline of 600 Cannon County producers in the period from 1954-65. The decline was due partially to the increase in production of Grade A milk from no purchasers in 1935 to 16 by 1967 (10:13). During that period four buyers who previously did not operate in this locality began purchasing manufacturing milk in the county.

Problems identified in the Annual Project III Plan of Work for Fiscal Year 1967 included the following: (1) there is lack of an adequate supply of quality feed (especially hay and silage); (2) only 16 percent of the cows are bred artificially; (3) most dairymen in Cannon County do not keep adequate records; (4) many housing and milking facilities are inadequate and/or inefficient; and (5) mastitis continues to be a common disease in dairy herds throughout the county. The basis for identification of the foregoing problems has been mainly that of observation by the county extension staff members and a "Recommended Manufactured Milk Production Practice Checklist," which was used in interviewing a randomly selected sample of 50 dairymen during 1966 (10:13). Judging by the lack of available literature, further research needs to be done in selected counties to try to ascertain which recommended production and management practices manufacturing

milk producers are using and why they are or are not using them. Based on such knowledge, educational plans should be developed for use in teaching dairymen to do a better job in the management of their herds in order to receive increased net returns per cow and per herd (6:3).

It is anticipated that future extension plans in the county will include coordination of promising methods identified by this study for increasing Cannon County milk production to a more profitable level with emphasis on increased net returns for the manufacturing milk producer.

## II. THE PURPOSE OF THE STUDY

This specific study was guided by the following purpose: to determine the characteristics of Cannon County dairymen, and their farms, whose herds produced in high, middle and low thirds in terms of average pounds of butterfat per cow in 1967.

## III. REVIEW OF LITERATURE

Limited information was available on the characteristics of manufacturing milk producers in Tennessee and their farms.

Based on data from a survey of 25 Tennessee plants purchasing manufacturing milk in 1961, Chappell (7:1) noted that producers shifting to elevated stalls from stables or no milking facilities increased milk production per cow an average of 12.2 percent by the end of the second year.

Also, the addition of silage to dairy rations was shown to

increase milk production an average of 14.5 percent over no silage. (Less than 2 percent of the herds having fewer than 10 cows were being fed silage.)

Ellmore (13:3) reported on a Virginia survey conducted in 1960. The 7,225 farms reporting represented 69 percent of the producers of manufacturing milk in the state. The total number of farms reporting milk cows decreased 40 percent from 1954 to 1960. The survey showed the average milk producer to be 50 years old, to have completed eight years of schooling, and to be milking seven cows with an average production per cow of 5,700 pounds annually. Approximately one-fifth of the producers used milking machines, one-third used electric milk coolers and one out of seven used silos. Beef bulls were used for breeding 63 percent of the cows.

A 1964 study of 20 Grade A dairymen in Anderson County, Tennessee, by O'Neal (16:25) revealed that levels of milk production were related to the quality of the feed used and to the managerial ability of the producer.

Dealing specifically with manufacturing milk production, Caldwell (6:7-50), based on a 1966 survey of 75 manufacturing milk producers in Henry County, found that they:

1. Averaged 50 years of age, those in the high production third being slightly older than those in the medium and low production thirds.
2. Had a little over eight years of formal education at all production levels.

3. Were generally known by the county agent with more high than low producers being known.

4. Had a receptive attitude toward the survey in all production groups.

5. Had an average gross family income of \$4,945 with high producers averaging about one-third more income than reported by the low producers.

6. Produced an average of 243 pounds of butterfat and 5,543 pounds of milk per cow with high producers having nearly twice the production recorded for the low producers.

7. Only 36 percent of the producers received the major share of their income from dairying.

8. Operated farms averaging 142 acres in size with high producers having larger farms than the low producers.

9. Milked an average of 10 cows with high producers milking 3 through 16 and low producers 2 through 34.

10. Had an average of about four registered cows per herd.

11. Generally produced most of their replacement heifers.

12. Had a total median bacterial count of 875,000--the high production group averaging less than one-half the count of the medium production group.

Caldwell felt that educational programs planned to meet the needs of Henry County manufacturing milk producers should consider the wide ranges found in educational level, the needs for motivation and attitude changes, radical age differences and extreme differences

in facilities used by these dairymen. The similarities between the Caldwell study and the present one will become obvious--though differences between characteristics of producers in different locations might be expected.

#### IV. METHODS

For the purpose of this study, 50 percent of the total population of 120 producers was randomly sampled, and 60 producers were selected for interview. The manufacturing milk producers were divided into three groups of 20 each according to the butterfat marketed per cow in 1967. Table I shows the groups and the actual range of butterfat production for each group.

A copy of the survey schedule form is included in the appendix. It consisted of 45 questions to be completed by personal interview. The average time spent with each respondent was approximately 90 minutes, four surveys being the largest number completed in any one day. The local buyer of manufacturing milk (Armour Creamery) furnished necessary information concerning pounds of milk sold, butterfat, and average bacteria count.

After the survey was completed, the interviewer answered eight judgment questions concerning the respondent. The questions related to the respondent's interest, attitude, rating with regard to the value and condition of the herd, and how well the interviewer knew the respondent.

The manufacturing milk producers ranged in average butterfat

TABLE I

NUMBERS OF CANNON COUNTY MANUFACTURING MILK PRODUCERS IN THE BUTTERFAT PRODUCTION GROUPS ACCORDING TO RANGES IN BUTTERFAT PRODUCTION PER COW BASED ON 1967 MARKETING FIGURES

| Average Per Cow Butterfat Production Group | Number of Producers Interviewed | Range of Butterfat Marketed Per Cow Within Groups (pounds) |
|--|---------------------------------|--|
| Low  | 20                              | 62-171 lb.   |
| Medium                                     | 20                              | 173-235 lb.  |
| High                                       | 20                              | 249-476 lb.  |
| Total                                      | 60                              | 62-476   |

marketed per cow from 62 to 476 pounds with an average production of 218 pounds. Manufacturing milk producers in the same type of survey in Henry County two years earlier averaged 25 pounds higher with about the same variation in each of the three production thirds.

Analysis was made of data in simple numbers and percents, and the main comparisons were made between high and low production groups.



## CHAPTER II

### FINDINGS

#### I. DEGREE TO WHICH INTERVIEWER KNEW MANUFACTURING MILK PRODUCERS

The interviewer was acquainted with nearly nine-tenths (89 percent) of the producers and knew them either very well or fairly well, as shown in Table II. Ninety-five percent of the high producers, compared with 85 percent of the low producers were at least fairly well known. Eleven percent (7 producers) were not very well known by the interviewer and apparently had had relatively little contact with county extension personnel.

#### II. RESPONDENT'S ATTITUDE TOWARD THE SURVEY

Data in Table III show that the interviewer was well received by 93 percent of the producers. Four, none of them high producers, were considered indifferent and none antagonistic. All cooperated by answering the questions. It was necessary to make it clear to some of the producers that the information would be kept confidential. While 90 percent of the high producers were friendly, less than two-thirds (65 percent) of the low producers fell in this category.

#### III. EDUCATIONAL LEVELS

Table IV indicates that the educational level seemed to have some effect on the placings in the production groups. The average grade

TABLE II

DEGREE TO WHICH INTERVIEWER KNEW ALL CANNON COUNTY MANUFACTURING MILK  
PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW  
PRODUCERS BY NUMBERS AND PERCENTS\*

| Degree to Which<br>Interviewer Knew<br>Respondent | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Very Well   | 13                          | 22  | 8                 | 40  | 2                   | 10  | 3                | 15  |
| Fairly Well                                       | 40                          | 67  | 11                | 55  | 15                  | 75  | 14               | 70  |
| Not Very Well                                     | 7                           | 11  | 1                 | 5   | 3                   | 15  | 3                | 15  |
| Not at All  | 0                           | 0   | 0                 | 0   | 0                   | 0   | 0                | 0   |
| Total   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE III

INTERVIEWER'S ESTIMATE OF THE ATTITUDE OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS TOWARD THE SURVEY BY NUMBERS AND PERCENTS\*

| Attitude<br>Toward the<br>Survey | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|----------------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                                  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Friendly                         | 45                          | 75  | 18                | 90  | 14                  | 70  | 13               | 65  |
| Somewhat friendly                | 11                          | 18  | 2                 | 10  | 3                   | 15  | 6                | 30  |
| Indifferent                      | 4                           | 7   | 0                 | 0   | 3                   | 15  | 1                | 5   |
| Antagonistic                     | 0                           | 0   | 0                 | 0   | 0                   | 0   | 0                | 0   |
| Total                            | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE IV

EDUCATIONAL LEVELS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS AND AVERAGE EDUCATIONAL GRADE LEVELS\*

| Educational Grade Level   | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---------------------------|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|                           | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| Not Answered              | 4                        | 6   | 0              | 0   | 2                | 10  | 2             | 10  |
| 1-6 grades                | 15                       | 25  | 3              | 15  | 8                | 40  | 4             | 20  |
| 7-8 grades                | 16                       | 27  | 4              | 20  | 7                | 35  | 5             | 25  |
| 9-10 grades               | 2                        | 3   | 1              | 5   | 0                | 0   | 1             | 5   |
| 11-12 grades              | 19                       | 32  | 9              | 45  | 3                | 15  | 7             | 35  |
| 1-4 college               | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| B.S. or M.S. degree       | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| Doctor's or Law degree    | 2                        | 3   | 1              | 5   | 0                | 0   | 1             | 5   |
| Total                     | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |
| Average Educational Level | 8.5 grades               |     | 10.6 grades    |     | 6.5 grades       |     | 8.5 grades    |     |

\*Percents are rounded to nearest whole number.

level for the entire group was 8.5 years. Less than one-half (42 percent) of the producers had 9 or more years of schooling. When high and low producers were compared, it was found that 60 percent of the former and only 40 percent of the latter had nine or more years. The average grade level for the high producers was 10.6 years compared to only 8.5 for the low producers.

#### IV. AGE GROUPS

Table V shows only two years difference in ages of the high and low production groups (48 and 46 respectively). The medium producers average age of 51 was three years older than that of the high group. Therefore, it would seem that age did not appear to be a characteristic distinguishing between high and low production groups.

#### V. GROSS FAMILY INCOME

Gross family income averaged \$6,759 for the 58 producers who answered this question as shown in Table VI. High producers averaged \$7,842; while low producers averaged \$5,737.

Sixty-nine percent of all those interviewed reported gross family incomes of \$4,000 or more, more high producers (75 percent) being included in this grouping than low (55 percent). Thus, there seems to be a relation between production and gross family income.

Sixty Grade A producers in Henry County in 1965 averaged \$19,339. This wide difference of some \$12,000 indicated the possibility of considerable opportunity for improvement for manufacturing milk producers.

TABLE V

AGE GROUPS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED,  
HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS,  
AND AVERAGE AGES\*

| Age<br>Category          | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                          | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Under 25                 | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| 25-34                    | 7                           | 12  | 1                 | 5   | 2                   | 10  | 4                | 20  |
| 35-44                    | 16                          | 26  | 7                 | 35  | 4                   | 20  | 5                | 25  |
| 45-54                    | 12                          | 20  | 5                 | 27  | 3                   | 15  | 4                | 20  |
| 55-64                    | 17                          | 28  | 6                 | 30  | 9                   | 45  | 2                | 10  |
| 65 or more               | 7                           | 12  | 1                 | 5   | 2                   | 10  | 4                | 20  |
| Total                    | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Estimated Average<br>Age | 48.7                        |     | 48.5              |     | 51.5                |     | 46.0             |     |

\*Percents are rounded to nearest whole number.

TABLE VI

TOTAL 1967 GROSS FAMILY INCOME OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE INCOMES\*

| Total Gross Family Income Category (in dollars) | All Dairymen Interviewed |         | High Producers |         | Medium Producers |         | Low Producers |         |
|---|--------------------------|---------|----------------|---------|------------------|---------|---------------|---------|
|   | No.                      | %       | No.            | %       | No.              | %       | No.           | %       |
| Not Answered                                    | 2                        | 3       | 1              | 5       | 0                | 0       | 1             | 5       |
| 0-1,999   | 6                        | 10      | 1              | 5       | 2                | 10      | 3             | 15      |
| 2,000-3,999                                     | 11                       | 18      | 3              | 15      | 3                | 15      | 5             | 25      |
| 4,000-5,999                                     | 18                       | 30      | 4              | 20      | 9                | 45      | 5             | 25      |
| 6,000-7,999                                     | 6                        | 10      | 3              | 15      | 1                | 5       | 2             | 10      |
| 8,000-9,999                                     | 4                        | 7       | 2              | 10      | 0                | 0       | 2             | 10      |
| 10,000-11,999                                   | 6                        | 10      | 3              | 15      | 3                | 15      | 0             | 0       |
| 12,000-13,999                                   | 2                        | 3       | 1              | 5       | 0                | 0       | 1             | 5       |
| 14,000-15,999                                   | 1                        | 2       | 1              | 5       | 0                | 0       | 0             | 0       |
| 16,000-17,999                                   | 1                        | 2       | 0              | 0       | 1                | 5       | 0             | 0       |
| 18,000-19,999                                   | 1                        | 2       | 1              | 5       | 0                | 0       | 0             | 0       |
| 20,000-21,999                                   | 2                        | 3       | 0              | 0       | 1                | 5       | 1             | 5       |
| Total   | 60                       | 100     | 20             | 100     | 20               | 100     | 20            | 100     |
| Estimated Average for Those Reporting           |                          | \$6,759 |                | \$7,842 |                  | \$6,700 |               | \$5,737 |

\*Percents are rounded to nearest whole number.

## VI. STAGES IN THE ADOPTION PROCESS

Following each interview, the respondent was rated by the interviewer with respect to his adoption of recommended dairy management practices in general. Table VII discloses that the high producers (3.40 points) were scored between "Soon after the first few" and "Sooner than average," while low producers (2.40) rated between "Sooner than average" and "A little later than most." There was little difference in the scores of the medium and low producers.

## VII. SEX GROUPS

Only two of the respondents were females, having sole responsibility for the management of the dairy herd. One of the women was in the high production group and one was in the low. The sample was too small to draw any conclusions.

In eight of the interviews, both husband and wife participated in answering the questions.

## VIII. INTEREST IN DAIRY HERD MANAGEMENT IMPROVEMENT

Table VIII shows the ratings given by the interviewer with regard to the producer's interest in improving his level of dairy herd management. These ratings were given in numerical numbers with those receiving a "Not interested" rating 0 and the ratings of "Indifferent," "Somewhat interested," and "Very interested" receiving ratings of 1, 2, and 3, respectively.



TABLE VII

INTERVIEWER'S OPINION OF STAGES OF THE ADOPTION PROCESS REPRESENTED BY ALL CANNON COUNTY PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN TERMS OF NEW RECOMMENDED DAIRY MANAGEMENT PRACTICES, BY NUMBERS AND PERCENTS\*

| Stage in Adoption<br>of New Dairy<br>Management Practices<br>and Score Allowed | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Among the first few<br>(5 points)  | 6                           | 10  | 4                 | 20  | 2                   | 10  | 0                | 0   |
| Soon after the first few<br>(4 points)   | 10                          | 17  | 5                 | 25  | 2                   | 10  | 3                | 15  |
| Sooner than the average<br>(3 points)  | 18                          | 30  | 6                 | 30  | 6                   | 30  | 6                | 30  |
| A little later than most<br>(2 points)   | 19                          | 32  | 5                 | 25  | 7                   | 35  | 7                | 35  |
| Among the last few<br>(1 point)  | 7                           | 11  | 0                 | 0   | 3                   | 15  | 4                | 20  |
| Total  | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Average Stage  | 2.82 pts.                   |     | 3.40 pts.         |     | 2.65 pts.           |     | 2.40 pts.        |     |

\*Percents are rounded to nearest whole number.

TABLE VIII

INTERVIEWER'S OPINION OF THE INTEREST OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN IMPROVING THEIR LEVELS OF DAIRY HERD MANAGEMENT BY NUMBERS AND PERCENTS, AND AVERAGE INTEREST\*

| Degree of Interest in Improving Dairy Management Level | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|--|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|  | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| Very Interested<br>(3 points)                          | 19                       | 32  | 10             | 50  | 5                | 25  | 4             | 20  |
| Somewhat Interested<br>(2 points)                      | 33                       | 55  | 9              | 45  | 11               | 55  | 13            | 65  |
| Indifferent<br>(1 point)                               | 7                        | 11  | 0              | 0   | 4                | 20  | 3             | 15  |
| Not Interested<br>(0 points)                           | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| Total  | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |
| Average Interest                                       | 2.2 pts.                 |     | 2.4 pts.       |     | 2.1 pts.         |     | 2.1 pts.      |     |

\*Percents are rounded to nearest whole number.

The high producers (2.4 points) rated between "Somewhat" and "Very interested," while the low producers (2.1 points) also were between "Somewhat" and "Very interested."

#### IX. MAJOR OCCUPATIONS

Fifty-three percent of the producers were classed full-time farmers (Table IX). More of the high producers (55 percent) than the low producers (40 percent) were full-time farmers.

#### X. MAJOR FARM ENTERPRISES AND INCOME SOURCES

Dairying was the major farm enterprise on 48 percent of the farms in the study (see Table X). More of the high producers (50 percent) than the low (30 percent) received most of their income from the dairying enterprise.

"Wage earner" was the second most frequently mentioned source of income with 22 percent of the dairymen (25 percent of the high and 30 percent of the low) reporting. Few other differences were noted between high and low producers, though sources of income for the latter was more varied.

