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GRADE A MILK PRODUCERS IN LINCOLN COUNTY, TENNESSEE

PROBLEM A: CHARACTERISTICS OF LINCOLN COUNTY GRADE A MILK
PRODUCERS AND THEIR FARMS

PROBLEM B: MANAGEMENT PRACTICES OF LINCOLN COUNTY GRADE A
MILK PRODUCERS

PROBLEM C: FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE
ADOPTION BY LINCOLN COUNTY GRADE A MILK PRO-
DUCERS

Three Related Special Problems in Lieu of Thesis

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

by
Joseph Larry Glasgow

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PROBLEM A:

CHARACTERISTICS OF LINCOLN COUNTY GRADE A MILK
PRODUCERS AND THEIR FARMS

CHAPTER I

INTRODUCTION

I. THE SITUATION AND NEED FOR THE STUDY

Dairying annually ranks about fourth in importance as a source of income in Tennessee (19:1).^{*} Annual receipts averaged about 96 million dollars for the five year period 1962-1966 (22:25). There were approximately 373,000 dairy cows in Tennessee in 1966. PROBLEM A: milk production per cow

in Tennessee. CHARACTERISTICS OF LINCOLN COUNTY GRADE A MILK PRODUCERS AND THEIR FARMS. It has been

suggested that production of less than 6,000 pounds per cow is unprofitable, and that cows producing below that amount should be considered for culling and possible replacement.

Lincoln County is located in the southern section of Middle Division of Tennessee. It is bordered by Alabama to the south, Franklin County to the east, Moore, Bedford and Marshall to the north, and Giles County to the west. The

^{*}Numbers in parentheses refer to numbered references in the Bibliography; those after the colon are page numbers.

CHAPTER I

INTRODUCTION

I. THE SITUATION AND NEED FOR THE STUDY

Dairying annually ranks about fourth in importance as a source of income in Tennessee (19:1).^{*} Annual receipts averaged about 96 million dollars for the five year period 1962-1966 (22:25). There were approximately 373,000 dairy cows in Tennessee in 1966. Average milk production per cow in Tennessee that year was 5,800, while the average dairy cow in America produced 8,513 pounds (7:11). It has been suggested that production of less than 6,000 pounds per cow is unprofitable, and that cows producing below that amount should be considered for culling and possible replacement.

Lincoln County is located in the southern section of Middle Division of Tennessee. It is bordered by Alabama to the south, Franklin County to the east, Moore, Bedford and Marshall to the north, and Giles County to the west. The

^{*}Numbers in parentheses refer to numbered references in the Bibliography; those after the colon are page numbers.

Agriculture of the County is rather diversified with crops accounting for 39 percent, Livestock and Livestock Products, 28 percent, and Dairy Products, 27 percent. Therefore, according to the above figures, dairying ranks third in importance in agriculture income (8).

Lincoln County has long been known as one of the leading counties of Middle Tennessee in the production of Grade A milk and milk for manufacturing purposes. Lincoln County ranks seventh in Middle Tennessee in the value of dairy products sold. Total sales in 1964 were \$2,139,662 (23).

The total number of farms in Lincoln County decreased from 2794 in 1959 to 2301 in 1964, while the average size of farm increased from 116.8 acres in 1959 to 130.2 acres in 1964. The number of farms classed as dairy farms decreased from 375 in 1959 to 315 in this same period. During this same period, the number of dairy cows decreased from 16,434 to 11,878, while the dollar value of milk sales increased 4.41 percent (23).

In 1966 there were in Lincoln County 85 Grade A producers selling milk to five different markets. Twenty of these producers belonged to the Dairy Herd Improvement Association (D.H.I.A.). Those producers on D.H.I.A. increased

their production per cow from an average of 8320 pounds of milk and 364 pounds of butterfat in 1966 to 8910 pounds of milk and 371 pounds of butterfat in 1967 (14). The dairy situation in Lincoln County, therefore, presents a similar picture to that of the state and the nation in that the numbers of dairy farms and dairy cows have decreased as the production per cow has increased.

Some statewide milk production problems that have been identified include (4:27): (1) There is a lack of adequate supply of quality feed; (2) too few dairymen are using artificial breeding; (3) most dairymen in Tennessee do not keep adequate records; (4) many housing and milking facilities are inadequate and/or inefficient; (5) mastitis continues to be a common disease in dairy herds throughout the state; and (6) the failure to control flies and other insects and the indiscriminate use of insecticides has been found to cause milk contamination problems, resulting in high bacterial counts.

The basis for the identification of the above problems was mainly that of observation by county and state Extension staff members. It was noted that further research was needed in selected counties to learn the characteristics of milk

producers and try to ascertain which recommended production and management practices they were and were not using, and why they were or were not using them. Lincoln County was one of several Tennessee counties participating in a statewide project under the guidance of the Agricultural Extension Training and Studies and Extension Dairy Departments of the University of Tennessee.

Based on findings of this and comparison studies, plans will be developed for use in teaching Grade A milk producers to be more efficient in the management of their herds.

II. THE PURPOSE OF THE STUDY

This specific study, then, was guided by the following purpose: to determine the characteristics of Lincoln County Dairymen, including those who annually produce in high, middle and low thirds in terms of pounds of butterfat per cow.

III. REVIEW OF LITERATURE

Based on the data available, it would appear that only limited research had been conducted to determine the characteristics of Grade A dairy producers. Similar studies had been made in seven counties in Tennessee (5,10,11,13,17,20,21).

In summary, their findings revealed that the average Grade A milk producer in 1963 had the following characteristics:

(1) was a farm owner and operator of about 49 years of age; (2) had completed 10.9 years of schooling; (3) reported a gross family income of nearly \$19,250; (4) reported milking 40 cows and producing an average of 302 pounds of butterfat and 7653 pounds of milk; (5) had farms averaging 245 total acres and 159 in cropland; (6) kept an average of twenty-two replacement heifers; (7) had a bulk milk tank; and (8) had some type of silage storage.

Givan (9:8) found that the average Tennessee producers who responded to mail questionnaires in 1963 was 47 years of age, operated a farm consisting of 250 acres of land, and had a herd of 41 mature cows with each producing 7157 pounds of milk annually.

In a Virginia study of Grade A milk producers in 1958, it was found the average dairyman was between 40 and 50 years of age, had nine formal years of education, milked 40 cows in a stanchion-type barn, used some artificial breeding and expected to increase the size of his dairy herd (15:4).

In a Pennsylvania Project III statement for 1964-65 (6:2), it was noted that benchmark data were included for

numbers of herds, cows, bulk tanks and pipeline milkers. However, no compositive information was available for high and low producers.

Much of the literature reviewed dealt with dairy farmers who were in some way cooperating with a Land Grant College or University. This included test demonstration farmers and dairy farmers who were members of various record-keeping groups. Such information does not give much insight into the characteristics of the average or below average dairymen who generally have not participated in these programs.

O'Neal (18) found that by studying twenty Grade A milk producers in Anderson County that the level of milk production was related to the operators managerial ability.

IV. METHODS

For the purpose of this study, sixty Lincoln County producers were selected randomly from a population of 85 Grade A dairymen who produced milk during all of 1965. The dairymen were divided into three groups of twenty each according to their average annual butterfat sold per cow.

Table I shows the groups and the range of butterfat sold of each group.

A comprehensive survey (see Appendix) consisting of forty-five main questions, some of them containing many sub-parts, was completed by personal interview with each of the sixty dairymen. In addition, information was obtained from the various milk companies concerning pounds of milk sold by each of these producers during the calender year 1965.

Also, the interviewer completed eight other judgement questions concerning the respondent after each interview was terminated. These questions gave the interviewer's impression of the respondent's interest, attitude, attention to management details, how well the interviewer knew the respondent, and gave a rating concerning the value and condition of his herd in those cases where the interviewer was familiar enough to make such judgements.

CHAPTER II

FINDINGS

TABLE I

NUMBERS OF LINCOLN COUNTY GRADE A DAIRYMEN INTERVIEWED
ACCORDING TO RANGES IN BUTTERFAT SOLD PER
COW BASED ON 1965 FIGURES

Average per Cow Butterfat Sold Group	Number of Producers Interviewed	Range of Butterfat Sold per Cow Within Groups (Pounds)
Low	20	115-119
Medium	20	200-263
High	20	264-606
Total	60	115-606

13. RESPONDENT'S ATTITUDE TOWARD THE SURVEY

The interviewer was well received in 98 percent of the cases and only one was classified as "indifferent" (see Table III). Those classified as "indifferent" as basically easy to answer the questions, but they were not interested enough to ask questions or see the usefulness of the survey. It is interesting to note that the one classified "indifferent"

CHAPTER II

FINDINGS

I. DEGREE TO WHICH INTERVIEWER KNEW GRADE A PRODUCERS

Table II shows that 67 percent, or 40, of the dairy-men were known "very well" or "fairly well" by the interviewer, while 20 percent were known "not very well" or "not at all." It appeared that the more progressive farmers kept in closer touch with the Agricultural Extension Agents than the medium and low producers, since 85 percent of the high producers were known very well or fairly well. In contrast, the interviewer knew 40 percent of the low producers "very well" or "fairly well."

II. RESPONDENT'S ATTITUDE TOWARD THE SURVEY

The interviewer was well received in 98 percent of the cases and only one was classed as "indifferent" (see Table III). Those classed as "indifferent" did not hesitate to answer the questions, but they were not interested enough to ask questions or see the usefulness of the survey. It is interesting to note that the one classed "indifferent"

TABLE II

DEGREE TO WHICH INTERVIEWER KNEW ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY NUMBERS AND PERCENTS*

Degree to Which Inter- viewer Knew Respondent	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Very Well	13	22	8	56	4	20	1	5
Fairly Well	27	45	9	45	11	55	7	35
Not Very Well	15	25	2	10	3	15	10	50
Not at All	5	8	1	5	2	10	2	10
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE III

INTERVIEWER'S ESTIMATE OF THE ATTITUDES OF ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM
AND LOW PRODUCERS TOWARD THE SURVEY
BY NUMBERS AND PERCENTS*

Attitude Toward the Survey	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Friendly	58	96	20	100	20	100	18	90
Somewhat Friendly	1	2	0	0	0	0	1	5
Indifferent	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

was in the low producers group.

III. EDUCATIONAL LEVELS

Formal education did seem to play an important role in this study when the average levels of the groups were compared. Table IV reveals that the average grade level of all dairymen was 10.4 grades. The high producers (11.4) averaged more than two grade levels above the low producers (9.3 average).

IV. AGE GROUPS

The difference in ages of producers is shown in Table V. The average age of all dairymen interviewed was 52 years. Four of all the producers interviewed were in the 25-34 age category. Three of these were in the high producer group. Eight of the producers were over 65 and only two were in the high producer group.

V. GROSS FAMILY INCOME

Gross family income was an optional question on the interview, and nine did not respond. It was not a case of refusing to answer, but the most of these nine that did not

TABLE IV

EDUCATIONAL LEVELS OF ALL LINCOLN COUNTY DAIRYMEN
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.	%
None	4	7	1	5	1	5	2	10
1-4 (elemen- tary)	2	3	1	5	0	0	1	5
5-7	4	7	1	5	2	10	1	5
8	6	10	0	0	2	10	4	20
9-11	6	10	1	5	2	10	3	15
12	27	45	10	50	12	60	5	25
1-3 (college)	8	13	3	15	1	5	4	20
Bachelor's	3	5	3	15	0	0	0	0
Total	60	100	20	100	20	100	20	100
Average Educa- tional Level	10.4		11.4		10.3		9.3	

*Percents are rounded to the nearest whole number.