#### XI. TOTAL FARM ACREAGE

Table XI shows a wide range in farm acreages from 13 to 1,026 acres per farm. The high producers, with an average of about 258 acres, had 120 total farm acres more than the low group, who averaged about 138 acres. The total average of 195 acres for all manufacturing

TABLE IX  
 MAJOR OCCUPATIONS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS  
 INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS  
 AND PERCENTS\*

| Major Occupation | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Full-time Farmer | 32                          | 53  | 11                | 55  | 13                  | 65  | 8                | 40  |
| Part-time Farmer | 23                          | 38  | 7                 | 35  | 6                   | 30  | 10               | 50  |
| Professional     | 3                           | 5   | 2                 | 10  | 0                   | 0   | 1                | 5   |
| Retired          | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Student          | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Total            | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE X

MAJOR FARM ENTERPRISES AND INCOME SOURCES OF ALL CANNON COUNTY  
MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS  
BY NUMBER AND PERCENTS\*

| Major Farm<br>Enterprise and<br>Income Source | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Dairying                                      | 29                          | 48  | 10                | 50  | 13                  | 65  | 6                | 30  |
| Wage Earner                                   | 13                          | 22  | 5                 | 25  | 2                   | 10  | 6                | 30  |
| Truck or Bus Driver                           | 6                           | 10  | 2                 | 10  | 2                   | 10  | 2                | 10  |
| Profession                                    | 4                           | 6   | 2                 | 10  | 0                   | 0   | 2                | 10  |
| Livestock                                     | 3                           | 5   | 1                 | 5   | 1                   | 5   | 1                | 5   |
| Crops   | 2                           | 3   | 0                 | 0   | 1                   | 5   | 1                | 5   |
| Grain & Crops                                 | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Livestock & Crops                             | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Social Security Check                         | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Total   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XI

TOTAL FARM ACREAGE CATEGORIES OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBER AND PERCENTS, AND AVERAGE FARM ACRES\*

| Total Farm<br>Acreage Interval     | All Dairymen<br>Interviewed |       | High<br>Producers |       | Medium<br>Producers |       | Low<br>Producers |       |
|------------------------------------|-----------------------------|-------|-------------------|-------|---------------------|-------|------------------|-------|
|                                    | No.                         | %     | No.               | %     | No.                 | %     | No.              | %     |
| 13-49                              | 4                           | 7     | 0                 | 0     | 3                   | 15    | 1                | 5     |
| 50-99                              | 12                          | 20    | 3                 | 15    | 2                   | 10    | 7                | 35    |
| 100-149                            | 15                          | 25    | 5                 | 25    | 5                   | 25    | 5                | 25    |
| 150-199                            | 7                           | 11    | 2                 | 10    | 3                   | 15    | 2                | 10    |
| 200-249                            | 11                          | 18    | 5                 | 25    | 3                   | 15    | 3                | 15    |
| 250-299                            | 3                           | 5     | 0                 | 0     | 1                   | 5     | 2                | 10    |
| 300-399                            | 4                           | 7     | 2                 | 10    | 2                   | 10    | 0                | 0     |
| 400-1,026                          | 4                           | 7     | 3                 | 15    | 1                   | 5     | 0                | 0     |
| Total                              | 60                          | 100   | 20                | 100   | 20                  | 100   | 20               | 100   |
| Estimated Average<br>Acres in Farm |                             | 194.6 |                   | 258.2 |                     | 187.8 |                  | 137.8 |

\*Percents are rounded to nearest whole number.

milk producers interviewed is much larger than the county farm average of 132 acres (10:3).

## XII. TOTAL CROPLAND ACREAGE

Eighty-seven percent of the farms had cropland acreages of less than 150 acres (Table XII). The high producers' farms had an average of about 103 acres, compared to 80 acres for the medium producers and approximately 66 acres for the low producers.

## XIII. COWS MILKED

### Size of Herd

Table XIII indicates that the average-sized herd for the entire group was 13.7 cows, with a range of 1 through 50. It is interesting to note that the high producers averaged 14.7 cows milked; while the low producers averaged only 10.8. The average herd size of 13.7 cows was approximately one-third the size of the average Grade A herd in the county in 1967 (10:13).

### Registered Cows

As seen in Table XIV, while only 4 producers were milking any registered cows, 1 each in high and low categories were milking some registered animals.

While the average number of registered cows milked per herd for all those having registered cows (7 percent) was 5 cows, the two high producers with registered cows averaged 2 each and the low producer had 1 cow.

TABLE XII

TOTAL CROPLAND ACREAGE CATEGORIES OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE ACRES\*

| Total Cropland<br>Acreage<br>Interval  | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| No crop land                           | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| 6-49                                   | 20                          | 33  | 6                 | 30  | 5                   | 25  | 9                | 45  |
| 50-99                                  | 21                          | 35  | 7                 | 35  | 6                   | 30  | 8                | 40  |
| 100-149                                | 10                          | 17  | 0                 | 0   | 8                   | 40  | 2                | 10  |
| 150-199                                | 5                           | 8   | 5                 | 25  | 0                   | 0   | 0                | 0   |
| 200-249                                | 2                           | 3   | 1                 | 5   | 0                   | 0   | 1                | 5   |
| 250-300                                | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Total                                  | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Estimated Average<br>Acres in Cropland | 83.1                        |     | 103.4             |     | 79.5                |     | 66.4             |     |

\*Percents are rounded to nearest whole number.



TABLE XIII

TOTAL NUMBER OF COWS MILKED BY ALL CANNON COUNTY MANUFACTURING MILK  
PRODUCERS IN 1967 BY NUMBERS AND PERCENTS,  
AND AVERAGE HERD SIZE\*

| Herd Size<br>Interval in<br>Number of Cows | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| 1-9  | 23                          | 38  | 7                 | 35  | 8                   | 40  | 8                | 40  |
| 10-19                                      | 24                          | 40  | 9                 | 45  | 8                   | 40  | 7                | 35  |
| 20-29                                      | 6                           | 10  | 2                 | 10  | 0                   | 0   | 4                | 20  |
| 30-39                                      | 5                           | 8   | 1                 | 5   | 3                   | 15  | 1                | 5   |
| 40-50                                      | 2                           | 4   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Total                                      | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Actual Average<br>Herd Size                | 13.7 cows                   |     | 14.7 cows         |     | 15.6 cows           |     | 10.8 cows        |     |

\*Percents are rounded to nearest whole number.

TABLE XIV

TOTAL NUMBER OF REGISTERED COWS MILKED BY ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1967 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS\*

| Number of Registered Cows Milked          | All Dairymen Interviewed |     | High Producers |     | Medium Producers |      | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|------|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %    | No.           | %   |
| Not any                                   | 56                       | 93  | 18             | 90  | 19               | 95   | 19            | 95  |
| 1-9                                       | 3                        | 5   | 2              | 10  | 0                | 0    | 1             | 5   |
| 10-15                                     | 1                        | 2   | 0              | 0   | 1                | 5    | 0             | 0   |
| Total                                     | 60                       | 100 | 20             | 100 | 20               | 100  | 20            | 100 |
| Actual Average Number for Those Reporting |                          | 5.0 |                | 2.0 |                  | 15.0 |               | 1.0 |

\*Percents are rounded to nearest whole number.

### Breed of Cows

Tables XV and XVI show the breeds of registered and grade cows and their distribution throughout the three production groups. One low producer had one registered Jersey cow, two high producers had 4 Holsteins and a medium producer had 15 registered Guernseys. The sample was too small to draw conclusions. Producers in all production groups had ten or more different breed combinations, totaling 20 different combinations.

### XIV. HEIFERS KEPT

#### Replacement

Tables XVII and XVIII show that 40 percent of the producers had heifers for replacements over one year of age, and 45 percent had replacements under one year old.

More high producers (50 percent) kept heifers one year or older (average 6.1 per herd) than was true for low producers (30 percent averaging 4.7 heifers per herd. Forty-five percent each of high and low producers kept 4.0 and 3.7 heifers under one year of age, respectively.

#### Registered Heifers

One high producer was keeping one registered Jersey heifer over one year of age and one low producer was keeping a registered Jersey heifer under one year of age. Several producers indicated that they had heifers from purebred sires and dams, but felt that they would not benefit from registering them. Numbers were too small to draw conclusions. There seems to be no clear relation between registration, breed and production group.

TABLE XV  
BREEDS OF REGISTERED COWS MILKED IN 1967 BY ALL CANNON COUNTY  
MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM  
AND LOW PRODUCERS BY NUMBERS AND PERCENTS\*

| Breed of<br>Registered<br>Cows | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--------------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                                | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Not Answered                   | 56                          | 93  | 18                | 90  | 19                  | 95  | 19               | 95  |
| Holstein                       | 2                           | 3   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Guernsey                       | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Jersey                         | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Total                          | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XVI

BREEDS OF GRADE COWS MILKED IN 1967 BY ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS\*

| Breed of<br>Grade Cows                     | All Dairymen<br>Interviewed |    | High<br>Producers |    | Medium<br>Producers |    | Low<br>Producers |    |
|--|-----------------------------|----|-------------------|----|---------------------|----|------------------|----|
|  | No.                         | %  | No.               | %  | No.                 | %  | No.              | %  |
| Guernsey & Jersey                          | 9                           | 15 | 3                 | 15 | 2                   | 10 | 4                | 20 |
| Guernsey, Holstein,<br>Jersey              | 8                           | 13 | 4                 | 20 | 2                   | 10 | 2                | 10 |
| Brown Swiss, Guernsey,<br>Holstein, Jersey | 7                           | 12 | 3                 | 15 | 2                   | 10 | 2                | 10 |
| Guernsey & Holstein                        | 4                           | 7  | 2                 | 10 | 2                   | 10 | 0                | 0  |
| Holstein & Jersey                          | 4                           | 7  | 0                 | 0  | 2                   | 10 | 2                | 10 |
| Jersey                                     | 3                           | 5  | 1                 | 5  | 2                   | 10 | 0                | 0  |
| Brown Swiss, Guernsey,<br>Holstein         | 2                           | 3  | 1                 | 5  | 0                   | 0  | 1                | 5  |
| Jersey & Mixed                             | 3                           | 5  | 0                 | 0  | 0                   | 0  | 3                | 15 |
| Brown Swiss, Guernsey,<br>Jersey, Mixed    | 2                           | 3  | 0                 | 0  | 1                   | 5  | 1                | 5  |
| Brown Swiss, Guernsey,<br>Jersey           | 2                           | 3  | 0                 | 0  | 2                   | 10 | 0                | 0  |
| Brown Swiss & Holstein                     | 2                           | 3  | 0                 | 0  | 1                   | 5  | 1                | 5  |
| Brown Swiss & Jersey                       | 2                           | 3  | 2                 | 10 | 0                   | 0  | 0                | 0  |
| Brown Swiss, Jersey,<br>Mixed              | 2                           | 3  | 0                 | 0  | 1                   | 5  | 1                | 5  |
| Mixed                                      | 2                           | 3  | 1                 | 5  | 1                   | 5  | 0                | 0  |

TABLE XVI (continued)

| Breed of<br>Grade Cows                  | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Brown Swiss, Holstein,<br>Jersey        | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Brown Swiss, Holstein,<br>Jersey, Mixed | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Guernsey                                | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Guernsey, Holstein,<br>Ayrshire, Mixed  | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Guernsey, Holstein,<br>Jersey           | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Guernsey, Jersey,<br>Mixed              | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Total                                   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XVII

TOTAL NUMBER OF HEIFERS ONE YEAR OR OLDER KEPT BY ALL CANNON COUNTY  
MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW  
PRODUCERS IN 1967 BY NUMBERS AND PERCENTS,  
AND AVERAGE NUMBERS\*

| Number of<br>Heifers Kept                            | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| None   | 36                          | 60  | 10                | 50  | 12                  | 60  | 14               | 70  |
| 1-4  | 13                          | 22  | 6                 | 30  | 4                   | 20  | 3                | 15  |
| 5-9  | 6                           | 10  | 1                 | 5   | 3                   | 15  | 2                | 10  |
| 10-14  | 3                           | 5   | 2                 | 10  | 0                   | 0   | 1                | 5   |
| 15-30  | 2                           | 3   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Total  | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Actual Average Number<br>Kept for Those<br>Reporting | 6.2<br>heifers              |     | 6.1<br>heifers    |     | 7.4<br>heifers      |     | 4.7<br>heifers   |     |

\*Percents are rounded to nearest whole number.

TABLE XVIII

TOTAL NUMBER OF HEIFERS UNDER ONE YEAR OF AGE KEPT BY ALL CANNON COUNTY  
MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW  
PRODUCERS IN 1967 BY NUMBERS AND PERCENTS, AND AVERAGE  
NUMBERS\*

| Number of<br>Heifers Kept                         | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| None  | 33                          | 55  | 11                | 55  | 11                  | 55  | 11               | 55  |
| 1-4   | 14                          | 23  | 6                 | 30  | 4                   | 20  | 4                | 20  |
| 5-9   | 10                          | 17  | 2                 | 10  | 3                   | 15  | 5                | 25  |
| 10-14   | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| 15-20   | 2                           | 3   | 0                 | 0   | 2                   | 10  | 0                | 0   |
| Total   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Actual Average Number<br>Kept for Those Reporting | 5.2                         |     | 4.0               |     | 8.0                 |     | 3.7              |     |
|   | heifers                     |     | heifers           |     | heifers             |     | heifers          |     |

\*Percents are rounded to nearest whole number.



Of the grade heifers kept, Table XIX shows that 47 percent (40 percent of the high and 55 percent of the low) of the producers were keeping none. One-third of the high producers and one-fourth of the low producers were keeping herds of predominantly one breed--suggesting the possible merits of this system.

#### XV. BULLS KEPT

Table XX shows that 80 percent of the producers kept no dairy bulls. Fewer of the high producers (20 percent) were keeping more bulls per herd (1.8 average) than was true of the low producers (30 percent keeping an average of 1.0 bulls).

Data in Table XXI show that three grade Brown Swiss, two Guernsey, two grade Jersey, one grade Holstein and one mixed bull were kept. Two registered dairy bulls were kept, a registered Holstein by a high producer and a registered Guernsey by a low producer.

It seems that a large number had been using beef bulls because they wanted to veal their baby calves. Also, they felt that their day-old male calves were selling higher when sired by beef bulls.

#### XVI. RATING OF HERD

Tables XXII and XXIII show the ratings of the dairy herds as adjudged by the producer and the interviewer, respectively.

Seventy-five percent of the high producers and 40 percent of the low producers rated the value and condition of their herds as "good" or better. High producers, on the average, rated their herds

TABLE XIX

BREEDS OF GRADE HEIFERS KEPT IN 1967 BY ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS\*

| Breeds<br>of<br>Grade Heifers                        | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| None Kept  | 28                          | 47  | 8                 | 40  | 9                   | 45  | 11               | 55  |
| Guernsey   | 6                           | 10  | 5                 | 25  | 0                   | 0   | 1                | 5   |
| Jersey   | 6                           | 10  | 2                 | 10  | 1                   | 5   | 3                | 15  |
| Holstein   | 4                           | 6   | 0                 | 0   | 3                   | 15  | 1                | 5   |
| Mixed  | 4                           | 6   | 2                 | 10  | 1                   | 5   | 1                | 5   |
| Guernsey, Holstein &<br>Jersey                       | 2                           | 3   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Guernsey & Jersey                                    | 2                           | 3   | 0                 | 0   | 2                   | 10  | 0                | 0   |
| Holstein, Jersey, Brown<br>Swiss, Guernsey           | 2                           | 3   | 1                 | 5   | 0                   | 0   | 1                | 5   |
| Brown Swiss  | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Brown Swiss, Guernsey,<br>Holstein, Jersey,<br>Mixed | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Brown Swiss, Holstein,<br>Jersey, Mixed              | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Guernsey & Holstein                                  | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Guernsey & Mixed                                     | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| Jersey & Mixed                                       | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Total  | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XX

TOTAL NUMBERS OF BULLS KEPT BY ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1967 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS\*

| Number of<br>Bulls Kept                    | All Dairymen<br>Interviewed |     | High<br>Producer |     | Medium<br>Producer |     | Low<br>Producer |     |
|--|-----------------------------|-----|------------------|-----|--------------------|-----|-----------------|-----|
|  | No.                         | %   | No.              | %   | No.                | %   | No.             | %   |
| None                                       | 48                          | 80  | 16               | 80  | 18                 | 90  | 14              | 70  |
| 1-4  | 12                          | 20  | 4                | 20  | 2                  | 10  | 6               | 30  |
| Total                                      | 60                          | 100 | 20               | 100 | 60                 | 100 | 20              | 100 |
| Average Number Kept for<br>Those Reporting | 1.3 bulls                   |     | 1.8 bulls        |     | 1.0 bulls          |     | 1.0 bulls       |     |

\*Percents are rounded to nearest whole number.

TABLE XXI

BREEDS OF GRADE BULLS KEPT IN 1967 BY ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS\*

| Breed<br>of<br>Grade Bulls | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|----------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                            | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Not Answered               | 49                          | 82  | 17                | 85  | 17                  | 85  | 15               | 75  |
| Brown Swiss                | 3                           | 5   | 0                 | 0   | 0                   | 0   | 3                | 5   |
| Guernsey                   | 3                           | 5   | 1                 | 5   | 0                   | 0   | 2                | 10  |
| Holstein                   | 2                           | 3   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Jersey                     | 2                           | 3   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Mixed                      | 1                           | 2   | 0                 | 0   | 1                   | 5   | 0                | 0   |
| Total                      | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to the nearest whole number.

TABLE XXII

RATINGS GIVEN TO THEIR DAIRY HERDS BY ALL CANNON COUNTY DAIRY  
MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND  
LOW PRODUCERS IN NUMBERS AND PERCENTS, AND AVERAGE\*

| Ratings Dairymen<br>Gave Their Own<br>Herds | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Excellent<br>(3 points)                     | 6                           | 10  | 1                 | 5   | 2                   | 10  | 3                | 15  |
| Good<br>(2 points)                          | 27                          | 45  | 14                | 70  | 8                   | 40  | 5                | 25  |
| Fair<br>(1 point)                           | 27                          | 45  | 5                 | 25  | 10                  | 50  | 12               | 60  |
| Pocr<br>(0 points)                          | 0                           | 0   | 0                 | 0   | 0                   | 0   | 0                | 0   |
| Total                                       | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Average Rating of Those<br>Answering        | 1.66 points                 |     | 1.80 points       |     | 1.60 points         |     | 1.57 points      |     |

\*Percents are rounded to nearest whole number.