TABLE V

AGE GROUPS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS
AND PERCENTS, AND AVERAGE AGES

Age Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
25 - 34	4	7	3	15	0	0	1	5
35 - 44	10	17	2	10	5	25	3	15
45 - 54	22	36	9	45	10	50	3	15
55 - 64	16	27	4	20	3	15	9	45
65 or more	8	13	2	10	2	10	4	20
Total	60	100	20	100	20	100	20	100
Average Age	52		49		51		56	

*Percents are rounded to the nearest whole number.

respond actually did not know the gross family income. The average gross family income was \$25,794 for those reporting (Table VI).

The incomes of the three groups of producers showed a definite trend with the high producers averaging \$32,105, the medium \$23,529 and the low producers \$20,367.

Twenty percent of the low producers had gross family incomes of \$12,000 or less; while only 10 percent of the high producers were in this category. With regard to gross family income above \$20,000, it may be noted that this bracket included 80 percent of the high producers and only 45 percent of the low producers. It will be further noted that 40 percent of the high producers had gross family incomes of over \$30,000, as compared to only 10 percent of the low producers in this bracket.

VI. SEX GROUPS

All respondents interviewed were male except one. However, the interviewer found that both husband and wife were very much interested in the dairy operation.

TABLE VI

TOTAL 1965 FAMILY (GROSS) INCOME OF ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS,
AND AVERAGE INCOMES*

Total Gross Family Income Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	9	15	1	5	3	15	5	25
2000-3999	2	3	0	0	1	5	1	5
6000-7999	2	3	1	5	1	5	0	0
8000-9999	4	7	0	0	2	10	2	10
10,000-11,999	3	5	1	5	1	5	1	5
12,000-13,999	2	3	1	5	1	5	0	0
14,000-15,999	2	3	0	0	1	5	1	5
18,000-19,999	1	2	0	0	0	0	1	5
20,000-21,999	9	15	2	10	3	15	4	20
22,000-23,999	5	8	4	20	0	0	1	5
24,000-25,999	4	7	0	0	3	15	1	5
26,000-29,999	3	5	2	10	0	0	1	5
30,000-49,999	11	19	6	30	3	15	2	10
50,000-99,999	3	5	2	10	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average for Those Reporting	\$25,794		\$32,105		\$23,529		\$20,367	

*Percents are rounded to the nearest whole number.

VII. STAGE IN THE ADOPTION PROCESS

The interviewer was asked to rate each respondent with respect to the adoption of recommended dairy practices. The results of these judgement ratings are shown in Table VII. Efforts were made by the interviewer to be as objective as possible in this rating.

Only 3 percent were rated as being among the first few to adopt recommended practices, as compared to 3 percent being among the last few to make these adoptions. When the dairymen were considered in production groups, it was important to note that the high producers tended to be further along in adoption of practices than low or medium producers. The high producers averaged 3.1 points, "sooner than average," when the stage of adoption was put on a rating scale where five (5) points were given those classified among the first few, and one (1) point given those among the last few, others falling between. All producers averaged 2.7 points, "a little later than most." The low producers had an average of 2.5 points.

TABLE VII

INTERVIEWER'S OPINION OF STAGES OF THE ADOPTION PROCESS
 REPRESENTED BY ALL LINCOLN COUNTY DAIRYMEN INTER-
 VIEWED, HIGH, MEDIUM AND LOW PRODUCERS,
 BY NUMBERS AND PERCENTS*

Stage in Adoption of New Dairy Management Practices	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Among the first few (5 points)	2	3	1	5	0	0	1	5
Soon after first few (4 points)	5	9	3	15	2	10	0	0
Sooner than average (3 points)	30	50	12	60	10	50	8	40
A little later than most (2 points)	21	35	4	20	8	40	9	45
Among the last few (1 point)	2	3	0	0	0	0	2	10
Total	60	100	20	100	20	100	20	100
Average Stage	2.7 points		3.1 points		2.7 points		2.5 points	

*Percents are rounded to nearest whole number.

VIII. INTEREST IN DAIRY HERD MANAGEMENT IMPROVEMENT

The interviewer rated each producer concerning their apparent interest in improving their level of dairy herd management (Table VIII). These ratings were given numerical values with those receiving a "very interested" rating were scored 3.0 points, while those receiving "somewhat interested," "indifferent," or "not interested" rating were scored 2.0, 1.0 and 0.0 respectively.

The average rating for all dairymen was 2.0 points. It will be noted that the higher producers received higher ratings than the medium and low producers.

IX. MAJOR OCCUPATION

Table IX reveals that 92 percent of the dairymen interviewed received a major phase of their family income from full time farming. The ratio between the high producers and low producers was essentially the same for full time farmers and part time farmers.

X. MAJOR SOURCE OF INCOME

Dairying was the major farm enterprise for 91 percent

TABLE VIII

INTERVIEWER'S OPINION OF THE INTEREST OF ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS, IN
IMPROVING THEIR LEVELS OF DAIRY HERD MANAGEMENT BY
NUMBER 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 (3.0 points)	12	20	5	25	3	15	4	20
Somewhat Interested (2.0 points)	38	63	14	70	15	75	9	45
Indifferent (1.0 point)	9	15	1	5	2	10	6	30
Not Interested (0 points)	1	2	0	0	0	0	1	5
Total	60	100	60	100	20	100	20	100
Average Interest	2.0 points		2.2 points		2.0 points		1.8 points	

*Percents are rounded to the nearest whole number.