TABLE XXIII

RELATIVE HERD VALUE RATINGS GIVEN BY INTERVIEWER TO HERDS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE\*

| Ratings Interviewers<br>Gave Herds of<br>Interviewees | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Not Known Well Enough<br>to Rate                      | 8                           | 14  | 2                 | 10  | 2                   | 10  | 4                | 20  |
| Excellent<br>(3 points)                               | 5                           | 8   | 3                 | 15  | 2                   | 10  | 0                | 0   |
| Good<br>(2 points)                                    | 27                          | 45  | 10                | 50  | 9                   | 45  | 8                | 40  |
| Fair<br>(1 point)                                     | 17                          | 28  | 5                 | 25  | 6                   | 30  | 6                | 30  |
| Poor<br>(0 points)                                    | 3                           | 5   | 0                 | 0   | 1                   | 5   | 2                | 10  |
| Total   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |
| Average Ratings of Herds<br>of Known Respondents      | 1.65 points                 |     | 1.89 points       |     | 1.67 points         |     | 1.38 points      |     |

\*Percents are rounded to the nearest whole number.

slightly higher (1.80 points) than the low (1.57 points) when points were assigned on the following basis: (1) excellent received 3 points; (2) good received 2 points; (3) fair received 1 point; and (4) poor received 0 points.

Figures in Table XXIII show that the interviewer knew 86 percent of the herds well enough to rate them in terms of their relative value and condition. Ninety percent of the herds in the high production group were known well enough to rate; while only 80 percent of the low were that well known.

The average rating for the high group was 1.89 points, slightly below "good," and for the low was 1.38 points, slightly above "fair."

The interviewer tended to rate herds of high and medium producers slightly higher than producers rated them; while the reverse was true for the low.

#### XVII. TYPE OF MILKING FACILITIES AND EQUIPMENT.

Table XXIV shows that 47 percent of the manufacturing milk producers were using stanchion type facilities, 33 percent were using elevated stalls, 18 percent were milking in stables and hallways, and 2 percent in free stall. Forty-five percent of the high producers were using elevated stalls, while only 25 percent of the low producers were doing so. Equal percents (45) of high and low producers were using stanchions. Ten percent of the high producers and 30 percent of the low producers milked by hand in hallways.

The survey showed that all the producers except 11 (6 high,

TABLE XXIV

TYPES OF MILKING FACILITIES USED BY ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS\*

| Types of Milking Facility | All Dairymen Interviewed |     | High Producer |     | Medium Producer |     | Low Producer |     |
|---------------------------|--------------------------|-----|---------------|-----|-----------------|-----|--------------|-----|
|                           | No.                      | %   | No.           | %   | No.             | %   | No.          | %   |
| Stanchion                 | 28                       | 47  | 9             | 45  | 10              | 50  | 9            | 45  |
| Elevated Stalls           | 20                       | 33  | 9             | 45  | 6               | 30  | 5            | 25  |
| In Hallway by Hand        | 11                       | 18  | 2             | 10  | 3               | 15  | 6            | 30  |
| Free Stall                | 1                        | 2   | 0             | 0   | 1               | 5   | 0            | 0   |
| Total                     | 60                       | 100 | 20            | 100 | 20              | 100 | 20           | 100 |

\*Percents are rounded to the nearest whole number.



5 medium and 1 low producer) who were on the bulk tank program, were selling milk in cans. The twelve producers mentioned above had bulk tanks ranging in size from 150 gallons to 300 gallons capacity. Only two producers (1 high and 1 medium) had tanks with less than 250 gallons in size.

Twelve producers were using pipeline systems which had been installed in preparation for selling bulk tank milk. None of the producers had weighing devices. This last fact has direct implications for extension teaching.

#### XVIII. STORAGE AVAILABLE FOR SILAGE

Table XXV shows that 77 percent of the producers did not have silos. Eight producers had upright silos and six producers had trench silos. Little difference is noted when production groups are compared.

#### XIX. SOURCE OF WATER FOR COWS

The different methods of providing water for cows is shown in Table XXVI. It is interesting to note that 76 percent of the producers had streams. More than one-half (55 percent) had ponds. Fifty-one percent had water troughs outside the barn. The average number of sources of water was 1.57 for all dairymen. Low producers averaged 1.65 compared to about the same (1.60) for the high group. Little difference is noted between production groups. It would seem that all groups had adequate sources of water for their cows.

TABLE XXV

NUMBERS AND PERCENTS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS HAVING DIFFERENT KINDS OF SILOS\*

| Type<br>of<br>Silo | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                    | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Not Answered       | 46                          | 77  | 15                | 75  | 15                  | 75  | 16               | 80  |
| Upright            | 8                           | 13  | 3                 | 15  | 3                   | 15  | 2                | 10  |
| Trench             | 6                           | 10  | 2                 | 10  | 2                   | 10  | 2                | 10  |
| Total              | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XXVI

NUMBERS AND PERCENTS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS ACCORDING TO SOURCES OF WATER FOR COWS\*

| Source of Water                         | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| Pond, Stream, and/or Water Outside Barn | 26                       | 43  | 9              | 45  | 7                | 35  | 10            | 50  |
| Stream                                  | 20                       | 33  | 4              | 20  | 10               | 50  | 6             | 30  |
| Pond                                    | 7                        | 12  | 4              | 20  | 1                | 5   | 2             | 10  |
| Water in Barn and Water Outside Barn    | 3                        | 5   | 1              | 5   | 0                | 0   | 2             | 10  |
| Water Outside Barn                      | 2                        | 3   | 1              | 5   | 1                | 5   | 0             | 0   |
| Drinking cups in Barn                   | 1                        | 2   | 0              | 0   | 1                | 5   | 0             | 0   |
| Other Water in Barn                     | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| Total                                   | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |
| Average Number of Sources               | 1.57 sources             |     | 1.60 sources   |     | 1.45 sources     |     | 1.65 sources  |     |

\*Percents are rounded to nearest whole number.

## XX. AMOUNT OF LOAFING BARN AREA

Seventy percent of all producers interviewed were using more than 50 square feet per cow of loafing area, as seen in Table XXVII. Eighty-five percent of those in the high group and 60 percent of those in the low producing group reported 50 or more square feet. This was one area in which many producers felt they needed to make improvements.

## XXI. PERSON DOING THE MILKING

Table XXVIII shows that 65 percent of the producers did their own milking. Fifteen percent of the producers shared the milking duties with other members of the family. Little difference was noted between production groups.

## XXII. BUTTERFAT PRODUCTION

Table XXIX shows that the herds of all dairymen interviewed were selling, on the average, 218 pounds of butterfat annually per cow. Twenty-nine of these were selling less than 200 pounds which is not considered a profitable milk operation (7:21). Thirty-nine percent sold 250 or more pounds--the profitable area (actual ranges of production are listed in Table I, page 8).

## XXIII. MILK PRODUCTION

The average milk production per cow is shown in Table XXX. The average production for the 60 herds in 1967 was 5,198 pounds per cow.

TABLE XXVII

NUMBERS AND PERCENTS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS HAVING DIFFERENT AMOUNTS OF LOAFING BARN AREA PER COW\*

| Loafing Barn Area<br>Per Cow<br>(Square Feet) | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Under 30                                      | 12                          | 20  | 3                 | 15  | 5                   | 25  | 4                | 20  |
| 30-39   | 2                           | 3   | 0                 | 0   | 1                   | 5   | 1                | 5   |
| 40-49   | 4                           | 7   | 0                 | 0   | 1                   | 5   | 3                | 15  |
| 50-59   | 1                           | 2   | 0                 | 0   | 0                   | 0   | 1                | 5   |
| 60-69   | 7                           | 12  | 1                 | 5   | 4                   | 20  | 2                | 10  |
| 70 or above                                   | 28                          | 46  | 14                | 70  | 5                   | 25  | 9                | 45  |
| Box (Free) Stalls                             | 6                           | 10  | 2                 | 10  | 4                   | 20  | 0                | 0   |
| Total   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XXVIII

PERSONS DOING MILKING ON FARMS OF CANNON COUNTY MANUFACTURING MILK  
 PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS  
 BY NUMBERS AND PERCENTS\*

| Person<br>Doing<br>Milking | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|----------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                            | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Owner                      | 39                          | 65  | 12                | 60  | 15                  | 75  | 12               | 60  |
| Tenant                     | 8                           | 14  | 5                 | 25  | 1                   | 5   | 2                | 10  |
| Owner & Family             | 9                           | 15  | 2                 | 10  | 4                   | 20  | 3                | 15  |
| Owner & Tenant             | 2                           | 3   | 0                 | 0   | 0                   | 0   | 2                | 10  |
| Owner's Son                | 2                           | 3   | 1                 | 5   | 0                   | 0   | 1                | 5   |
| Total                      | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XXIX

NUMBER OF PERCENTS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE BUTTERFAT PRODUCTION CATEGORIES FOR 1967, AND TOTAL AVERAGES\*

| Average Butterfat Production Category, 1967<br>(Pounds Sold/Cow) | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|--|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|  | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| 62-99  | 5                        | 8   | 0              | 0   | 0                | 0   | 5             | 25  |
| 100-149  | 6                        | 10  | 0              | 0   | 0                | 0   | 6             | 30  |
| 150-199  | 18                       | 30  | 0              | 0   | 9                | 45  | 9             | 45  |
| 200-249  | 8                        | 13  | 1              | 5   | 7                | 35  | 0             | 0   |
| 250-299  | 14                       | 24  | 10             | 50  | 4                | 20  | 0             | 0   |
| 300-349  | 4                        | 7   | 4              | 20  | 0                | 0   | 0             | 0   |
| 350-399  | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| 400-449  | 2                        | 3   | 2              | 10  | 0                | 0   | 0             | 0   |
| 450-476  | 2                        | 3   | 2              | 10  | 0                | 0   | 0             | 0   |
| Total  | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |
| Actual Total Average Production                                  | 218 pounds               |     | 322 pounds     |     | 203 pounds       |     | 129 pounds    |     |

\*Percents are rounded to nearest whole number.

TABLE XXX

NUMBERS AND PERCENTS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE MILK PRODUCTION CATEGORIES FOR 1967, AND TOTAL AVERAGES\*

| Average Milk Production Category, 1967<br>(Pounds Sold/Cow) | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| 1,329-2,499   | 7                        | 12  | 0              | 0   | 0                | 0   | 7             | 35  |
| 2,500-3,499   | 6                        | 10  | 0              | 0   | 0                | 0   | 6             | 30  |
| 3,500-4,499   | 11                       | 18  | 0              | 0   | 4                | 20  | 7             | 35  |
| 4,500-5,499   | 17                       | 28  | 2              | 10  | 15               | 75  | 0             | 0   |
| 5,500-6,499   | 7                        | 12  | 6              | 30  | 1                | 5   | 0             | 0   |
| 6,500-7,499   | 4                        | 7   | 4              | 20  | 0                | 0   | 0             | 0   |
| 7,500-8,499   | 2                        | 3   | 2              | 10  | 0                | 0   | 0             | 0   |
| 8,500-9,499   | 2                        | 3   | 2              | 10  | 0                | 0   | 0             | 0   |
| 9,500-11,716  | 4                        | 7   | 4              | 20  | 0                | 0   | 0             | 0   |
| Total   | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |
| Actual Average Production                                   | 5,189#                   |     | 7,531#         |     | 4,951#           |     | 3,110#        |     |

\*Percents are rounded to nearest whole number.



Sixty-eight percent of the 60 producers were producing below the 5,500 pound profit level (21:1). Fully 10 percent of the high producers and 100 percent of the low group fell below 5,500 pounds in 1967.

The high producers had an average of 7,531 pounds which is below the national average of 8,821 (21:1). The low producer average of 3,110 pounds indicates the likelihood that most were losing money on the dairy enterprise.

#### XXIV. BACTERIAL COUNT

Table XXXI shows that the bacterial readings were acceptable for the milk marketed by 75 percent of the producers.

It is generally accepted that a low bacterial count is indicative of good management and higher production. The figures in this case revealed that 80 percent of the high group and only 65 percent of the low group marketed milk at satisfactory bacterial levels. Note that the average readings for high producers (1.7) and low producers (2.2) again show an advantage in favor of the former.

TABLE XXXI

NUMBERS AND PERCENTS OF ALL CANNON COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE BACTERIAL READING CATEGORIES IN 1967, AND TOTAL MEDIAN COUNTS\*

| Average Bacterial Reading<br>(Methyl Blue Score) <sup>a</sup> | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| 1.0-1.9   | 32                       | 53  | 13             | 65  | 12               | 60  | 7             | 35  |
| 2.0-2.9   | 13                       | 22  | 3              | 15  | 4                | 20  | 6             | 30  |
| 3.0-3.9   | 7                        | 12  | 1              | 5   | 2                | 10  | 4             | 20  |
| 4.0-4.9   | 8                        | 13  | 3              | 15  | 2                | 10  | 3             | 15  |
| Total   | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |
|   |                          | 1.9 |                | 1.7 |                  | 1.7 |               | 2.2 |

\*Percents are rounded to nearest whole number.

<sup>a</sup>Readings of from 1.0 to 3.0 are acceptable.

## CHAPTER III

### SUMMARY

This study was designed to research the characteristics of manufacturing milk producers in Cannon County, Tennessee. The information was obtained through a personal interview survey of 60 of the 120 producers who sold manufacturing milk in the county in 1967. The manufacturing milk buyer in Woodbury made milk production, butterfat test records and bacterial level information available for this study. Butterfat marketed per cow in 1967 was used to determine high, medium and low producers with 20 assigned to each group.

A review of related literature disclosed the presence of few previous benchmark studies similar to the present one.

#### I. REVIEW OF FINDINGS

The following findings were revealed concerning the characteristics of manufacturing milk producers in Cannon County who produced in the high, middle and low thirds, according to the average pounds of butterfat produced per cow in 1967:

1. The 60 producers marketed an average of 5,198 pounds of milk and 218 pounds of butterfat per cow in 1967; average production from the high producers' cows (322 pounds) being nearly three times the amount for the low producers cows (129 pounds).

2. The average formal education level was 8.5 years, with the

high producers (10.6 grades) having 2.1 years more schooling than the low (8.5 grades).

3. The average age of the producers was 48 years, the high producers averaging 48 years of age and the low producers 46.

4. Nine-tenths of the producers were known by the interviewer, with 95 percent of the high producers and 85 percent of the low producers being at least fairly well known.

5. Most producers (93 percent) had a friendly attitude toward the survey; all high producers and 95 percent of the low being at least somewhat friendly.

6. The average gross family income was \$6,759, with the high group averaging \$7,842, while the low producers averaged \$5,737.

7. Fifty-three percent of the producers were classed as full-time farmers (55 percent of the high and 40 of the low producers) with about one-half of the 60 producers (50 percent of the high and 30 percent of the low) receiving the major portion of their incomes from manufacturing milk sales.

8. About one-half of the manufacturing producers were raising replacement heifers to continue their dairy herds, more high (65 percent) than low (50 percent) producers keeping one or more replacements.

9. The dairymen had averages of 195 acres of total farm land and 83 acres of cropland, high producers averaging 258 and 103 acres, respectively, and low producers having 138 and 66, respectively.

10. The dairymen had an average herd size of about 14 cows, the high producers (average of 15 cows) having one cow less than

medium (average 16 cows) and three more than the low producers (11 cow average).

11. Only four of the producers out of 60 kept any registered heifers.

12. One-third of the producers reported milking in elevated stalls, 45 percent of the high and 25 percent of the low producers.

13. Only fourteen producers had and were using silos.

14. None of the dairymen had or used weighing devices for milk and feed.

## II. IMPLICATIONS

Some of the implications that can be drawn from the findings are:

1. Further evaluation of the data from the manufacturing milk survey would be useful in planning for a more effective educational effort with manufacturing producers in Cannon County.

2. The characteristic differences between the high and low producers should be considered when planning educational programs for Cannon County dairymen.

PROBLEM B: MANAGEMENT PRACTICES OF CANNON COUNTY  
MANUFACTURING MILK PRODUCERS

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A Special Problem in Lieu of Thesis

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

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by  
Clayton F. Glenn  
December 1968

## CHAPTER I

### INTRODUCTION

Manufacturing milk production became important in Cannon County with the location of the Armour Creamery at Woodbury in 1935. Prior to that time the sale of cream was practically the only source of income from milk products in the county.

From 1935 to 1950 the number of manufacturing milk producers increased rapidly to more than 1,300 in Cannon and surrounding counties according to Armour Creamery records. The number of producers continued at about this same level for the next four or five years. However, during 1955 the number of manufacturing milk producers began to decline. At the time of this study there were 120 producers selling manufacturing milk in Cannon County. Even with this decreased number of producers, the dairy industry is the largest single source of agricultural income in the county. Receipts from the sale of all milk in Cannon County amounted to slightly over three-fourths of a million dollars in 1966 (10:4).\*

Incentive payments had been made by Armour Creamery of Woodbury to producers who would install bulk tanks and milk coolers, and who would milk on concrete. Also, information made available by Armour

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\*Numbers in parentheses refer to numbered references in the bibliography; those after the colon are page numbers.

field men regarding sanitation, fly control, weighing, use of elevated stalls, electric milkers and proper feeding caused many changes in the practices followed by manufacturing milk producers.

Findings from a 1966 study of 75 manufacturing milk producers in Henry County provided some background information and guidance for the present study (6). Other similar studies in several selected counties in Tennessee were underway at the time of this study.

No previous attempt had been made to learn what Cannon County manufacturing milk producers were or were not doing in regard to recommended practices. By using the combined findings of the manufacturing milk studies concerning the present situation and the management practices being used in the county it was felt that the Agricultural Extension Service would be better equipped to provide educational information that should help dairymen become more efficient producers in the future.

## I. PURPOSE OF THE STUDY

The purpose of this study, then, was to determine the kinds of management practices that were being used by Cannon County manufacturing milk producers in all, high, medium and low production groups in terms of pounds of butterfat produced per cow in 1967.

## II. REVIEW OF LITERATURE

There seemed to be little information available concerning practices followed by manufacturing milk producers in Tennessee.



Chappell (7:2), from a survey mailed to 25 Tennessee manufacturing milk plants in 1961, reported the following findings regarding the management practices of the manufacturing milk producers surveyed:

1. A total of 57 percent bred over one-half of their cows to beef bulls.
2. Only 36 percent raised replacements, and only 7 percent raised heifers for sale.
3. Two percent reported that they weighed milk from individual cows.
4. About 65 percent of the producers had fair, poor, or no hay.
5. Summary information indicated that total production, total cow numbers and production per cow were associated with the installation of elevated stalls and feeding of adequate amounts of high quality silage.

Caldwell (6:67) found that the 25 manufacturing dairymen in Henry County who annually produced in the high third in pounds of butterfat, operated at a higher management level, and had a higher practice diffusion rating on 15 of 23 production practices, than did the 25 producers in the low third.

In a 1960 Virginia study (8:3), the most important problems listed by "manufacturing grade" farmers were low production per cow, poor forage, and insufficient forage. Beef bulls were used for breeding 63 percent of the cows.

Sumrall and Hurt (21:2) reported the following costs and net

returns from a 1957 to 1962 management study entitled "Producing Manufacturing Milk in Mississippi":

1. A 40-cow herd at the Pontotoc Branch Experiment Station with a herd average of 8,727 pounds of milk per cow showed a net return to labor and capital of \$118 per cow per year for the 5-year period.
2. The calculated average production cost per one hundred pounds of milk was \$2.19 and the net return was \$1.34 per hundred pounds.
3. The average cost of keeping a cow per year amounted to about \$190.
4. Production must be over 5,500 pounds per cow to show a profit in Mississippi when selling milk for manufacturing purposes at a price of \$3.53 per hundred.

### III. METHODS

A complete list of Cannon County manufacturing milk producers selling milk to Armour Creamery was obtained from the plant in Woodbury. From the list of 120 producers, 60 were selected by random sampling for survey. Records on butterfat sold, milk production and bacterial levels for 1967 were then obtained from the milk plant.

The producers were divided into three groups of 20 according to their levels of butterfat production. The average level of butterfat produced per cow for the entire group was 218 pounds. The high producers averaged 322 pounds with a range of 200 to 476 pounds.

The medium producers averaged 203 pounds with a range of 150 to 299 pounds. The low group averaged 129 pounds with a range of

62 to 199 pounds. No effort was made to try to estimate the value of other milk produced but not sold.

An effort was made to determine the practice adoption levels of producers in each production group regarding 23 recommended dairy practices.

A personal interview was conducted with each of the 60 manufacturing milk producers. In asking the survey questions, care was exercised not to influence the producers' answers. The interviewer explained only the basic details regarding the practice and tried to let the respondent answer as he felt he was really carrying out the practice.

#### Rating Explanation

The following rating scheme was used to classify management levels of the producers for each of the 23 practices: (1) no points were given if the person interviewed had not heard of the specific practice; (2) 1 point was given if the person had only heard of the practice; (3) 2 points were given if the person was only interested in it; (4) 3 points were given if the person had not tried the practice but planned to do so; (5) 4 points were given if the person had tried the practice but was not using it at the time of interview; and (6) 5 points were given if the person had tried the practice and was still using it.

The practice adoption levels of the producers in the high, medium and low thirds are compared in this study and their numerical

values are referred to as the practice diffusion ratings. The scale used to show the diffusion stage and rating interval is as follows: 0.0 to 0.5-"unaware"; 0.5 to 1.5-"aware"; 1.5 to 2.5-"interested"; 2.5 to 3.5-"planning to try"; 3.5 to 4.5-"tried"; and 4.5 through 5.0-"using."

The practice diffusion rating for each producer has been determined by adding his total score on all the recommended practices and dividing by 23. Ratings are listed for the high, medium and low production groups and for all interviewees. Other data were compared in numbers, percents and averages. The main comparisons are made between the high and low producers.

## CHAPTER II

### FINDINGS

#### I. MANAGEMENT LEVELS OF MILK PRODUCERS

##### Average Practice Diffusion Rating Intervals

Table XXXII gives the average practice diffusion ratings for the 60 Cannon County dairymen divided into high, medium and low thirds according to average butterfat marketed per cow in 1967.

It is noted that the average rating for all dairymen interviewed (2.94) placed them in the "planning to try" stage on the 23 practices studied. The high producers rated slightly higher (3.18) than either the medium (2.81) or the low (2.82) producers.

It is interesting to note that 45 percent of the high producers were in the "tried" or above stage; while only 15 percent of the low producers and 10 percent of the medium producers scored so high. None averaged in the "using" (adopted) category for the total list of 23 practices. This indicates the need for improvement in the management of all herds studied.

##### Relation to Production

The average individual dairy management practice diffusion ratings and total average ratings for all Cannon County dairymen interviewed, high, medium and low producers are shown in Table XXXIII. Also, Table XXXIV gives a breakdown of the percents of Cannon County

TABLE XXXII

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE PRACTICE DIFFUSION RATING, INTERVALS, AND TOTAL AVERAGE PRACTICE DIFFUSION RATINGS\*

| Average Practice<br>Diffusion Rating<br>Interval <sup>a</sup> | All Dairymen<br>Interviewed |      | High<br>Producers |      | Medium<br>Producers |      | Low<br>Producers |      |
|---|-----------------------------|------|-------------------|------|---------------------|------|------------------|------|
|   | No.                         | %    | No.               | %    | No.                 | %    | No.              | %    |
| 1.52-1.99   | 5                           | 8    | 0                 | 0    | 2                   | 10   | 3                | 15   |
| 2.00-2.49   | 8                           | 13   | 4                 | 20   | 2                   | 10   | 2                | 10   |
| 2.50-2.99   | 24                          | 40   | 5                 | 25   | 10                  | 50   | 9                | 45   |
| 3.00-3.49   | 9                           | 15   | 2                 | 10   | 4                   | 20   | 3                | 15   |
| 3.50-3.99   | 10                          | 17   | 6                 | 30   | 1                   | 5    | 3                | 15   |
| 4.00-4.28   | 4                           | 7    | 3                 | 15   | 1                   | 5    | 0                | 0    |
| Total   | 60                          | 100  | 20                | 100  | 20                  | 100  | 20               | 100  |
| Actual Total Average  |                             | 2.94 |                   | 3.18 |                     | 2.81 |                  | 2.82 |

\*Percents are rounded to nearest whole number.

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practice.

TABLE XXXIII

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS AND TOTAL AVERAGE RATINGS FOR ALL  
CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS<sup>a</sup>

| Dairy Management Practices                      | All Dairymen<br>Average Rating | High Producers<br>Average Rating | Medium Producers<br>Average Rating | Low Producers<br>Average Rating |
|---|--------------------------------|----------------------------------|------------------------------------|---------------------------------|
| 1. Artificially inseminated 1/2 or more of cows | 2.62                           | 2.85                             | 2.65                               | 2.35                            |
| 2. All cows bred to same breed bull             | 2.60                           | 3.10                             | 2.75                               | 1.95                            |
| 3. 75% herd replacements raised                 | 3.35                           | 3.76                             | 2.85                               | 3.45                            |
| 4. 60-day dry period provided cows              | 4.70                           | 4.70                             | 4.60                               | 4.80                            |
| 5. 12-14 month calving period provided          | 4.82                           | 4.90                             | 4.55                               | 5.00                            |
| 6. 75% cows fall freshened                      | 2.02                           | 2.45                             | 2.05                               | 1.55                            |
| 7. Fed cows according to production             | 1.62                           | 2.45                             | 1.30                               | 1.10                            |
| 8. Adequate milk records kept                   | 0.90                           | 1.20                             | 0.75                               | 0.75                            |
| 9. Adequate herd records kept                   | 3.33                           | 3.50                             | 3.40                               | 3.10                            |
| 10. Calves permanently identified               | 1.38                           | 1.55                             | 1.10                               | 1.50                            |
| 11. Adequate supply of silage provided          | 1.67                           | 2.05                             | 1.65                               | 1.30                            |
| 12. High quality silage provided                | 1.67                           | 1.90                             | 1.65                               | 1.45                            |
| 13. Silage supplemented with enough hay         | 4.15                           | 4.40                             | 3.95                               | 4.10                            |
| 14. High quality hay provided                   | 3.05                           | 3.75                             | 2.95                               | 2.45                            |
| 15. Hay and/or silage provided on pasture       | 2.77                           | 3.60                             | 2.40                               | 2.30                            |
| 16. Adequate improved pasture provided          | 4.45                           | 4.40                             | 4.15                               | 4.80                            |
| 17. Sufficient summer pasture provided          | 2.60                           | 2.60                             | 2.40                               | 2.80                            |
| 18. Flies systematically controlled             | 4.55                           | 4.50                             | 4.90                               | 4.25                            |
| 19. Separate feeding and loafing areas provided | 3.38                           | 2.90                             | 3.45                               | 3.80                            |
| 20. Strip cup always used                       | 0.55                           | 0.75                             | 0.55                               | 0.35                            |
| 21. Professional advice obtained                | 4.63                           | 4.60                             | 4.50                               | 4.80                            |
| 22. Calves vaccinated for brucellosis, etc.     | 3.38                           | 3.65                             | 2.60                               | 3.90                            |
| 23. Milking system 6-month checked              | 3.43                           | 3.60                             | 3.65                               | 3.05                            |
| Actual total average                            | 2.94                           | 3.18                             | 2.81                               | 2.82                            |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of the recommended practice; 2 = interested in the practice; 3 = planning to try the practice; 4 = tried the practice but not using; and 5 = using the practice.

TABLE XXXIV

PERCENTS OF CANNON COUNTY DAIRYMEN INTERVIEWED IN VARIOUS STAGES OF THE DIFFUSION  
PROCESS ON EACH OF PRACTICES STUDIED\*

| Dairy Management Practice                       | Unaware<br>of It<br>Percent | Aware<br>of It<br>Percent | Interested<br>in It<br>Percent | Planning<br>to Try<br>Percent | Tried and<br>Not Using<br>Percent | Using<br>It<br>Percent | Total<br>Percent |
|---|-----------------------------|---------------------------|--------------------------------|-------------------------------|-----------------------------------|------------------------|------------------|
| 1. Artificially inseminated 1/2 or more of cows | 3                           | 44                        | 7                              | 0                             | 28                                | 18                     | 100              |
| 2. All cows bred to same breed bull             | 3                           | 48                        | 7                              | 2                             | 7                                 | 33                     | 100              |
| 3. 75% of replacements raised                   | 2                           | 30                        | 7                              | 2                             | 13                                | 46                     | 100              |
| 4. 60-day dry period provided cow               | 0                           | 3                         | 2                              | 0                             | 12                                | 83                     | 100              |
| 5. 12-14 month calving period provided          | 0                           | 0                         | 2                              | 0                             | 13                                | 85                     | 100              |
| 6. 75% cows fall freshened                      | 22                          | 43                        | 5                              | 0                             | 2                                 | 28                     | 100              |
| 7. Fed cows according to production             | 16                          | 55                        | 10                             | 2                             | 2                                 | 15                     | 100              |
| 8. Adequate milk records kept                   | 32                          | 53                        | 12                             | 0                             | 3                                 | 0                      | 100              |
| 9. Adequate herd records kept                   | 0                           | 33                        | 10                             | 0                             | 3                                 | 54                     | 100              |
| 10. Calves permanently identified               | 16                          | 62                        | 10                             | 0                             | 2                                 | 10                     | 100              |
| 11. Adequate supply of silage provided          | 10                          | 62                        | 10                             | 2                             | 3                                 | 13                     | 100              |
| 12. High quality silage provided                | 18                          | 55                        | 7                              | 0                             | 2                                 | 19                     | 100              |
| 13. Silage supplemented with enough hay         | 3                           | 7                         | 13                             | 0                             | 2                                 | 75                     | 100              |
| 14. High quality hay provided                   | 15                          | 15                        | 18                             | 2                             | 2                                 | 48                     | 100              |
| 15. Hay and/or silage provided on pasture       | 12                          | 37                        | 5                              | 0                             | 3                                 | 43                     | 100              |
| 16. Adequate improved pasture provided          | 0                           | 10                        | 3                              | 0                             | 5                                 | 82                     | 100              |
| 17. Sufficient summer pasture provided          | 2                           | 43                        | 17                             | 0                             | 8                                 | 30                     | 100              |
| 18. Flies systematically controlled             | 0                           | 5                         | 7                              | 0                             | 5                                 | 83                     | 100              |
| 19. Separate feeding and loafing areas provided | 7                           | 28                        | 5                              | 0                             | 0                                 | 60                     | 100              |
| 20. Strip cup always used                       | 68                          | 22                        | 5                              | 0                             | 2                                 | 3                      | 100              |
| 21. Professional advice obtained                | 0                           | 5                         | 3                              | 0                             | 7                                 | 85                     | 100              |
| 22. Calves vaccinated for brucellosis, etc.     | 0                           | 22                        | 22                             | 0                             | 10                                | 46                     | 100              |
| 23. Milking system 6-month checked              | 12                          | 23                        | 0                              | 0                             | 5                                 | 60                     | 100              |
| Total average                                   | 10                          | 31                        | 8                              | 1                             | 6                                 | 44                     | 100              |

\*Percents are rounded to the nearest whole number.



dairymen in each of the stages of the diffusion process for each of the management practices studied.

A wide variation in average practice diffusion ratings (Table XXXIII) is noted from practice to practice of all dairymen. On the average, the management level ranged from the "unaware" stage for Practice 20, "Strip cup always used" to the "using" stage (4.82) for Practice 5, "12-14 month calving period provided cows." All producers averaged in the "using" stage with regard to only 4 practices: (1) Practice 4, "60-day dry period provided cows" (4.70); (2) Practice 5, mentioned above (4.82); (3) Practice 18, "Flies systematically controlled" (4.55); and (4) Practice 21, "Professional advice obtained" (4.63).

The high producers had a higher average rating than did the low producers in 17 of the 23 practices. They averaged 0.55 to 1.35 points better than the low producers in 7 of the 17 practices (Practices 7, 15, 14, 2, 6, 11 and 18, in rank order of importance). These apparently critical practices may give some indications regarding the reasons for differences in production. Some observations regarding these and other practices will follow below.

#### Breeding Practices

Practices 1 through 6 in Tables XXXIII and XXXIV are related to breeding. Regarding Practice 1, "Artificially inseminated one-half or more cows," 54 percent were not even "planning to try" it. Fifty-eight percent were not even "planning to try" Practice 2, "All cows bred to

same breed bull." These low percents may be accounted for by the fact that a large number were running beef bulls with the cows to get veal calves. Consequently, less than one-half (46 percent) were following Practice 3, "75 percent of replacements raised." In the main, all producers averaged in the "tried" or "using" stages with the exception of Practice 6, "75 percent of cows fall freshened." Comparing the high and low groups on Practice 6, the high group averaged 2.45, "interested," and the low group 1.55, "aware." The low rating of both can be partially explained by the fact that they have no milk base to build, as they would have to for Grade A production, and many of the producers interviewed appeared to be trying to freshen their cows in early spring to take advantage of lush growth of pasture. Then, too, over a 13-year period (1955-67) no substantial price advantage had accrued to those having cows fall freshen; whereas the costs of winter feeding and care had risen considerably during the period (8:1).

In Table XXXIV, page 65, it is noted that 70 percent of the producers were not even "planning to try" Practice 6, and only 28 percent were "aware" of its being a recommended practice. The low producers averaged 0.90 points below the high.

It was noted from milk records that about 23 percent of the producers were providing a 60 to 90 day dry period (Practice 4) and selling no milk during the months of December, January and February. Questions concerning the reason for this procedure brought these answers: The "milk sold won't pay for the feed during these months"; "My facilities are inadequate which makes winter a good time to turn

them dry"; and "I don't like to milk in cold, bad weather." Nearly all high producers and all low producers were using Practice 5, mentioned earlier.

### Keeping and Using Records

Practices 7, 8, 9 and 10 are related to records and their use. It is widely held that farmers do not like to keep records. The results of this study indicate that this is generally true for Cannon County manufacturing producers. In Table XXXIII, page 64, it is noted that all producers were, on the average, only in the "aware" stage (1.30 average) with regard to the bundle of 4 record-keeping practices except Practice 9, "Adequate herd records kept."

Seventy-one percent of the producers were not even "interested" in Practice 7, "Feeding according to production," while only 15 percent were "using" it. When asked if they fed according to production, many of them would say, "What do you mean?" or "Yes, I feed all they will eat while I am milking." High producers (2.45) averaged higher than the low producers (1.10) on this practice. None of the producers were even "planning to use" Practice 8, "Adequate milk records kept," the high producers averaging only 0.45 diffusion points above the low producers on this practice.

Table XXXIV, page 65, shows that 54 percent were in the "using" stage on Practice 9, "Adequate herd records kept"--including heat, health and calving date. The 18 percent of the producers using artificial insemination indicated that calving records and breeding dates were shown on their breeding receipts. Producers further stated that they

kept most of the herd records on a calendar or on a barn chart. Table XXXVIII, page 64, shows the average of all producers to be in the "planning to try" stage on Practice 9, with little difference between groups--though high producers (3.50) rated higher than low (3.10).

Eighty-eight percent of all producers were not even "planning to try" Practice 10, "Calves permanently identified." Several of the producers stated that they could visually identify all the calves (and their dams) with the small number of animals they were keeping. Only 10 percent were in the "using" stage on Practice 10.

It appears that much emphasis needs to be put on record keeping when planning educational work for dairymen in Cannon County. The same was found to be true of manufacturing producers in Henry County in an earlier survey (1966) conducted by Caldwell (6:79).

#### Feeding Practices

Practices 11 through 17 were concerned with adequate feeding. Table XXXVIII shows that all producers on the average had "tried" only two of the seven feeding practices. Those "tried" were: Practice 13, "Silage supplemented with enough hay," and Practice 16, "Adequate improved pasture provided."

The lowest practice diffusion ratings for any of the feeding practices had to do with providing adequate high quality silage (Practices 11 and 12). The average for all producers on the two practices was only in the "interested" stage with none of the three groups coming above that stage on either practice. It is noted in

Table XXXIV, page 65, that only 13 percent of all producers interviewed were at the "using" stage for Practice 11, "Adequate supply of silage provided," and only 18 percent were at the "using" stage for Practice 12, "High quality silage provided." It is further noted that 72 and 73 percent respectively were "aware" or below of Practices 11 and 12.