TABLE IX

MAJOR OCCUPATIONS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY NUMBERS AND PERCENTS*

Major Occupation	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Full-time Farmer	55	92	17	85	20	100	18	90
Part-time Farmer	5	8	3	15	0	0	2	10
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

of the dairymen (Table X). Eighty percent of the high producers, 95 percent of the medium producers and 100 percent of the low producers major source of income was from dairying. Only 9 percent of all producers received a major source of their income from nonfarm sources.

XI. TOTAL FARM ACREAGE

Table XI shows that the average of all dairymen was 346.6 acres. The high producers have an average of 413.2 acres and the low producers had an average of 268.2 acres. This is an important difference and would seem to indicate that limited acreage is related to low production, although other factors might be related here also. The above compares to 130.2 acres for all farms in Lincoln County (25).

XII. TOTAL CROPLAND ACREAGE

Average cropland acres show somewhat the same results as did average farm acreage (Table XII). The high producers had an average of 242.2 cropland acres, compared to 168.3 cropland acres of low producers.

TABLE X

MAJOR SOURCES OF INCOME OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY NUMBERS AND PERCENTS*

Major Source of Income	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Dairying	55	91	16	80	19	95	20	100
Banking	1	2	1	5	0	0	0	0
Mail Route	1	2	1	5	0	0	0	0
Fieldman	1	2	1	5	0	0	0	0
Other	2	3	1	5	1	5	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

TABLE XI

TOTAL FARM ACREAGE CATEGORIES OF ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS
AND AVERAGE FARM ACRES*

Total Farm Acreage Interval	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
50-99	3	5	1	5	1	5	1	5
100-149	6	10	0	0	3	15	3	15
150-199	6	10	1	5	1	5	4	20
200-249	12	20	5	25	2	10	5	25
250-299	5	8	1	5	4	20	0	0
300-349	6	10	2	10	2	10	2	10
350-399	2	3	0	0	1	5	1	5
400-449	2	3	0	0	1	5	1	5
450-499	5	8	3	15	1	5	1	5
500-549	4	7	3	15	1	5	0	0
550-600	1	2	0	0	0	0	1	5
600 or more	8	14	4	20	3	15	1	5
Total	60	100	20	100	20	100	20	100
Average Acres in Farm	346.6		413.2		358.3		268.2	

*Percents are rounded to nearest whole number.

TABLE XII

TOTAL CROPLAND ACREAGE CATEGORIES OF ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS,
AND AVERAGE ACRES*

Total Cropland Acreage Interval	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0-49	2	3	1	5	1	5	0	0
50-99	10	17	0	0	2	10	8	40
100-149	8	13	1	5	5	25	2	10
150-199	8	13	3	15	1	5	4	20
200-249	13	22	6	30	4	20	3	15
250-299	6	10	4	20	2	10	0	0
300-349	5	8	2	10	2	10	4	5
350-399	1	2	1	5	0	0	0	0
400-450	3	5	1	5	1	5	1	5
	4	7	1	5	2	10	1	5
Total	60	100	20	100	20	100	20	100
Average Acres in Cropland	214.2		242.2		232.0		168.3	

*Percents are rounded to the nearest whole number.

XIII. COWS MILKED

Size of Herd

The average size of the milking herd was 53 cows, as shown in Table XIII. Seventy-three percent of all dairymen were milking fewer than 70 cows. Seventy percent of the high and low producers milked fewer than 70 cows. It will be noted that six high producers, four medium producers and six low producers milked 70-111 cows. There seemed to be very little relation between the size of herds and butterfat production.

Registered Cows

Table XIV presents data concerning registered cows milked. There seems to be no relationship between the total number of registered cows milked and the level of butterfat production. It may be noted that 63 percent of all dairymen reported no registered cows in their herds.

Breed of Cows

Tables XV and XVI show the breeds of registered and grade cows and their distribution throughout the three groups. It is noted that more dairymen (14 percent) were

TABLE XIII

TOTAL NUMBERS OF COWS MILKED BY ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM
AND LOW PRODUCERS IN 1965 BY NUMBERS AND
PERCENTS, AND AVERAGE HERD SIZE*

Herd Size Interval in Numbers of Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
1-11	1	2	1	5	0	0	0	0
12-29	14	23	3	15	6	30	5	25
30-49	15	25	4	20	6	30	5	25
50-69	14	23	6	30	4	20	4	20
70-111	16	27	6	30	4	20	6	30
Total	60	100	20	100	20	100	20	100
Average Herd Size	53		56		48		54	

*Percents are rounded to the nearest whole number.

TABLE XIV

TOTAL NUMBERS OF REGISTERED COWS MILKED BY ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1965 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.	%
0	38	63	11	55	10	50	17	85
1-9	6	10	1	5	5	25	0	0
10-19	3	5	1	5	1	5	1	5
20-29	3	5	1	5	1	5	1	5
30-39	3	5	2	10	1	5	0	0
40-49	3	5	3	15	0	0	0	0
50-59	1	2	0	0	1	5	0	0
60-69	1	2	0	0	0	0	1	5
70-100	2	3	1	5	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number of those Re- porting Regis- tered Cows	29.6		35.9		23.2		32.3	

*Percents are rounded to the nearest whole number.

TABLE XV

BREEDS OF REGISTERED COWS MILKED IN 1965 BY ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Registered Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	38	63	11	55	10	50	17	85
Brown Swiss	2	3	0	0	1	5	1	5
Guernsey	2	3	1	5	1	5	0	0
Jersey	8	14	4	20	4	20	0	0
Other	3	5	1	5	2	10	0	0
Guernsey and Holstein	4	7	1	5	2	10	1	5
Guernsey, Holstein &/or Jersey	2	3	2	10	0	0	0	0
All Four Above	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 1965 BY ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND
LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Grade Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	6	10	2	10	3	15	1	5
Holstein	1	2	1	5	0	0	0	0
Other	10	17	4	20	3	15	3	15
Guernsey and Holstein	7	12	1	5	3	15	3	15
Guernsey, Holstein &/or Jersey	11	18	4	20	5	25	2	10
Holstein and Jersey	12	20	4	20	3	15	5	25
Brown Swiss &/or Holstein &/or Jersey &/or Guernsey or other	2	3	1	5	0	0	1	5
All Four Above	11	18	3	15	3	15	5	25
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

milking registered Jersey than any other breed. Holsteins followed with representation in 10 percent of the herds. Four of the eight registered Jersey breeders were high producers and four were medium producers.