Although Practice 15, "Hay and silage provided on pasture" shows 43 percent in the "using" stage (Table XXXIV), most of these producers were using hay since only 14 producers were feeding silage. High producers had "tried" four of the seven feeding practices (13, 14, 15 and 16), while low producers had at least "tried" only two of the seven (Practices 13 and 16). Practice 17, "Sufficient summer pasture provided" shows producers to rate only in the "planning to try" stage (2:60).

There is strong indication that silage feeding should make a large increase in profits from dairying. Chappell (7:1) reported, based on a mail survey of 25 milk plants, that an increase of 14.5 percent in milk production could possibly be attributed to the addition of silage to the ration. This would merit consideration in future educational program planning.

#### Sanitation Practices

The next group of practices for discussion in Table XXXIII, page 64, is generally classified under the heading of sanitary practices, and includes Practices 18, 19 and 20. It is noted that all producers were, on the average, in the "using" stage (4.55) with regard to Practice 18, "Flies systematically controlled," in the "planning to

try" stage (3.38) on Practice 19, "Separate feeding and loafing areas provided," but only in the "aware" stage (0.55) on Practice 20, "Strip cup always used." When the high and low groups were compared, the only large difference noted was on Practice 19, with the low group averaging in the "tried" stage (3.80), while the high group was only in the "planning to try" stage (2.90).

In Table XXXIV, page 65, it is seen that 90 percent of all producers were not even interested in Practice 20, "Using the strip cup." It is interesting to note that 60 percent were providing separate feeding and loafing areas and 83 percent were systematically controlling flies.

#### Other Practices

The remaining three practices (21, 22, 23) in Table XXXIII, page 65, have been grouped as "other practices" for the purposes of this study, and are discussed separately. Practice 23, "Milking system 6-month checked," had an average rating of "planning to try" (3.43) for all producers. The high producers were in the "tried" stage (3.60) for this practice, while the low producers were "planning to try" it (3.05).

Table XXXIV shows that 60 percent were in the "using" stage on Practice 23, while 35 percent were not "interested" in it.

All producers were, on the average, in the "using" stage (4.63) on Practice 21, "Professional advice obtained," and high and low producers were in the "tried" stage on Practice 22, "Calves vaccinated

TABLE XXXV

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF CANNON COUNTY DAIRYMEN BY HERD SIZE  
CATEGORIES FOR INDIVIDUAL DAIRY MANAGEMENT PRACTICES<sup>a</sup>

| Dairy Management Practice                       | All Dairymen<br>Average Rating<br>(N=60) | 1-9 Cows<br>Average Rating<br>(N=23) | 10-19 Cows<br>Average Rating<br>(N=24) | 20-25 Cows<br>Average Rating<br>(N=13) |
|---|--|--------------------------------------|--|--|
| 1. Artificially inseminated 1/2 or more of cows | 2.57                                     | 2.26                                 | 2.88                                   | 2.54                                   |
| 2. All cows bred to same breed bull             | 2.60                                     | 2.17                                 | 2.75                                   | 3.08                                   |
| 3. 75% of replacements raised                   | 3.42                                     | 2.87                                 | 3.42                                   | 4.38                                   |
| 4. 60-day dry period provided cow               | 4.70                                     | 4.74                                 | 4.71                                   | 4.62                                   |
| 5. 12-14 month calving period provided          | 4.82                                     | 4.87                                 | 4.71                                   | 4.92                                   |
| 6. 75% cows fall freshen                        | 2.43                                     | 1.30                                 | 2.46                                   | 4.38                                   |
| 7. Fed cows according to production             | 1.62                                     | 1.35                                 | 1.67                                   | 2.00                                   |
| 8. Adequate milk records kept                   | 0.88                                     | 0.65                                 | 0.97                                   | 1.23                                   |
| 9. Adequate herd records kept                   | 3.33                                     | 3.43                                 | 3.58                                   | 2.69                                   |
| 10. Calves permanently identified               | 1.37                                     | 0.91                                 | 1.33                                   | 2.23                                   |
| 11. Adequate supply of silage provided          | 1.67                                     | 1.13                                 | 1.71                                   | 2.54                                   |
| 12. High quality of silage provided             | 1.67                                     | 0.91                                 | 1.75                                   | 2.85                                   |
| 13. Silage supplemented with enough hay         | 4.15                                     | 4.30                                 | 4.00                                   | 4.15                                   |
| 14. High quality hay provided                   | 3.05                                     | 3.00                                 | 2.88                                   | 3.46                                   |
| 15. Hay and/or silage provided on pasture       | 2.77                                     | 2.43                                 | 2.92                                   | 3.08                                   |
| 16. Adequate improved pasture provided          | 4.45                                     | 4.78                                 | 4.04                                   | 4.62                                   |
| 17. Sufficient summer pasture provided          | 2.55                                     | 2.35                                 | 2.46                                   | 3.08                                   |
| 18. Flies systematically controlled             | 4.55                                     | 4.26                                 | 4.83                                   | 4.54                                   |
| 19. Separate feeding and loafing area provided  | 3.38                                     | 3.35                                 | 3.17                                   | 3.85                                   |
| 20. Strip cup always used                       | 0.48                                     | 0.43                                 | 0.46                                   | 0.62                                   |
| 21. Milking system 6-month checked              | 3.50                                     | 2.39                                 | 4.08                                   | 4.38                                   |
| 22. Professional advice obtained                | 4.63                                     | 4.61                                 | 4.67                                   | 4.62                                   |
| 23. Calves vaccinated for brucellosis, etc.     | 3.45                                     | 3.17                                 | 3.88                                   | 3.15                                   |
| Total average                                   | 2.94                                     | 2.68                                 | 2.98                                   | 3.35                                   |

<sup>a</sup>In the rating scale used: 1 = aware of the recommended practices; 2 = interested in the practice; 3 = planning to try the practice; 4 = tried the practice but not using; and 5 = using the practice.

for brucellosis, etc." Eighty-five percent were in the "using" stage on Practice 21, and nearly one-half (46 percent) were "using" Practice 22.

## II. BREEDING OF HEIFERS

### Method

All producers were asked how heifers were bred and Table XXXVI gives the results. Seventy-eight percent said they used a bull in natural service on all their heifers. One-fourth (25 percent) of the high producers indicated that they used artificial breeding on at least some heifers. Only 10 percent of low producers had used artificial insemination. This suggests the possible relative merits of this breeding practice.

### Type of Bull Used

Table XXXVII reveals that 53 percent (32 producers) were using beef bulls on their heifers, while 47 percent were using dairy bulls. More than one-half (55 percent) of the high producers were breeding their heifers to dairy bulls. Low producers were breeding more than one-half (55 percent) of their heifers to beef bulls.

## III. BREEDING OF COWS

### Type of Bull

Table XXXVIII shows that 52 percent were breeding their herd cows to a beef bull and 48 percent to dairy bulls. The same differences



TABLE XXXVI  
 NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH,  
 MEDIUM AND LOW PRODUCERS IN 1967 BY METHOD  
 OF BREEDING HEIFERS\*

| Method of<br>Breeding<br>Heifers | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|----------------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                                  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Not Answered                     | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Naturally                        | 47                          | 78  | 14                | 70  | 15                  | 75  | 18               | 90  |
| Artificially                     | 10                          | 17  | 4                 | 20  | 4                   | 20  | 2                | 10  |
| Both                             | 2                           | 3   | 1                 | 5   | 1                   | 5   | 0                | 0   |
| Total                            | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XXXVII

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH,  
MEDIUM AND LOW PRODUCERS IN 1967 BY TYPE OF BULL  
USED ON HEIFERS\*

| Type<br>of<br>Bull Used | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|-------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                         | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Dairy                   | 28                          | 47  | 11                | 55  | 8                   | 40  | 9                | 45  |
| Beef                    | 32                          | 53  | 9                 | 45  | 12                  | 60  | 11               | 55  |
| Total                   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE XXXVIII

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH,  
MEDIUM AND LOW PRODUCERS IN 1967 BY TYPE  
OF BULL USED ON COWS\*

| Type<br>of<br>Bull Used | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|-------------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                         | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Dairy                   | 29                          | 48  | 11                | 55  | 9                   | 45  | 9                | 45  |
| Beef                    | 31                          | 52  | 9                 | 45  | 11                  | 55  | 11               | 55  |
| Total                   | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

shown in the previous table (Table XXXVII) between the high and low groups held here also. More high producers favored dairy bulls (50 percent) than was true for low producers (45 percent).

#### IV. FEEDING OF COWS

##### Percent of Protein in Dairy Ration

It is noted in Table XXXIX that the most common dairy ration used was an 8 to 11 1/2 percent protein ration, with 33 percent of the producers using it. Twenty-seven of the producers were using a 16 percent ration, 37 percent of the producers were feeding a ration between 12 and less than 16 percent protein. Forty percent of the high producers and 10 percent of the low were feeding the recommended 16 percent protein ration. The high producers generally were feeding a higher percent protein ration (average of 13.7) than low producers (a 11.7 average).

##### Method of Providing Concentrates

Seventy-five percent of the producers indicated that they bought their concentrates. Sixty-five percent of the producers were mixing their own and 10 percent producers were mixing some and buying some. Almost all of these producers took their grain to the mill and had it ground, added supplement and had it mixed. Only 25 percent purchased a complete dairy feed with the supplement added. Little difference was to be noted between high and low production groups on this point.

##### Grinding of Hay

Table XL shows that 38 percent of the producers ground their hay,

TABLE XXXIX

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH,  
MEDIUM AND LOW PRODUCERS BY PERCENTS OF PROTEIN  
USED IN DAIRY RATION\*

| Percent Protein<br>in Dairy Ration | All Dairymen<br>Interviewed |      | High<br>Producers |      | Medium<br>Producers |      | Low<br>Producers |      |
|------------------------------------|-----------------------------|------|-------------------|------|---------------------|------|------------------|------|
|                                    | No.                         | %    | No.               | %    | No.                 | %    | No.              | %    |
| 8-11 1/2                           | 20                          | 33   | 4                 | 20   | 6                   | 30   | 10               | 50   |
| 12                                 | 10                          | 17   | 3                 | 15   | 3                   | 15   | 4                | 20   |
| 14                                 | 12                          | 20   | 5                 | 25   | 3                   | 15   | 4                | 20   |
| 16                                 | 16                          | 27   | 8                 | 40   | 6                   | 30   | 2                | 10   |
| 18                                 | 2                           | 3    | 0                 | 0    | 2                   | 10   | 0                | 0    |
| Total                              | 60                          | 100  | 20                | 100  | 20                  | 100  | 20               | 100  |
| Estimated Average<br>Percent Tried |                             | 12.9 |                   | 13.7 |                     | 13.4 |                  | 11.7 |

\*Percents are rounded to the nearest whole number.

TABLE XL

NUMBERS AND PERCENTS OF CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY WHETHER OR NOT THEY GRIND THEIR HAY\*

| Grinding<br>of<br>Hay | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|-----------------------|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|                       | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Did Grind Hay         | 41                          | 55  | 10                | 40  | 16                  | 64  | 15               | 60  |
| Did Not Grind Hay     | 34                          | 45  | 15                | 60  | 9                   | 36  | 10               | 40  |
| Total                 | 75                          | 100 | 25                | 100 | 25                  | 100 | 25               | 100 |

\*Percents are rounded to nearest whole number.

an unrecommended practice. Forty-five percent of the high producers and 35 percent of the low producers were grinding hay. This appears to be an area for some educational work among all groups.

#### Type of Hay Fed

Seventy-five percent (45 producers) of the dairymen indicated that they fed legume-grass hay. Twenty-three percent (32 producers) were using a legume hay. One of the producers reported using all grass hay. Comparisons shows no difference between production groups.

#### Method of Supplying Salt and Minerals

Data in Table XLI show that 67 percent of the dairymen supplied salt and minerals free choice. Twenty-five percent of the dairymen supplied salt and minerals both mixed in the ration and free choice. Eight percent supplied salt and minerals only in the ration. A comparison of the high and low producers shows that 35 percent of the high compared to 10 percent of the low provided salt and minerals both in the ration and free choice.

#### Storage Capacity Available for Silage

Seventy-seven percent (46 producers) of the dairymen had no storage space for silage. The average capacity for those producers with silos was 180 tons. There were eight upright and six trench silos among all the dairymen interviewed. Five of the eight upright silos were in the high group and none in the low group. Trench silos were evenly distributed among the three production groups.

TABLE XLI

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH,  
MEDIUM AND LOW PRODUCERS BY METHOD OF SUPPLYING  
SALT AND MINERALS\*

| Method of<br>Supplying<br>Salt and Minerals | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|---|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|   | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Free Choice                                 | 40                          | 67  | 11                | 55  | 13                  | 65  | 16               | 80  |
| Mix in Ration                               | 5                           | 8   | 2                 | 10  | 1                   | 5   | 2                | 10  |
| Both  | 15                          | 25  | 7                 | 35  | 6                   | 30  | 2                | 10  |
| Total                                       | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.



#### V. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO AGE

Table XLII shows that the practice diffusion ratings of producers in the six age groups ranged from the "interested" stage for the 65 or over age group to the "tried" stage for those under 25. There seemed to be a tendency for younger farmers to have higher management levels.

#### VI. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO EDUCATIONAL LEVELS

Table XLIII in general shows increases in practice diffusion ratings with the increases in educational levels up through 4 years in college. There is a slight decrease for the two producers with Doctor's and Law degrees. Numbers having work above high school level were too few to draw any conclusions.

#### VII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SIZE OF FARM

Table XLIV shows a slight tendency for the average ratings of all interviewees to be positively related to size of farm (i.e., increases in the one occur with increases in the other). This tendency is not noted when either high or low groups are studied alone.

#### VIII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SOURCES OF INCOME

Table XLV shows that those listing dairying as the major source of

TABLE XLII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS ACCORDING TO AGE GROUPS<sup>a</sup>

| Age Group<br>of<br>Dairymen | All Dairymen<br>Interviewed |      | High<br>Producers |      | Medium<br>Producers |      | Low<br>Producers |      |
|-----------------------------|-----------------------------|------|-------------------|------|---------------------|------|------------------|------|
|                             | No.                         | %    | No.               | %    | No.                 | %    | No.              | %    |
| Under 25                    | 1                           | 3.91 | 0                 | ---  | 0                   | ---  | 1                | 3.91 |
| 25-34                       | 7                           | 3.11 | 1                 | 3.52 | 2                   | 3.16 | 4                | 2.98 |
| 35-44                       | 16                          | 3.24 | 7                 | 3.71 | 4                   | 3.01 | 5                | 2.75 |
| 45-54                       | 12                          | 3.12 | 5                 | 3.22 | 3                   | 3.03 | 4                | 3.07 |
| 55-64                       | 17                          | 2.57 | 6                 | 2.66 | 9                   | 2.56 | 2                | 2.35 |
| 65 or more                  | 7                           | 2.53 | 1                 | 2.13 | 2                   | 2.87 | 4                | 2.47 |
| Actual Total                | 60                          | 2.94 | 20                | 3.18 | 20                  | 2.81 | 20               | 2.82 |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practice; 4 = tried the practice but not using; and 5 = using the practice.

TABLE XLIII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY EDUCATIONAL LEVELS<sup>a</sup>

| Educational<br>Grade<br>Level  | All Dairymen<br>Interviewed |      | High<br>Producers |      | Medium<br>Producers |      | Low<br>Producers |      |
|--------------------------------|-----------------------------|------|-------------------|------|---------------------|------|------------------|------|
|                                | No.                         | %    | No.               | %    | No.                 | %    | No.              | %    |
| Not Answered                   | 4                           | 2.80 | 0                 | ---  | 2                   | 3.18 | 2                | 2.42 |
| 1-6 grades                     | 15                          | 2.46 | 3                 | 2.45 | 8                   | 2.57 | 4                | 2.26 |
| 7-8 grades                     | 16                          | 2.80 | 4                 | 2.97 | 7                   | 2.85 | 5                | 2.57 |
| 9-10 grades                    | 2                           | 2.66 | 1                 | 2.61 | 0                   | ---  | 1                | 2.70 |
| 11-12 grades                   | 19                          | 3.37 | 9                 | 3.41 | 3                   | 3.17 | 7                | 3.43 |
| 1-4 college                    | 1                           | 4.13 | 1                 | 4.13 | 0                   | ---  | 0                | ---  |
| B.S. or M.S. degree            | 1                           | 3.91 | 1                 | 3.91 | 0                   | ---  | 0                | ---  |
| Doctor's or Lawyer's<br>degree | 2                           | 3.02 | 1                 | 3.13 | 0                   | ---  | 1                | 2.91 |
| Actual Total                   | 60                          | 2.94 | 20                | 3.18 | 20                  | 2.81 | 20               | 2.82 |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practice; 4 = tried the practice but not using; and 5 = using the practice.

TABLE XLIV

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY SIZE OF FARM CATEGORIES<sup>a</sup>

| Size of Farm Category | All Dairymen Interviewed |      | High Producers |      | Medium Producers |      | Low Producers |      |
|-----------------------|--------------------------|------|----------------|------|------------------|------|---------------|------|
|                       | No.                      | %    | No.            | %    | No.              | %    | No.           | %    |
| 12-49                 | 4                        | 2.38 | 0              | ---  | 3                | 2.45 | 1             | 2.17 |
| 50-99                 | 12                       | 3.11 | 3              | 3.61 | 2                | 2.83 | 7             | 2.97 |
| 100-149               | 15                       | 2.71 | 5              | 3.06 | 5                | 2.43 | 5             | 2.65 |
| 150-199               | 7                        | 3.00 | 2              | 3.20 | 3                | 3.19 | 2             | 2.52 |
| 200-249               | 11                       | 3.04 | 5              | 3.11 | 3                | 2.84 | 3             | 3.13 |
| 250-299               | 3                        | 3.04 | 0              | ---  | 1                | 3.39 | 2             | 2.87 |
| 300-399               | 4                        | 2.76 | 2              | 2.37 | 2                | 3.16 | 0             | ---  |
| 400-999               | 4                        | 3.54 | 3              | 3.62 | 1                | 3.30 | 0             | ---  |
| Actual Total          | 60                       | 2.94 | 20             | 3.18 | 20               | 2.81 | 20            | 2.82 |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practice.

TABLE XLV

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY MAJOR SOURCE OF INCOME<sup>a</sup>

| Major Source of Income | All Dairymen Interviewed |                | High Producers |                | Medium Producers |                | Low Producers |                |
|------------------------|--------------------------|----------------|----------------|----------------|------------------|----------------|---------------|----------------|
|                        | No.                      | Average Rating | No.            | Average Rating | No.              | Average Rating | No.           | Average Rating |
| Dairying               | 29                       | 3.08           | 10             | 3.32           | 13               | 2.89           | 6             | 3.10           |
| Other Farm             | 7                        | 2.91           | 1              | 2.43           | 2                | 3.05           | 4             | 2.97           |
| Non-Farm               | 24                       | 2.77           | 9              | 3.11           | 5                | 2.51           | 10            | 2.59           |
| Actual Total           | 60                       | 2.94           | 20             | 3.18           | 20               | 2.81           | 20            | 2.82           |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

income tended to be managing at a higher level than others. This was true for all production groups excepting the medium.

IX. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS  
TO GROSS FAMILY INCOME

In Table XLVI, it is noted that, generally, practice diffusion ratings tended to increase as levels of gross family income increased. The trend was more noticeable for all dairymen, medium and low, than for high producers.

X. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS  
TO DAIRY HERD RATING

Table XLVII suggests a positive relation between the way the producers rated their herds subjectively (as to value and condition) and their management levels on the rating scale. The relation was not as pronounced for low producers as for other groups.

XI. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS  
TO INTEREST IN IMPROVING DAIRY MANAGEMENT

All dairymen were rated by the interviewer as to his judgment of their interest in improving their dairy management. Table XLVIII shows the producers' average diffusion ratings in relation to their apparent interest in improving.

Generally speaking, a higher average practice diffusion rating was noted for those who appeared to be more interested.

TABLE XLVI

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY TOTAL GROSS FAMILY INCOME REPORTED<sup>a</sup>

| Total Gross Family Income Category | All Dairymen Interviewed |                | High Producers |                | Medium Producers |                | Low Producers |                |
|------------------------------------|--------------------------|----------------|----------------|----------------|------------------|----------------|---------------|----------------|
|                                    | No.                      | Average Rating | No.            | Average Rating | No.              | Average Rating | No.           | Average Rating |
| Not Answered                       | 2                        | 3.02           | 1              | 3.13           | 0                | ---            | 1             | 2.91           |
| 0-3,999                            | 17                       | 2.55           | 4              | 2.65           | 5                | 2.54           | 8             | 2.52           |
| 4,000-7,999                        | 24                       | 2.91           | 7              | 3.07           | 10               | 2.70           | 7             | 2.92           |
| 8,000-11,999                       | 10                       | 3.42           | 5              | 3.95           | 3                | 2.94           | 2             | 2.79           |
| 12,000-15,999                      | 3                        | 2.81           | 2              | 2.54           | 0                | ---            | 1             | 3.35           |
| 16,000-21,999                      | 4                        | 3.58           | 1              | 3.61           | 2                | 3.37           | 1             | 3.96           |
| Actual Total                       | 60                       | 2.94           | 20             | 3.18           | 20               | 2.81           | 20            | 2.82           |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

TABLE XLVII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY RATINGS THEY GAVE THEIR OWN DAIRY HERD AS TO CONDITION AND VALUE<sup>a</sup>

| Ratings Dairymen Gave Their Own Herd | All Dairymen Interviewed |                | High Producer |                | Medium Producer |                | Low Producer |                |
|--------------------------------------|--------------------------|----------------|---------------|----------------|-----------------|----------------|--------------|----------------|
|                                      | No.                      | Average Rating | No.           | Average Rating | No.             | Average Rating | No.          | Average Rating |
| Not Answered                         | 1                        | 2.52           | 0             | ---            | 0               | ---            | 1            | 2.52           |
| Excellent                            | 6                        | 3.16           | 1             | 3.91           | 2               | 2.85           | 3            | 3.12           |
| Good                                 | 27                       | 3.10           | 14            | 3.39           | 8               | 2.82           | 5            | 2.71           |
| Fair                                 | 26                       | 2.78           | 5             | 2.45           | 10              | 2.80           | 11           | 2.81           |
| Total                                | 60                       | 2.94           | 20            | 3.18           | 20              | 2.81           | 20           | 2.82           |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.



TABLE XLVIII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY INTEREST OF RESPONDENT IN IMPROVING HIS DAIRY MANAGEMENT<sup>a</sup>

| Degree of Interest<br>in Improving Dairy<br>Management Level | All Dairymen<br>Interviewed |                   | High<br>Producers |                   | Medium<br>Producers |                   | Low<br>Producers |                   |
|--|-----------------------------|-------------------|-------------------|-------------------|---------------------|-------------------|------------------|-------------------|
|  | No.                         | Average<br>Rating | No.               | Average<br>Rating | No.                 | Average<br>Rating | No.              | Average<br>Rating |
| Very Interested  | 19                          | 3.52              | 10                | 3.74              | 5                   | 3.25              | 4                | 3.30              |
| Somewhat Interested  | 33                          | 2.70              | 9                 | 2.63              | 11                  | 2.81              | 13               | 2.67              |
| Indifferent  | 7                           | 2.52              | 0                 | ---               | 4                   | 2.26              | 3                | 2.85              |
| Not Interested   | 1                           | 2.61              | 1                 | 2.61              | 0                   | ---               | 0                | ---               |
| Total  | 60                          | 2.94              | 20                | 3.18              | 20                  | 2.81              | 20               | 2.82              |

<sup>a</sup>In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

## CHAPTER III

### SUMMARY

A total of 60 Cannon County manufacturing milk producers who produced milk in 1967 were interviewed regarding their dairy production practices.

Using 1967 information obtained from Armour Creamery in Woodbury, the producers were divided into three equal production groups (high, medium and low) according to average annual butterfat marketed per cow.

Producers were questioned concerning the use of 23 recommended production practices, and, as a result, given dairy production management practice diffusion ratings ranging from 0, "unaware," to 5, "using." Average practice diffusion ratings were established for all producers and for the three production groups. The practice diffusion ratings were used in comparing management levels of high, medium and low producers in relation to: (1) production, (2) stage in the diffusion process, (3) herd size, (4) age, (5) educational level, (6) size of farm, (7) occupation, (8) source of income, (9) sex, (10) gross family income, (11) herd ratings, and (12) interest in improving their dairy management.

In addition to information regarding the 23 recommended practices, other data were obtained regarding breeding and feeding practices. For example, questions were asked to reveal methods used for breeding heifers and the type(s) of bulls (dairy or beef) used on heifers and cows.

Feeding information obtained in addition to that included in the 23 recommended practices had to do with: (1) the percent of protein in the dairy ration; (2) methods of providing concentrates; (3) whether hay was ground or not; (4) types of hay fed; (5) methods of supplying salt and minerals; and (6) the storage capacity available for silage.

Information regarding management practices of manufacturing milk producers, especially comparative information between low and high producers in Tennessee was limited as was found to be true in most other areas. A study in Virginia, one in Mississippi, and a mail-out questionnaire in Tennessee to twenty-five milk plants gave relatively little specific information relative to practices used and not used by dairymen in Cannon County. A similar study was found to have been made of dairymen in Henry County in 1966.

## I. REVIEW OF FINDINGS

The following is a brief summary of the major findings as related to production and management practices of manufacturing milk producers in Cannon County:

1. The high producers showed a higher average practice diffusion rating than the low producers on 17 of the 23 practices considered.
2. The high producers had ratings of 0.55 diffusion points, or more, greater than the low producers on the following 7 practices:
  - (a) 75 percent of the cows fall freshened;
  - (b) all cows bred to same breed bull;
  - (c) high quality hay provided;
  - (d) fed cows according to

production; (e) adequate supply of silage provided; (f) milking system six-month checked; and (g) hay and or silage provided on pasture.

3. The incidence of dairymen in the "unaware" stage on the 23 recommended practices, on the average, was 10 percent, while the average "using" percent was only 44 for practices studied.

4. Less than 10 percent (mostly high producers) were using the following three practices: (a) adequate milk records kept; (b) calves permanently identified; and (c) strip cup always used.

5. Practices used by less than 20 percent of the dairymen (mostly high producers) in addition to the above were: (a) artificially inseminated one-half or more of cows; (b) fed cows according to production; (c) adequate supply of silage provided; and (d) high quality silage provided.

6. Sixty-eight percent were unaware of the practice "Strip cup always used" and one-third of the producers were unaware of the practice "Adequate milk records kept"--more high than low producers using both practices.

7. The high producers were breeding more than one-half of their cows and heifers to dairy bulls, while more than one-half of the medium and low groups were using beef bulls on their cows and heifers.

8. High producers tended to feed a higher protein ration than the other groups.

9. Thirty-five percent of all producers followed the unrecommended practice of grinding hay.

10. Twenty-five percent more of the high producers than the low provided salt and minerals both in the ration and free choice.

11. Younger dairymen tended to have a slightly higher practice diffusion rating than older ones in all groups.

12. Dairymen with higher levels of education tended to have higher practice diffusion ratings in all groups up through college below the degree level.

13. Farmers with dairying as a major source of income scored higher than other farmers in regard to practice diffusion ratings.

14. The practice diffusion ratings tended to increase with increases in gross family income.

15. The higher producers rated the value and condition of their herds, the higher their management levels tended to be in all groups.

## II. IMPLICATIONS

Implications from this study are as follows:

1. These data indicate some positive relationship between recommended practice adoption and level of production, verifying the fact that many important practices were, in the main, not being used.

2. The bundle of practices relating to record keeping offers an educational challenge in Extension work with all producers.

3. Further evaluation of data obtained through the survey and consideration of the findings relating to reasons for adopting recommended practices should be helpful when planning to further educational dairy work in Cannon County.

PROBLEM C: FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION  
BY CANNON COUNTY MANUFACTURING MILK PRODUCERS

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A Special Problem in Lieu of Thesis

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science,

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by  
Clayton F. Glenn  
December 1968

## CHAPTER I

### INTRODUCTION

The two previous problems in this series were concerned with the characteristics and management practices of Cannon County manufacturing milk producers. Further analysis of the data collected in this study is necessary in order to identify the factors influencing them to adopt or not to adopt recommended dairy management practices.

Dairying is an important agricultural enterprise in Cannon County and annually represents almost 39 percent of the total county farm income. In 1964, dairying was the largest single source of income in the county. The dairy business was then made up of 16 Grade A dairy farms and 609 producers of manufacturing milk producers (10;3).\* The dairy industry has undergone many changes and made rapid growth during the past 35 years. One of the significant happenings in this period was the location of Armour Creamery, a cheese plant at Woodbury, in 1935, which provided a market for manufacturing purposes. Another factor affecting the manufacturing milk producers in the county was the drive put on by the various companies from surrounding counties during the mid-1950's, for a share of the producers. Some roads in the county had as many as four milk trucks from different plants

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\*Numbers in parentheses refer to numbered references in the bibliography; those after the colon are page numbers.

picking up the manufacturing milk. The number of Grade A producers, also increased to 16 by 1964. This increase was from producers who had previously sold manufacturing milk. At the time of the present study there were 120 Cannon County producers selling to the milk company at Woodbury.

Members of the County Extension staff have made considerable effort through the years to present educational information to Cannon County dairymen. Some of the methods that have been used include: demonstrations, tours, farm management schools, dairy meetings, circular letters, news articles, radio programs, county dairy shows, and individual work with the producers. Also, an outstanding registered dairy calf is presented each year to an active 4-H club member. Attempts have been made to evaluate the results of this teaching, but no previous attempt has been made to determine what factors have influenced manufacturing milk producers to adopt or not to adopt recommended dairy management practices.

#### I. PURPOSE OF THE STUDY

The purpose of this study was to try to determine what factors, other than those identified earlier, had influenced manufacturing milk producers in Cannon County to adopt or reject recommended dairy management practices.

#### II. REVIEW OF LITERATURE

Studies (1:4) have shown that farmers adopt new ideas or practices at different times. They tend to be at different stages in the



adoption process at different times as it may relate to a given, recommended, proven practice or bundle of practices.

The adoption process is a mental process through which an individual passes from first hearing about a new idea to its final adoption. Authorities generally agree that the stages in the adoption process include the following: (1) awareness (referred to in this study as "aware"); (2) interest (hereafter referred to as "interested"); (3) evaluation (referred to hereafter as "planning to try"); (4) trial (called "tried" in this study) and, (5) adoption (hereinafter called "using"). Research has indicated that, in general terms, as one proceeds from unawareness to "using," more and more intensive or personal contacts are required if adoption of a practice is to result.

At the "aware" and "interested" stages, mass media sources, such as demonstrations, farm magazines, newspapers, and radio are most important. At the "planning to try" and "tried" stages, neighbors and friends are generally more important influences than mass media. When farmers move closer to the "using" stage, personal contacts with representatives of agricultural agencies are of more importance, but may still be secondary to neighbors and friends.

Research findings (1:6) generally indicate that farmers who are the first to adopt have: (1) more formal education than others; (2) more favorable attitudes toward extension and other educational agencies than others; (3) more participation in general farm organizations; (4) children in 4-H clubs or vocational agriculture; (5) a high value placed on individual achievement; and (6) family members who participate in the decision-making and the operation of the farm.

### III. METHODS

A list of manufacturing milk producers in Cannon County was brought up to date and information concerning total milk sold, butterfat test, and bacterial readings for 1967 were obtained from the local manufacturing milk plant.

A random sample of 60 producers was taken from the 120 manufacturing milk producers in Cannon County. Each of these producers was contacted personally and interviewed using a schedule (see appendix) consisting of questions designed to reveal characteristics, production practices, and factors influencing practice adoption. This study has to do with those questions related to the factors influencing practice adoption not already dealt with in a related problem above. The 60 producers were divided into thirds according to average pounds of butterfat marketed per cow in 1967. The high group (20 producers) had average butterfat production ranging downward from 476 to 249 pounds; the medium group (20 producers) had production from 235 to 173 pounds; and the low group (20 producers) were in a range from 171 down to 62 pounds. Analysis will be based on simple numbers and percents, and averages shown where pertinent.

## CHAPTER II

### FINDINGS

#### I. THINGS LIKED ABOUT MANUFACTURING MILK PRODUCTION

Each producer was asked to tell what he liked most about manufacturing milk production. Table XLIX shows that 83 percent (50 dairymen) said that "It provides a regular source of income and is a stable form of agriculture." Nine of the producers gave as their answer, "I love working with dairy cattle." Two of these were in the high group, four in the medium and three in the low group. One other answer given by a high producer was, "It helps me round out my farming operation."

The fact that 83 percent milked mainly for the income may be one of the reasons why there had been a decrease over the most recent 13 years in the number of manufacturing milk producers. More profitable and less confining sources of income off the farm may have given those with smaller investments in their milking operations a chance to stop milking. Little difference is noted when high and low producers are compared.

#### II. THINGS DISLIKED ABOUT MANUFACTURING MILK PRODUCTION

Fifty-six percent of all dairymen gave the one thing they disliked about manufacturing milk production as, "Too confining." It is

TABLE XLIX

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS MENTIONING THINGS THEY LIKED MOST ABOUT MANUFACTURING MILK PRODUCTION\*

| Things Liked Most About Manufacturing Milk Production | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| Steady Income   | 50                       | 83  | 17             | 85  | 16               | 80  | 17            | 85  |
| Working with Cows                                     | 9                        | 15  | 2              | 10  | 4                | 20  | 3             | 15  |
| Helps Round out Farm Operation                        | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| Total   | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |

\*Percents are rounded to the nearest whole number.

shown in Table L that the high, medium and low groups each had about the same number of producers that answered in this way.

Ten percent more of all the dairymen reported reasons closely related to confinement such as milking every day and "working seven days a week."

"Cold weather conditions" was the answer given by 10 percent. "Cheap price of milk" was mentioned by four producers. Two producers, one each in the high and low group felt that "trying to hold test up" and one in the high group said, "not being able to find enough help."

It is noted that 10 percent (6 producers) of the dairymen did not have a particular dislike. Two of these were in the high group, three were in the medium group and one was in the low group.

### III. REASONS WHY MANUFACTURING MILK PRODUCERS DO NOT ADOPT RECOMMENDED PRACTICES

In order to determine the relative importance of some reasons as to why manufacturing milk producers do not adopt recommended dairy production practices, each milk producer was asked to select the three most important reasons from a set of ten. This was done by giving the respondent a set of ten cards, with a reason typed on each, from which he made his decision. After the three reasons were selected, he was asked to rank them in order of importance as to why he thought manufacturing milk producers do not adopt recommended dairy production practices, and to give any other reasons he felt to be important.

Table LI shows a combined summary of numbers and percents of all

TABLE L

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS MENTIONING THINGS THEY DISLIKED MOST ABOUT MANUFACTURING MILK PRODUCTION\*

| Things Disliked Most About Manufacturing Milk Production | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|--|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|  | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| Confinement  | 34                       | 56  | 11             | 55  | 10               | 50  | 13            | 65  |
| Cold Weather   | 6                        | 10  | 2              | 10  | 2                | 10  | 2             | 10  |
| Likes Everything   | 6                        | 10  | 2              | 10  | 3                | 15  | 1             | 5   |
| Milking Every Day  | 5                        | 8   | 1              | 5   | 2                | 10  | 2             | 10  |
| Cheap Price of Milk                                      | 4                        | 7   | 1              | 5   | 2                | 10  | 1             | 5   |
| Milking Hard to Milk Cows & Having to Cull a Good Cow    | 2                        | 3   | 1              | 5   | 0                | 0   | 1             | 5   |
| Not Being Able to Find Enough Help                       | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| Trying to Hold Test Up                                   | 1                        | 2   | 1              | 5   | 0                | 0   | 0             | 0   |
| Working 7 Days a Week                                    | 1                        | 2   | 0              | 0   | 1                | 5   | 0             | 0   |
| Total  | 60                       | 100 | 20             | 100 | 20               | 100 | 20            | 100 |

\*Percents are rounded to the nearest whole number.