There seems to be no major relation between the number of herds reporting grade cows, or the breeds of grade cows, and production. It might be of interest to note that the one grade Holstein herd was in the high producers group.

XIV. HEIFERS KEPT

Ninety-two percent of all Lincoln County dairymen interviewed were raising at least a portion of their replacement heifers. Tables XVII and XVIII give a breakdown of heifers under and over one year of age, respectively, that were kept on 60 Grade A dairy farms in Lincoln County.

Five dairymen were buying all of their replacement heifers. Four of these producers were in the low producers group.

Those dairymen keeping from one to thirty heifers were evenly distributed between producer groups.

TABLE XVII

TOTAL NUMBERS OF HEIFERS UNDER ONE YEAR OF AGE KEPT
BY ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH,
MEDIUM AND LOW PRODUCERS BY NUMBERS AND
PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	5	8	0	0	1	5	4	20
1-10	20	33	6	30	5	25	9	45
11-20	20	33	9	45	8	40	3	15
21-30	10	17	3	15	4	20	3	15
31-40	4	7	2	10	1	5	1	5
41-50	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	16.9		18.3		17.5		14.4	

*Percents are rounded to the nearest whole number.

TABLE XVIII

TOTAL NUMBERS OF HEIFERS ONE YEAR OR OLDER KEPT BY ALL
LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM
AND LOW PRODUCERS IN 1965 BY NUMBERS AND
PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	5	8	1	5	1	5	3	15
1-10	16	27	4	20	7	35	5	25
11-20	24	40	10	50	8	40	6	30
21-30	5	8	2	10	2	10	1	5
31-40	4	7	2	10	0	0	2	10
41-50	3	5	0	0	2	10	1	5
51-65	3	5	1	5	0	0	2	10
Total	60	100	20	100	20	100	20	100
Average Number Kept	20.3		20.8		16.2		24.4	

*Percents are rounded to the nearest whole number.

Registered Heifers

Thirty percent of all dairymen interviewed were keeping registered heifers. Data in Tables XIX and XX show that the numbers of registered heifers kept were relatively small with only five herds having more than 20 registered heifers that were one year old or over, and only four herds having more than 20 registered heifers that were under one year of age. It was noted that the majority of those registering heifers had 4-H or FFA members in the family interested in the junior dairy program (10). This is essentially the same as found in Lincoln County.

The average of all producers was 14.3 registered heifers kept under one year of age and 16.5 over one year and older respectively. Forty percent of the high producers reported keeping some registered heifers compared to only 10 percent of the low producers keeping registered heifers. This indicates that calves from the higher producing cows are being registered.

Breed of Heifers

Table XXI shows that 19 dairymen reported keeping registered heifers. This compared to 22 dairymen (Table XIV, page 28) who reported having registered cows.

TABLE XIX

TOTAL NUMBERS OF REGISTERED HEIFERS UNDER ONE YEAR OF
AGE BY ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS
AND PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	42	70	12	60	12	60	18	90
1-10	9	15	4	20	4	20	1	5
11-20	5	8	3	15	2	10	0	0
21-30	2	3	0	0	1	5	1	5
31-40	1	2	1	5	0	0	0	0
41-50	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	14.3		13.9		14.7		14.0	

*Percents are rounded to the nearest whole number.

TABLE XX

TOTAL NUMBERS OF REGISTERED HEIFERS ONE YEAR OR OLDER
KEPT BY ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS IN 1965 BY
NUMBERS AND PERCENTS, AND
AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	42	70	12	60	12	60	18	90
1-10	9	15	3	15	5	25	1	5
11-20	4	7	3	15	1	5	0	0
21-30	2	3	0	0	1	5	1	5
31-40	2	3	2	10	0	0	0	0
41-50	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	16.5		18.5		14.3		17.5	

*Percents are rounded to the nearest whole number.

TABLE XXI

BREEDS OF REGISTERED HEIFERS KEPT IN 1965 BY ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND
LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Registered Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	41	68	12	60	11	55	18	90
Brown Swiss	4	7	2	10	1	5	1	5
Guernsey	1	2	0	0	1	5	0	0
Jersey	9	15	4	20	5	25	0	0
Other	2	3	0	0	1	5	1	5
Guernsey and Holstein	2	3	1	5	1	5	0	0
Guernsey, Holstein &/or Jersey	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.

A larger number of Jersey heifers were kept for replacement than any other breed of registered heifers. There was no relation between breeds and high, medium or low producer groups. It can be noted that of the 19 dairymen who reported keeping registered heifers 17 of them are in the high and medium producer groups.

As seen in Table XXII, the breeds of grade heifers kept were fairly well distributed among the three groups. However, it might be noted that the majority of all herds keeping grade heifers were keeping Guernsey and Holstein (12) and Holstein and Jersey (7). There was no major differences between the number of grade heifers kept among the high, medium and low producing groups.

XV. BULLS KEPT

Forty five percent of the dairymen interviewed reported keeping no dairy bulls. Table XXIII indicates that 50 percent of the high producers kept no bulls compared to 45 percent of the low producers. The high producers kept an average of 1.5 bulls while the low producers kept an average of 1.4 bulls.