TABLE LI

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS RATING VARIOUS REASONS WHY MANUFACTURING MILK PRODUCERS DO NOT ADOPT RECOMMENDED DAIRY PRACTICES: FIRST, SECOND OR THIRD RANKING\*

| Reasons Why Dairymen Do Not Adopt Recommended Practices <sup>a</sup> | All Dairymen Interviewed |    | High Producers |    | Medium Producers |    | Low Producers |    |
|--|--------------------------|----|----------------|----|------------------|----|---------------|----|
|  | No.                      | %  | No.            | %  | No.              | %  | No.           | %  |
| Not Answered   | 10                       | 17 | 3              | 15 | 1                | 5  | 6             | 30 |
| Physically Unable to do Supervision & Management of Job Needed       | 29                       | 40 | 10             | 50 | 11               | 55 | 8             | 40 |
| Expect to Move Away from Farm  | 28                       | 47 | 8              | 40 | 11               | 55 | 9             | 45 |
| Don't Have Technical Knowledge Needed                                | 24                       | 40 | 6              | 30 | 9                | 45 | 9             | 45 |
| Expect to Sell Dairy Herd  | 24                       | 40 | 8              | 40 | 11               | 55 | 5             | 25 |
| More Rewarding Activities Claim Owner's Time & Money                 | 24                       | 40 | 12             | 60 | 4                | 20 | 8             | 40 |
| Cost of Practices Outweighs Possible Benefits                        | 16                       | 27 | 6              | 30 | 4                | 20 | 6             | 30 |
| Don't Believe Practices are Sound                                    | 9                        | 15 | 3              | 15 | 3                | 15 | 3             | 15 |
| Facilities are Not Suited  | 9                        | 15 | 2              | 10 | 3                | 15 | 4             | 20 |
| Uncertainty of Ownership in Undivided Estate                         | 5                        | 8  | 1              | 5  | 3                | 15 | 1             | 5  |
| Have Tried Practices and Found Unsatisfactory                        | 2                        | 3  | 1              | 5  | 0                | 0  | 1             | 5  |

\*Percents are rounded to the nearest whole number.

<sup>a</sup>Numbers and percents do not add up to totals since all dairymen gave three most important reasons.

dairymen, high, medium and low producers who ranked each reason as either first, second or third in importance. An examination of the data reveals a number of interesting differences between high and low producers with regard to selection of reasons.

Reason 1, "physically unable to do supervision and management of job needed" was selected by 48 percent of all dairymen. Fifty percent of the high and 40 percent of the low producers selected it.

Reason 2, "expect to move away from farm," was selected by 47 percent of all dairymen. More low producers (45 percent) mentioned this item compared to 40 percent for the high group.

Reason 3, "don't have the technical knowledge needed," was selected by 40 percent of all the dairymen--more low producers (45 percent) than high (30 percent) mentioning it.

Reason 4, "expect to sell dairy herd," was selected by 40 percent of all dairymen. Forty percent of the high producers and 25 percent of the low group mentioned this reason.

Reason 5, "more rewarding activities claim owner's time and money," was selected by 40 percent of all dairymen. Sixty percent of the high producers selected this reason compared to only 40 percent for the low producers.

Reason 6, "cost of practices outweighs possible benefits," was selected by 27 percent of all dairymen. Some of the respondents mentioned some practices they felt were in this category. Those most often mentioned were: (1) using artificial insemination, (2) providing silage, and (3) feeding according to production.



The four remaining reasons (Table LI) and percents of producers mentioning them were:

Reason 9, "uncertainty of ownership in undivided estate" (8 percent),

Reason 7, "don't believe practices are sound" (15 percent).

Reason 10, "have tried and found unsatisfactory" (3 percent).

Reason 8, "facilities are not suited" (15 percent).

Each respondent was asked whether or not he thought there were other reasons why manufacturing milk producers do not adopt recommended dairy production practices. Thirteen percent (8 producers) gave other reasons. The most often mentioned were: "too lazy" and "just don't want to."

#### IV. DAIRY MANAGEMENT ADVICE SOUGHT

Farmers obtain information from many sources (1:7). Research has shown that most sources used by farmers vary with stages in the adoption process. Table LII shows that 95 percent of the dairymen interviewed sought advice concerning dairy management. Each dairyman talked to an average of 3.6 individuals during the previous year. The high producers talked to an average of 3.9, the medium 3.4, and the low 3.6.

Eighty-five of all dairymen ranked the "milk plant field man" most frequently. This is understandable since the producers sought his advice concerning milk coolers and equipment and since, in most cases, it was serviced by the field man. In addition to this, field men made regular visits to all producers interviewed. All three production

TABLE LII.

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY FREQUENCY WITH WHICH THEY REPORTED HAVING SOUGHT ADVICE CONCERNING DAIRY MANAGEMENT OF CERTAIN INDIVIDUALS\*

| Person From Whom Advice Was Sought <sup>a</sup> | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| None sought.                                    | 3                        | 5   | 1              | 5   | 1                | 5   | 1             | 5   |
| Milk Plant Fieldman                             | 51                       | 85  | 17             | 85  | 18               | 90  | 16            | 80  |
| Neighbor or Friend                              | 36                       | 60  | 13             | 65  | 10               | 50  | 13            | 65  |
| County Agent                                    | 36                       | 60  | 14             | 70  | 12               | 60  | 10            | 50  |
| Feed Dealer or Salesman                         | 34                       | 57  | 11             | 55  | 10               | 50  | 13            | 65  |
| Local Veterinarian                              | 24                       | 40  | 8              | 40  | 8                | 40  | 8             | 40  |
| Banker or PCA Rep.                              | 13                       | 22  | 6              | 30  | 3                | 15  | 4             | 20  |
| A.B.A. Technician                               | 10                       | 17  | 4              | 20  | 4                | 20  | 2             | 10  |
| Extension Dairyman                              | 7                        | 12  | 4              | 20  | 1                | 5   | 2             | 10  |
| F.H.A. Supervisor                               | 4                        | 7   | 0              | 0   | 2                | 10  | 2             | 10  |
| Health Dept. Sanitarian                         | 1                        | 2   | 0              | 0   | 0                | 0   | 1             | 5   |
| Average Number of Individuals Giving Advice     |                          | 3.6 |                | 3.9 |                  | 3.4 |               | 3.6 |

\*Percents are rounded to nearest whole number.

<sup>a</sup>Numbers and percents will neither add up to the total or dairymen interviewed nor to 100 percent since dairymen talked to one or more individuals.

groups agreed on this first choice with 85 percent of the high, 90 percent of the medium and 80 percent of the low producers seeking advice from this source.

"County agent" and "neighbor or friend" rated second with 60 percent of the producers mentioning this source. A higher percent of the high producers (70 percent) used the "County Agent" than did the medium (60 percent) or the low producers (50 percent). "Neighbor or friend" was equally mentioned by the high and low groups with 65 percent each.

The fourth ranking individual to give advice was the "feed dealer or salesman." Sixty-five percent of the low producers, 50 percent of the medium and 55 percent of the high producers received helpful information from this person.

The other sources of advice sought and their percentages were: (1) Local veterinarian, 40 percent; (2) Banker or PCA representative, 22 percent; (3) ABA technician, 17 percent; (4) Extension dairyman, 12 percent; (5) F.H.A. supervisor, 7 percent; (6) D.H.I.A. supervisor, 3 percent; and (7) Health Department Sanitarian, 2 percent.

#### V. ADDITIONAL SOURCES OF DAIRY MANAGEMENT INFORMATION USED

Ninety-two percent of all dairymen interviewed indicated that they received certain dairy management information from other sources as listed in Table LIII. All dairymen reported that they received information from an average of 4.3 sources. The high group averaged using 4.9, the medium 3.9 and the low 4.2 sources of management information.

TABLE LIII

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY FREQUENCY WITH WHICH THEY REPORTED RECEIVING INFORMATION USEFUL IN THE MANAGEMENT OF THEIR DAIRY HERDS FROM DIFFERENT SOURCES\*

| Source of Useful Information <sup>a</sup> | All Dairymen Interviewed |     | High Producers |     | Medium Producers |     | Low Producers |     |
|---|--------------------------|-----|----------------|-----|------------------|-----|---------------|-----|
|   | No.                      | %   | No.            | %   | No.              | %   | No.           | %   |
| None                                      | 5                        | 8   | 2              | 10  | 1                | 5   | 2             | 10  |
| Radio                                     | 50                       | 83  | 16             | 80  | 17               | 85  | 17            | 85  |
| Farm Magazines                            | 46                       | 77  | 19             | 85  | 14               | 70  | 15            | 15  |
| Commercial Bulletins                      | 29                       | 48  | 14             | 70  | 6                | 30  | 9             | 45  |
| Weekly Newspaper                          | 29                       | 48  | 8              | 40  | 8                | 40  | 13            | 65  |
| University Bulletins and Publications     | 25                       | 42  | 11             | 55  | 6                | 30  | 8             | 40  |
| Farm Meeting                              | 20                       | 33  | 8              | 40  | 7                | 35  | 5             | 25  |
| Television                                | 16                       | 27  | 5              | 25  | 6                | 30  | 5             | 25  |
| Daily Newspaper                           | 18                       | 30  | 7              | 35  | 6                | 30  | 5             | 25  |
| Field Days & Tours                        | 14                       | 23  | 6              | 30  | 3                | 15  | 5             | 25  |
| Newsletter                                | 12                       | 20  | 5              | 25  | 5                | 25  | 2             | 10  |
| Average Number of Sources of Information  |                          | 4.3 |                | 4.9 |                  | 3.9 |               | 4.2 |

\*Percents are rounded to nearest whole number.

<sup>a</sup>Numbers and percents will neither add up to the total of 60 dairymen interviewed nor 100 percent since dairymen received information from more than one source.

Radio was by far the most popular source reported, with 83 percent of all producers indicating this source. The low and medium groups reported 85 percent, while the high group was lowest with 80 percent.

It was interesting to note that farm magazines rated second as a source of information with 77 percent of all producers interviewed. Eighty-five percent of the high and only 15 percent of the low producers mentioned this source.

Commercial bulletins and weekly newspapers were another source of information with 48 percent each of all dairymen reporting their use. Next was university bulletins and publications with 42 percent of the producers receiving information from this source. It was noted that 70 percent of the high group and only 45 percent of the low producers use these sources.

Farm meetings were reported by 33 percent of the dairymen. The high producers reported 40 percent use this source as compared to only 25 percent for the low group.

Thirty percent of the producers reported using daily newspapers as a source of useful information, 27 percent reported viewing television, 23 percent reported field days and tours, and 20 percent of the producers reported referring to newsletters for useful information.

From Table LIII it is interesting to note that 7 out of the 10 sources of information showed a higher percent use by the high producers than the low producers.

## VI. DEGREE TO WHICH INTERVIEWER WAS FAMILIAR WITH DAIRY SITUATION

Table LIV shows that the interviewer was at least "fairly familiar" with 85 percent of the situations of all dairymen interviewed. It also shows that the interviewer was "very familiar" with 30 percent of the high producers' situation and only 10 percent of the low producers' situations. The fact that the situation of the high producers were, in the main, better known is consistent with findings elsewhere (23:25).

VII. PRODUCER'S NEED FOR GIVING INCREASED ATTENTION  
TO HERD MANAGEMENT

In Table LV the interviewer's opinion was that 98 percent of the dairymen "should pay more attention" to the management of their dairy herds. Ninety-five percent of the high producers and 100 percent of the low group were in this category.

The interviewer was "uncertain" about one of the high producers.

TABLE LIV

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH  
MEDIUM AND LOW PRODUCERS BY DEGREE TO WHICH INTERVIEWER WAS  
FAMILIAR WITH THE DAIRY SITUATION OF THE RESPONDENTS\*

| Degree to Which<br>Interviewer Knew<br>Dairy Situation | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Very Familiar  | 10                          | 17  | 6                 | 30  | 2                   | 10  | 2                | 10  |
| Fairly Familiar  | 41                          | 68  | 11                | 55  | 16                  | 80  | 14               | 70  |
| Not Very Familiar                                      | 6                           | 10  | 3                 | 15  | 1                   | 5   | 2                | 10  |
| Not Familiar   | 3                           | 5   | 0                 | 0   | 1                   | 5   | 2                | 10  |
| Total  | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to nearest whole number.

TABLE LV

NUMBERS AND PERCENTS OF ALL CANNON COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS WHO SHOULD, IN THE INTERVIEWER'S OPINION, PAY MORE ATTENTION TO THE MANAGEMENT OF THEIR DAIRY HERD\*

| Attention Paid<br>to Management<br>of Dairy Herd | All Dairymen<br>Interviewed |     | High<br>Producers |     | Medium<br>Producers |     | Low<br>Producers |     |
|--|-----------------------------|-----|-------------------|-----|---------------------|-----|------------------|-----|
|  | No.                         | %   | No.               | %   | No.                 | %   | No.              | %   |
| Should pay more                                  | 59                          | 98  | 19                | 95  | 20                  | 100 | 20               | 100 |
| Uncertain  | 1                           | 2   | 1                 | 5   | 0                   | 0   | 0                | 0   |
| Total  | 60                          | 100 | 20                | 100 | 20                  | 100 | 20               | 100 |

\*Percents are rounded to the nearest whole number.



## CHAPTER III

### SUMMARY

This study of 60 manufacturing milk producers in Cannon County was made to determine the factors not already identified that have influenced these dairymen to adopt and use or reject recommended dairy management practices.

Dairymen in the study were divided into three equal groups of 20 producers each in high, medium and low groups according to butterfat marketed per cow in 1967, and the factors influencing dairy management practice adoption of these groups were considered based on data obtained from personal interviews.

A review of other studies revealed the following general points:

1. Farmers studied have tended to adopt new practices or ideas at different times.

2. They tend to be at different stages in the adoption process on the same and different practices at any one period of time.

3. Mass media sources are considered most important at the awareness and interest stages.

4. Neighbors and friends are seen to be more important than mass media at the evaluation and trial stages.

5. Personal contacts become of greater value in the more advanced stages of the adoption process.

6. Representatives of agricultural agencies often are influential in helping influence individuals who are closest to the adoption stage.

## I. REVIEW OF FINDINGS

The following is a summary of the information concerning factors affecting practice adoption by the Cannon County manufacturing milk producers in this study:

1. Of the things liked most by manufacturing milk producers, the regular income was rated first by 83 percent of the dairymen. Little difference was noted when high and low producers were compared,

2. "Confinement" was the dislike mentioned by the greatest percentage of the producers--fewer of the high (55 percent) than of the low (65 percent) producers reported this dislike.

3. Manufacturing milk producers interviewed felt that recommended production practices most often were not adopted because:

(a) the owner was physically unable to provide necessary supervision and management (48 percent reporting); (b) the farmer expects to move away from the farm (47 percent reporting); (c) "don't have technical knowledge needed" (40 percent reporting); (d) "expect to sell herd" (40 percent reporting); and (e) "more rewarding activities claim owner's time and money" (40 percent reporting).

4. More high producers than low gave the following reasons why dairymen don't adopt recommended practices: (a) more rewarding activities claim the owner's time and money; (b) expect to sell dairy herd; and (c) physical inability (age) to do the job properly.

5. Only 15 percent of respondents in each production group felt that the recommended management practices were not sound.

6. Thirty percent each of the high and low producers interviewed felt that the "cost of practices outweighs possible benefits" and this was the reason dairymen did not adopt practices.

7. "Milk plant field man" was most frequently mentioned as a source of advice, 85 percent of the dairymen reporting.

8. Seventy percent of the high producers and 50 percent of the low sought advice from the county agent.

9. More than four-fifths of the producers (83 percent) listed radio most frequently as a source of additional useful dairying information--more of low group (85 percent) reporting this source than of the high (80 percent).

10. Seventy-seven percent of the dairymen rated farm magazines as their second most frequently reported source of information, 85 percent of the high and only 15 percent of the low producers mentioning this source.

11. The interviewer was at least "fairly familiar" with 85 percent of the total producers' dairy situations.

12. In the interviewer's opinion, 98 percent of the manufacturing milk producers interviewed should have been paying more attention to the management of their dairy herds.

## II. IMPLICATIONS

The information obtained in the study of manufacturing milk producers in Cannon County leads to the following implications for use in extension program planning:

1. Since 83 percent of the dairymen liked the regular income provided from dairy sales and since one-half did not like confinement, it should follow that the majority of those interviewed probably would be interested in learning how they might increase their net incomes.

2. Careful consideration should be given to the major reasons given by respondents as to why dairymen did not adopt recommended dairy production practices as plans are made for Extension work.

3. The producers who felt they lacked the technical knowledge needed should be contacted at an early date concerning dairy farm management schools and other educational opportunities.

4. The importance of working closely with the milk plant field man should not be overlooked as an avenue for encouraging recommended practice adoption.

5. Manufacturing milk producers should be contacted through the various sources of information that they indicated they used most (i.e., radio, newspapers, etc.).

6. All manufacturing milk producers in Cannon County, especially those interviewed, should be familiarized with the information from this study.

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## BIBLIOGRAPHY

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APPENDIX



THE AGRICULTURAL EXTENSION SERVICE, UNIVERSITY OF TENNESSEE  
Knoxville, Tennessee

TENNESSEE MANUFACTURING MILK PRODUCERS SURVEY

INTRODUCTION: I am helping with a survey that is being made by the University of Tennessee. The purpose is to obtain information to use in planning programs helpful to manufacturing milk producers. The answers you give will be added to those given by other dairymen who are being interviewed in this county and other parts of the state to get a complete picture of the dairy situation. Could I have a little of your time to go over these questions?

1. Total acres in farm \_\_\_\_\_ Cropland acres \_\_\_\_\_
2. Major occupation of the respondent
  - a. Full-time farmer \_\_\_\_\_
  - b. Part-time farmer \_\_\_\_\_
  - c. Business (specify) \_\_\_\_\_
  - d. Professional (specify) \_\_\_\_\_
  - e. Wage earner \_\_\_\_\_
  - f. Housewife or widow \_\_\_\_\_
  - g. Retired \_\_\_\_\_
  - h. Other (specify) \_\_\_\_\_
3. Is dairying your major source of income?
  - a. Yes \_\_\_\_\_
  - b. No \_\_\_\_\_
4. If your answer to question 3 above is NO, what is your major source of income? \_\_\_\_\_
5. Would you please complete this sentence? (Hand respondent card.)  
"The thing I like most about manufacturing milk production is \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TO THE INTERVIEWER: If the respondent mentions more than one thing, write down all of them, and ask him "Which is most important?" Then underscore it.