Table XXIV reveals that 60 percent of all dairymen

TABLE XXII

BREEDS OF GRADE HEIFERS KEPT IN 1965 BY ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND
LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Grade Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	13	22	3	15	5	25	5	25
Brown Swiss	1	2	0	0	1	5	0	0
Holstein	2	3	2	10	0	0	0	0
Jersey	4	7	1	5	2	10	1	5
Other	2	3	1	5	1	5	0	0
Guernsey and Holstein	12	20	5	25	3	15	4	20
Guernsey, Holstein &/or Jersey	3	5	1	5	2	10	0	0
Holstein and Jersey	7	12	2	10	2	10	3	15
Brown Swiss &/or Holstein &/or Jersey &/or Guernsey or other	2	3	0	0	1	5	1	5
All Four Above	14	23	5	25	3	15	6	30
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

TABLE XXIII

TOTAL NUMBERS OF BULLS KEPT BY ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS IN 1965 BY NUMBERS AND
PERCENTS, AND AVERAGE NUMBERS*

Number of Bulls Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	27	45	10	50	8	40	9	45
1	18	30	6	30	5	25	7	35
2	11	18	3	15	4	20	4	20
3	2	3	1	5	1	5	0	0
4	1	2	0	0	1	5	0	0
5	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	1.7		1.5		2.1		1.4	

*Percents are rounded to the nearest whole number.

TABLE XXIV

TOTAL NUMBERS OF REGISTERED BULLS KEPT BY ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1965 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Bulls Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	36	60	15	75	10	50	11	55
1	12	20	2	10	4	20	6	30
2	8	13	2	10	3	15	3	15
3	2	3	1	5	1	5	0	0
4	1	2	0	0	1	5	0	0
5	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	1.8		1.8		2.2		1.3	

*Percents are rounded to the nearest whole number.

interviewed kept no registered bulls. Seventy five percent of the high producers kept no registered bulls compared to 55 percent of the low producers. Forty percent of the producers reported having one or more registered bulls, and as indicated, only 25 percent of the high producers reported keeping one or more registered bulls compared to 45 percent of the low producers. These figures indicate that dairymen in the low producers group were probably not using as good a bull as those dairymen in the higher producers group. The high producers group were probably using artificial insemination. Table XXV indicates that 89 percent of the dairymen interviewed kept no grade bulls. It can be noted that 80 percent of high producers, 90 percent of the medium producers and 95 percent of the low producers kept no grade bulls.

Breeds of Bulls

The breeds of registered and grade dairy bulls kept by Grade A dairymen in Lincoln County are shown in Tables XXVI and XXVII. Fairly equal numbers of dairymen in the different production groups kept registered bulls, preference being shown for Jersey.

TABLE XXV

TOTAL NUMBERS OF GRADE BULLS KEPT BY ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS IN 1965 BY NUMBERS AND
PERCENTS, AND AVERAGE NUMBERS*

Number of Bulls Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	53	89	16	80	18	90	19	95
1	5	8	3	15	1	5	1	5
2	2	3	1	5	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	1.3		1.3		1.5		1.0	

*Percents are rounded to the nearest whole number.

TABLE XXVI

BREEDS OF REGISTERED DAIRY BULLS KEPT IN 1965 BY ALL
LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH,
MEDIUM AND LOW PRODUCERS BY
NUMBERS AND PERCENTS*

Breed of Registered Bulls	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	41	68	14	70	15	75	12	60
Brown Swiss	3	5	1	5	0	0	2	10
Guernsey	3	5	0	0	1	5	2	10
Holstein	2	3	1	5	0	0	1	5
Jersey	11	19	4	20	4	20	3	15
Total	60	100	20	100	20	100	20	100

* Percents are rounded to the nearest whole number.

TABLE XXVII

BREEDS OF GRADE BULLS KEPT IN 1965 BY ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Grade Bulls	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	52	86	16	80	18	90	18	90
Holstein	4	7	3	15	0	0	1	5
Jersey	3	5	1	5	2	10	0	0
Other	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

XVI. RATING OF HERDS

Tables XXVIII and XXIX show the ratings given to their dairy herds by producers and the interviewer's rating of the herd respectively.

It will be noted in Table XXVIII that the average rating given by the dairymen of their herds was between "fair" and "good" (1.2 points). Most producers seemed reluctant to put a rating of "poor" or "excellent" on their own herd, there being only eight rated in these categories. Thirty five producers rated their herds "fair" while sixteen rated their herds "good." Sixty five percent of the high producers rated their herds "fair" or "good" and 90 percent of the low producers rated their herds "fair" or "good."

A comparison of the above data with those in Table XXIX reveals an apparent close correlation between all the producers ratings and the interviewer's rating of their dairy herds.

A wide variation was found between the rating producers gave their herd and those given by the interviewer when classified according to production levels. The average rating for high producers by the dairymen was .7 points

TABLE XXVIII

RATINGS GIVEN TO THEIR DAIRY HERDS BY ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS IN NUMBERS AND PERCENTS,
AND AVERAGE RATINGS*

Ratings Dairymen Gave Their Own Herds	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	1	2	1	5	0	0	0	0
Excellent (3 points)	1	2	0	0	0	0	1	5
Good (2 points)	16	27	2	10	5	25	9	45
Fair (1 point)	35	58	11	55	15	75	9	45
Poor (0 points)	7	11	6	30	0	0	1	5
Total	60	100	20	100	20	100	20	100
Average Rating	1.2 points		.7 points		1.3 points		1.5 points	

*Percents are rounded to the nearest whole number.

TABLE XXIX

INTERVIEWER'S RATINGS GIVEN THE HERDS OF ALL LINCOLN
COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND
LOW PRODUCERS BY NUMBERS AND PERCENTS,
AND AVERAGE RATINGS*

Ratings Inter- viewer Gave Herds of Producers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	24	40	3	15	7	35	14	70
Excellent (3 points)	4	7	4	20	0	0	0	0
Good (2 points)	23	38	10	50	10	50	3	15
Fair (1 point)	9	15	3	15	3	15	3	15
Total	60	100	20	100	20	100	20	100
Average Rating	1.12 points		1.75 points		1.15 points		.45 points	

*Percents are rounded to the nearest whole number.

compared to 1.75 points by the interviewer. The average rating by dairymen in the low producer group was 1.5 points compared to .45 points by the interviewer.

XVII. TYPE OF MILKING FACILITIES

Seventy-one percent of the dairymen interviewed were using the stanchion-type milking facility (Table XXX). Twenty seven percent were using the elevated stall. Of the sixteen dairymen who were using elevated stalls, 50 percent were in the high producers group, compared to only 20 percent in the low producers group. These data indicate that improved facilities are associated with increased milk production.

XVIII. SIZE OF BULK TANK

Table XXXI shows that 74 percent of all producers were using bulk tanks. Of these 74 percent there were no producers using tanks less than 100 gallons. Forty percent of the dairymen were using bulk tanks with a capacity of 250 to 499 gallons. Another 22 percent were using larger tanks with a capacity between 500 and 749 gallons.

Forty percent of the high producers had tanks of 500 or more gallons capacity compared to only 25 percent of the

TABLE XXX

TYPES OF MILKING FACILITIES USED BY ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS*

Type of Milking Facility	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Stanchion	43	71	10	50	18	90	15	75
Elevated Stall	16	27	10	50	2	10	4	20
Other	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

* Percents are rounded to the nearest whole number.

TABLE XXXI

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
HAVING BULK TANKS OF DIFFERENT SIZES*

Size of Bulk Tank (gal.)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	16	26	5	25	6	30	5	25
100-249	3	5	1	5	1	5	1	5
250-499	24	40	7	35	8	40	9	45
500-749	13	22	5	25	3	15	5	25
750-999	2	3	1	5	1	5	0	0
1000-1249	1	2	1	5	0	0	0	0
2000	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.

low producers. This indicates that the high producers found it necessary to have a larger tank due to greater production per cow since the average size of herd for high, medium, and low producers did not vary this much (Table XIII, page 27). It might also be noted that only one of the high producers had tanks below 250 gallons, and none of the low producers had tanks over 750 gallons.

XIX. PIPELINE SYSTEMS AND WEIGHING DEVICES

It is seen from Table XXXII that 47 percent (28) of the dairymen were using a pipeline system of milking. It is interesting to note that 60 percent of the high producers were using a pipeline system as compared to only 35 percent of the low producers.

Eighteen dairymen interviewed reported having a weighing device. Sixteen of those reporting having such a device were using them. It might be further noted that 50 percent of the high producers had a weighing device as compared to only 15 percent of the low producers.

XX. STORAGE AVAILABLE FOR SILAGE

Table XXXIII indicates that 65 percent of all dairymen

TABLE XXXII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS HAVING PIPELINE SYSTEMS AND WEIGHING DEVICES*

Have Pipeline System	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Yes	28	47	12	60	9	45	7	35
Had weighing device	18	30	10	50	5	25	3	15
Used	16	27	9	45	5	25	2	10
Didn't use	2	3	1	5	0	0	1	5
Didn't have weighing device	9	15	2	10	3	15	4	20
Didn't Have weighing device; used testers device	1	2			1	5		
No	32	53	8	40	11	55	13	65
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number. All percents are based on totals.

TABLE XXXIII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
HAVING DIFFERENT KINDS OF SILOS*

Type of Silo	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	21	35	7	35	5	25	9	45
Upright	19	31	4	20	6	30	9	45
Trench	10	17	4	20	4	20	2	10
Upright and Trench	10	17	5	25	5	25	0	0
Total	60	100	20	100	20	100	20	100

* Percents are rounded to the nearest whole number.

interviewed had a silo of some type. Thirty one percent of the producers had an upright silo. Also, 17 percent of this group had an additional type of silo, either trench or bunker.

It can be noted that 65 percent of the high producers, 75 percent of medium producers and 55 percent of the low producers had some type of silo. These figures indicate that the type of silage storage did not influence the production level for Lincoln County dairymen.

Capacity

The capacities available for silage at the time of the study are shown in Table XXXIV. Fifteen percent of the high producers were able to store 500 or more tons, while only 5 percent of the low producers were able to store that much.

XVI. SOURCES OF WATER FOR COWS

The different methods of providing water for cows are shown in Table XXXV. The high, medium or low production was not associated with the source of water.

TABLE XXXIV

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
HAVING DIFFERENT SILAGE STORAGE CAPACITY*

Silage Storage Capacity in Tonnage Intervals	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	21	35	7	35	5	25	9	45
50-99	4	7	1	5	3	15	0	0
100-149	9	15	2	10	4	20	3	15
150-199	3	5	2	10	0	0	1	5
200-299	11	18	5	25	2	10	4	20
300-499	7	12	0	0	5	25	2	10
500-749	3	5	2	10	0	0	1	5
750 or more	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 XXXV

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
ACCORDING TO SOURCES OF WATER FOR COWS*

Source of Water for Milk Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Drinking cups in barn	2	3	1	5	0	0	1	5
Other water in barn	9	15	4	20	3	15	2	10
Water outside barn	10	17	5	25	3	15	2	10
Pond	4	6	1	5	1	5	2	10
Stream	1	2	0	0	1	5	0	0
Drinking cups in barn and other	3	5	0	0	3	15	0	0
Other water in barn and one or more other	9	15	2	10	4	20	3	15
Water outside and other (pond &/or stream)	7	12	3	15	1	5	3	15
Pond and stream	15	25	4	20	4	20	7	35
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

**Numbers and percents will not add up to the totals since some dairymen have more than one source of water for their cows.