6. Would you please complete this sentence? (Hand respondent card.)  
"The thing I dislike most about manufacturing milk production is \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TO THE INTERVIEWER: If the respondent mentions more than one thing, write down all of them, and ask him "Which is most important?" Then underscore it.

7. We have listed on these cards some reasons why Manufacturing Milk Producers do not adopt recommended dairy production practices. (Hand respondent set of cards.) Now, here is what we would like you to do:
- a. Please look through all of the cards; read each one; and pick out the three cards that show why you believe Manufacturing Milk Production Producers do not use better production practices. After you have selected the three cards, please hand me the rest.
  - b. Now, these three reasons are not of the same importance; so please go through them and decide which one is probably of most importance. Please give me the number on the back of the card. Also, please do this with the other two cards.

| Rank        | 1 | 2 | 3 |
|-------------|---|---|---|
| Card Number |   |   |   |

Are there any other reasons why you believe dairy farmers do not adopt recommended dairy production practices?

---



---

TO THE INTERVIEWER: The purpose of this next question is to find out if the respondent--

- (1) is aware of certain recommended practices
- (2) is interested in using them
- (3) has tried them
- (4) is still using them, or will use them when the need arises
- (5) and his reasons for never trying the practices, or for not using them after trying them.

INTERVIEWER hand each card to respondent separately after saying, "I have here a set of cards. On each card is a dairy production practice. Would you read each card and tell me whether or not you have tried that practice?" (Check Yes or No in the "Has Tried" column below.)

In his reply, the respondent may also answer the other four points. If not, interviewer will ask appropriate questions to obtain the answers. Check in appropriate columns below.

| 8. Recommended Dairy Production Practices   | Read or  |     | Inter-   |     | Is Using |     | Has Tried |     |
|---|----------|-----|----------|-----|----------|-----|-----------|-----|
|   | Heard of |     | ested in |     | or       |     | Will Use  |     |
|   | Yes      | No  | Yes      | No  | Yes      | No  | Yes       | No  |
|   | (a)      | (b) | (c)      | (d) | (e)      | (f) | (g)       | (h) |
| (1) Using artificial insemination in the breeding of 50% or more of your cows (exclude heifers)   |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying   | _____    |     |          |     |          |     |           |     |
| (2) Breeding each bull to a bull of same breed.   |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying   | _____    |     |          |     |          |     |           |     |
| (3) Having a basis for weighing feed and grain according to production with special attention to assure that high producers receive enough grain (i.e., 1-3 or 1-4) |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying   | _____    |     |          |     |          |     |           |     |
| (4) Providing an adequate (6-8 tons annually per cow) supply of silage (when fed with hay)  |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying   | _____    |     |          |     |          |     |           |     |
| (5) Providing high quality silage (i.e., corn cut in dent stage, alfalfa in early bloom stage and grasses in boot stage).   |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying   | _____    |     |          |     |          |     |           |     |

|  | Read or  |     | Inter-   |     | Is Using |     | Has Tried |     |
|--|----------|-----|----------|-----|----------|-----|-----------|-----|
|  | Heard of |     | ested In |     | or       |     | Will Use  |     |
|  | Yes      | No  | Yes      | No  | Yes      | No  | Yes       | No  |
|  | (a)      | (b) | (c)      | (d) | (e)      | (f) | (g)       | (h) |
| (6) Providing enough roughage (2 1/2 lb. of hay equivalent per cwt. of body weight daily) by supplementing silage with hay (1-2 tons annually per cow) |          |     |          |     |          |     |           |     |

i. Reasons for never trying practice OR not using after trying

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| (7) Providing high quality hay (i.e., alfalfa cut at bud. at 1/10 bloom stage, grasses and small grains in boot stage) |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| (8) Providing hay and/or silage when cows are on pasture |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| (9) Providing an adequate amount (1-2 acres per cow) of improved pasture (e.g., orchard grass and ladino) |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| (10) Providing sufficient summer pasture (1/4 to 1/2 A. per cow) |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|   | Read or  |     | Inter-   |     | Is Using |     | Has Tried |     |
|---|----------|-----|----------|-----|----------|-----|-----------|-----|
|   | Heard of |     | ested In |     | or       |     | Will Use  |     |
|   | Yes      | No  | Yes      | No  | Yes      | No  | Yes       | No  |
|   | (a)      | (b) | (c)      | (d) | (e)      | (f) | (g)       | (h) |
| (11) Keeping adequate milk production records on a per cow basis (i.e., D.H.I.R., D.H.I.A., W.A.D.A.M.) |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying                                   |          |     |          |     |          |     |           |     |
| (12) Raising at least 75% of all herd replacements  |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying                                   |          |     |          |     |          |     |           |     |
| (13) Annually providing an average of sixty days per cow for dry period                                 |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying                                   |          |     |          |     |          |     |           |     |
| (14) Maintaining a 12-14 month calving period for each cow in the herd                                  |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying                                   |          |     |          |     |          |     |           |     |
| (15) Having at least 75% of cows in the herd freshen in the fall  |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying                                   |          |     |          |     |          |     |           |     |
| (16) Permanently identifying each calf as to sire and dam   |          |     |          |     |          |     |           |     |
| i. Reasons for <u>never trying</u> practice OR not using after trying                                   |          |     |          |     |          |     |           |     |

|   | Read or  |     | Inter-   |     | Is Using |     | Has Tried |     |
|---|----------|-----|----------|-----|----------|-----|-----------|-----|
|   | Heard of |     | ested In |     | or       |     | Will Use  |     |
|   | Yes      | No  | Yes      | No  | Yes      | No  | Yes       | No  |
|   | (a)      | (b) | (c)      | (d) | (e)      | (f) | (g)       | (h) |
| (17) Vaccinating all calves (at 4-10 months of age) for brucellosis, blackleg, etc. |          |     |          |     |          |     |           |     |

i. Reasons for never trying practice OR not using after trying

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| (18) Keeping adequate herd records<br>(a) Calving<br>(b) Health<br>(c) Heat |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| (19) Using a strip cup on each cow before each milking |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| (20) Having a routine check made (every 6 mo.) of milking system as to recommended vacuum level and pulsation rate (varies with manufacturer) |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| (21) Providing separate feeding and loafing areas for the milking herd |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

|   | Read or  |     | Inter-   |     | Is Using |     | Has Tried |     |
|---|----------|-----|----------|-----|----------|-----|-----------|-----|
|   | Heard of |     | ested In |     | or       |     | Will Use  |     |
|   | Yes      | No  | Yes      | No  | Yes      | No  | Yes       | No  |
|   | (a)      | (b) | (c)      | (d) | (e)      | (f) | (g)       | (h) |
| (22) Systematically using a recommended method of fly control around barns, loafing and milking areas |          |     |          |     |          |     |           |     |

i. Reasons for never trying practice OR not using after trying

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| (23) Getting the advice of professional dairy workers |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|

i. Reasons for never trying practice OR not using after trying

9. During the past year, have you talked with anyone about the management of your dairy herd?

a. Yes \_\_\_\_\_ b. No \_\_\_\_\_

TO THE INTERVIEWER: If No, skip to question 11. If Yes, ask question 10 first.

10. With whom have you talked? (Check one or more of the following. If respondent gives names, write them at the side and check list later.)

- a. County agent \_\_\_\_\_
- b. Extension dairyman \_\_\_\_\_
- c. Local veterinarian \_\_\_\_\_
- d. D.H.I.A. supervisor \_\_\_\_\_
- e. A.B.A. technician \_\_\_\_\_
- f. Vo-Ag teacher \_\_\_\_\_
- g. Milk plant field man \_\_\_\_\_
- h. Feed dealer or salesman \_\_\_\_\_
- i. Banker or PCA representative \_\_\_\_\_
- j. Neighbor or friend (other dairyman) \_\_\_\_\_
- k. Health Department sanitarian \_\_\_\_\_
- l. Other (specify) \_\_\_\_\_

11. From which of the following other sources did you receive information useful in the management of your dairy herd during the past year?

- a. Univ. bulletins and publications \_\_\_\_\_
- b. Commercial (feed company magazines) \_\_\_\_\_
- c. Farm magazines \_\_\_\_\_
- d. Daily newspapers \_\_\_\_\_
- e. Weekly newspapers \_\_\_\_\_
- f. Radio \_\_\_\_\_
- g. Television \_\_\_\_\_
- h. Farm meetings \_\_\_\_\_
- i. Field days and tours \_\_\_\_\_
- j. Newsletters \_\_\_\_\_

12. What was the highest grade level that you completed? (Circle one)  
 0 12345678 9 10 11 12 1 2 3 4 Bachelor's Master's Doctor's  
 None Grade Sch. H.S. Col. Under. Degree Degree Degree

13. Age of respondent?

- a. Under 25 \_\_\_\_\_
- b. 25-34 \_\_\_\_\_
- c. 35-44 \_\_\_\_\_
- d. 45-54 \_\_\_\_\_
- e. 55-64 \_\_\_\_\_
- f. 65 or more \_\_\_\_\_

14. What plans do you have for the future management of your dairy herd? (Including 23 practices listed earlier plus any others mentioned.)

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(If respondent says he has no plans in question 14 above, ask why not.)

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15. What land use system did you follow last year?

| Crop               | Acres | Bottom or |       | Disposition |       |
|--------------------|-------|-----------|-------|-------------|-------|
|                    |       | Upland    | Yield | Used        | Sold  |
| Corn (grain)       | _____ | _____     | _____ | _____       | _____ |
| Corn (silage)      | _____ | _____     | _____ | _____       | _____ |
| Grass (silage)     | _____ | _____     | _____ | _____       | _____ |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Hay:               |       |           |       |             |       |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Pasture (improved) |       |           |       |             |       |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Supplemental:      |       |           |       |             |       |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |
| Kind _____         | _____ | _____     | _____ | _____       | _____ |



17. How many dairy animals in each of the following classifications did you have last year?

|                                      | <u>Total</u> | <u>Registered</u> | <u>Grade</u> |
|--------------------------------------|--------------|-------------------|--------------|
| a. Dairy cows milked                 | _____        | _____             | _____        |
| b. Dairy heifers over 1 year of age  | _____        | _____             | _____        |
| c. Dairy heifers under 1 year of age | _____        | _____             | _____        |
| d. Dairy bulls                       | _____        | _____             | _____        |

18. How many dairy animals in each of the classifications did you have in the following breeds? (Check with question 17 to see totals are the same.)

| <u>Breed</u>                 | <u>Number of Cows</u> |              | <u>Number of Heifers</u> |              | <u>Number of Bulls</u> |              |
|------------------------------|-----------------------|--------------|--------------------------|--------------|------------------------|--------------|
|                              | <u>Regis.</u>         | <u>Grade</u> | <u>Regis.</u>            | <u>Grade</u> | <u>Regis.</u>          | <u>Grade</u> |
| a. Brown Swiss               | _____                 | _____        | _____                    | _____        | _____                  | _____        |
| b. Guernsey                  | _____                 | _____        | _____                    | _____        | _____                  | _____        |
| c. Holstein                  | _____                 | _____        | _____                    | _____        | _____                  | _____        |
| d. Jersey                    | _____                 | _____        | _____                    | _____        | _____                  | _____        |
| e. Other<br>(Please specify) | _____                 | _____        | _____                    | _____        | _____                  | _____        |

19. Do you now have more, the same or fewer dairy cows than you had last year?

a. More \_\_\_\_\_ i. How many more? \_\_\_\_\_ ii. Why? \_\_\_\_\_  
 b. Same \_\_\_\_\_ i. Why? \_\_\_\_\_  
 c. Fewer \_\_\_\_\_ i. How many fewer? \_\_\_\_\_ ii. Why? \_\_\_\_\_

20. How do you breed your heifers?

a. Artificially \_\_\_\_\_ b. Naturally \_\_\_\_\_

21. What type bull do you use on your heifers?

a. Dairy \_\_\_\_\_ b. Beef \_\_\_\_\_

22. What type of bull do you use on your cows?

a. Dairy \_\_\_\_\_ b. Beef \_\_\_\_\_

23. What percent protein do you use in your dairy ration?

a. 12% \_\_\_\_\_ b. 14% \_\_\_\_\_ c. 16% \_\_\_\_\_ d. 18% \_\_\_\_\_ 3. Other (specify)

24. Do you mix your own concentrates?

a. Yes \_\_\_\_\_ b. Some \_\_\_\_\_ d. No \_\_\_\_\_

TO INTERVIEWER: if the answer to question 24 above was Yes, skip to question 26. If the answer was Some or No, ask question 25.

25. If you do not mix your own concentrates, how do you provide for them? \_\_\_\_\_  
\_\_\_\_\_

26. Do you grind your hay? a. Yes \_\_\_\_\_ b. No \_\_\_\_\_

TO INTERVIEWER: If the answer to question 26 above was Yes, ask question 27. If answer was No, skip to 28.

27. Please explain how hay is ground and fed \_\_\_\_\_  
\_\_\_\_\_

28. What type of hay do you usually feed?

a. Legume \_\_\_\_\_ b. Grass \_\_\_\_\_ c. Legume-grass \_\_\_\_\_

29. How do you supply salt and minerals?

a. Mix in ration \_\_\_\_\_ b. Supply them free choice \_\_\_\_\_  
c. Other (specify) \_\_\_\_\_

30. What source(s) of water do you have for your herd?

a. Drinking cups in barn \_\_\_\_\_ b. Other water in barn \_\_\_\_\_  
c. Water outside barn \_\_\_\_\_ d. Pond \_\_\_\_\_ e. Stream \_\_\_\_\_

31. If you have a pond, what distance is it from the barn? \_\_\_\_\_ yds.

32. If you have a stream, what distance is it from the barn? \_\_\_\_\_ yds.

33. What type of milking set-up do you have?

a. Stanchion \_\_\_\_\_ b. Elevated stall \_\_\_\_\_ c. Other (specify) \_\_\_\_\_

34. Do you have a bulk tank?

a. Yes \_\_\_\_\_ b. No \_\_\_\_\_

35. If you have a bulk tank, what is its capacity? \_\_\_\_\_ gallons

36. Do you have a pipeline system? a. Yes \_\_\_\_\_ b. No \_\_\_\_\_

37. If you do have a pipeline system, does it include a workable weighing device?

a. Yes \_\_\_\_\_ b. No \_\_\_\_\_

TO INTERVIEWER: If the answer to question 37 was Yes, ask question 38. If No, skip to question 39 below.

38. Do you use the weighing device?

a. Yes \_\_\_\_\_ b. No \_\_\_\_\_ If not, why not? \_\_\_\_\_

39. How much loafing barn area do you have for each cow? (in sq. ft.)

a. Under 30 \_\_\_\_\_ e. 60-69 \_\_\_\_\_  
 b. 30-39 \_\_\_\_\_ f. 70 or above \_\_\_\_\_  
 c. 40-49 \_\_\_\_\_ g. Box (free stalls) \_\_\_\_\_  
 d. 50-59 \_\_\_\_\_

40. Do you have a silo? a. Yes \_\_\_\_\_ b. No \_\_\_\_\_

TO INTERVIEWER: If the answer to question 40 is Yes, ask question 41. If No, skip to question 42.

41. What type(s) of silo(s) do you have? What size? What type of cover do you use?

| Type of Silo  | Size  | Roof  | Type of Cover |       | None  |
|---------------|-------|-------|---------------|-------|-------|
|               |       |       | Plastic       | Other |       |
| Upright _____ | _____ | _____ | _____         | _____ | _____ |
| Trench _____  | _____ | _____ | _____         | _____ | _____ |
| Bunker _____  | _____ | _____ | _____         | _____ | _____ |

42. Who does the milking?

a. Owner \_\_\_\_\_ b. Tenant \_\_\_\_\_ c. Other (please specify) \_\_\_\_\_

43. If a person other than owner milks, how is he paid?

a. Percentage \_\_\_\_\_ b. Salary \_\_\_\_\_ c. Combination (specify) \_\_\_\_\_

44. (OPTIONAL) Approximately what was your total (gross) family income last year? (Hand card to respondent and ask him to select a category.)

a. 0-1,999 \_\_\_\_\_ i. 16,000-17,999 \_\_\_\_\_  
 b. 2,000-3,999 \_\_\_\_\_ j. 18,000-19,999 \_\_\_\_\_  
 c. 4,000-5,999 \_\_\_\_\_ k. 20,000-21,999 \_\_\_\_\_  
 d. 6,000-7,999 \_\_\_\_\_ l. 22,000-23,999 \_\_\_\_\_  
 e. 8,000-9,999 \_\_\_\_\_ m. 24,000-25,999 \_\_\_\_\_  
 f. 10,000-11,999 \_\_\_\_\_ n. 26,000-29,999 \_\_\_\_\_  
 g. 12,000-13,999 \_\_\_\_\_ o. 30,000-49,999 \_\_\_\_\_  
 h. 14,000-15,999 \_\_\_\_\_ p. 50,000-99,999 \_\_\_\_\_

45. How would you rate the present condition and value of your dairy herd?

a. Excellent \_\_\_\_\_

c. Fair \_\_\_\_\_

b. Good \_\_\_\_\_

d. Poor \_\_\_\_\_

Name of Respondent \_\_\_\_\_

Address \_\_\_\_\_ County \_\_\_\_\_ Number \_\_\_\_\_

Date \_\_\_\_\_ Tenure Status \_\_\_\_\_

## VITA

Clayton Franklin Glenn was born July 20, 1930 to Franklin and Mary E. Glenn at McMinnville, Tennessee.

After graduation from Central High School, McMinnville, Tennessee, he attended Tennessee Tech University at Cookeville, Tennessee. He graduated from Tennessee Tech with a B.S. degree in Agriculture, with a major in Agriculture Science.

He attended the University of Tennessee, Knoxville, where he received a Master of Science degree, with a major in Agricultural Extension, in December, 1968.

He was a member of the Tennessee Tech Agricultural Club, Alpha Tau Agricultural Education Fraternity. He served two years in the U.S. Army and working experience includes teaching school two years, Assistant County Agricultural Agent in Cannon County for four years, and County Agricultural Agent, Cannon County, seven years.