XXII. AMOUNT OF LOAFING BARN AREA

All producers, except three, reported some loafing barn area for their cows. However, 43 percent reported less than the minimum recommended amount of loafing area (Table XXXVI). At least sixty square feet per cow should be allowed in the loafing area according to the Extension dairymen's recommendation.

There seemed to be little difference between the number of square feet of loafing area provided per cow by the three production groups.

XXIII. MILKING

Persons Doing Milking

Thirty seven percent of the producers, or their sons, did the milking (Table XXVII). When comparing the three production level groups, little difference was noted in who did the milking.

Way Milker Was Paid

Thirty six percent of the milkers that were paid received a salary (Table XXXVIII). Eighteen percent of the dairymen paid their milkers on a percentage basis. It can

TABLE XXXVI

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
HAVING DIFFERENT AMOUNTS OF LOAFING
BARN AREA PER COW*

Loafing Barn Area per Cow (Square Feet)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	3	5	2	10	1	5	0	0
Under 30	6	10	2	10	2	10	2	10
30-39	6	10	3	15	2	10	1	5
40-49	5	8	1	5	1	5	3	15
50-59	9	15	5	25	2	10	2	10
60-69	6	10	2	10	3	15	1	5
70 or more	23	38	4	20	8	40	11	55
Box stalls	1	2	1	5	0	0	0	0
None	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 XXXVII

PERSONS DOING THE MILKING ON FARMS OF ALL LINCOLN COUNTY
DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW
PRODUCERS BY NUMBERS AND PERCENTS*

Person Doing Milking	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	1	2	0	0	1	5	0	0
Owner	21	35	6	30	8	40	7	35
Tenant	25	41	9	45	7	35	9	45
Both	6	10	1	5	2	10	3	15
Other	6	10	4	20	1	5	1	5
Sons	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 XXXVIII

WAYS PERSONS DOING THE MILKING WERE PAID IN 1965 FOR
ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY
NUMBERS AND PERCENTS*

Way Person Doing Milking Was Paid	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	21	35	6	30	8	40	7	35
Salary	22	36	10	50	7	35	5	25
Percentage	11	18	1	5	4	20	6	30
Combination (Salary and Percentage)	3	5	2	10	1	5	0	0
Combination (all milk & part crop)	1	2	1	5	0	0	0	0
Combination (split dairy income)	1	2	0	0	0	0	1	5
Share in farm profit	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

be noted that over 50 percent of the high producers paid their milkers a salary or a combination of salary and percentage while only 25 percent of the low producers paid their milkers on this basis.

XXIV. BUTTERFAT PRODUCTION

Table XXXIX shows a breakdown of the average butterfat production per cow. Research has shown that cows averaging less than 250 pounds of butterfat are unprofitable and should be culled from the herd. It is noted that 33 herds averaged less than 250 pounds of butterfat and 14 other herds were in the marginal group of 250 to 299 pounds. Only two of the 60 dairymen interviewed had herds that produced between 400 and 600 pounds of butterfat. (Table I, page 8, shows the actual ranges for production within each group.)

XXV. MILK PRODUCTION

The average milk production per cow is shown in Table XL. It will be noted that the average for the 60 Grade A dairymen was 5,386 pounds. This is below the national average of 8,304 pounds in 1965 (23:1). The low producers had an average of 3,547 pounds with none producing

TABLE XXXIX

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY AVERAGE BUTTERFAT PRODUCTION CATEGORIES
AND TOTAL AVERAGES*

Average BF Pro- duction Category, (Pounds sold/cow)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
110-149	9	15	0	0	0	0	9	45
150-199	11	18	0	0	0	0	11	55
200-249	13	22	0	0	13	65	0	0
250-299	14	23	7	35	7	35	0	0
300-349	8	13	8	40	0	0	0	0
350-399	3	5	3	15	0	0	0	0
400-449	1	2	1	5	0	0	0	0
500 or more	1	2	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Total Average Production	240.5 lbs.		332.6 lbs.		235.0 lbs.		154.0 lbs.	

* Percents are rounded to nearest whole number.

TABLE XL

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY AVERAGE MILK PRODUCTION CATEGORIES
FOR 1965, AND TOTAL AVERAGES*

Average Milk Pro- duction Category, 1965 (Pounds sold per cow)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
2,000-2,999	6	10	0	0	0	0	6	30
3,000-3,999	9	15	0	0	0	0	9	45
4,000-4,999	13	21	0	0	8	40	5	25
5,000-5,999	12	20	1	5	11	55	0	0
6,000-6,999	10	16	9	45	1	5	0	0
7,000-7,999	6	10	6	30	0	0	0	0
8,000-8,999	1	2	1	5	0	0	0	0
9,000-9,999	1	2	1	5	0	0	0	0
10,000-10,999	0	0	0	0	0	0	0	0
11,000-11,999	1	2	1	5	0	0	0	0
12,000-12,999	0	0	0	0	0	0	0	0
13,000-13,999	1	2	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Actual Total Aver- age Production	5,386 lbs.		7,597 lbs.		5,015 lbs.		3,547 lbs.	

*Percents are rounded to the nearest whole number.

over 5,000 pounds of milk per cow. It was concluded that these dairymen have a very low income per cow and some of them had a negative income per cow. With the average of 3,547 pounds of milk per cow for the low group, it would seem that at least one third of the Grade A dairymen in Lincoln County are operating on a marginal or negative net return basis.

The high producers group averaged 7,597 pounds of milk per cow. It can be assumed from these figures that this group was receiving a fair return on this investment. It is interesting to note that the top herd, with an average of over 13,000 pounds of milk per cow, was producing more than six times as much milk per cow as the bottom herd in the low production group.

XXVI. BACTERIAL COUNT

The bacterial count for each month of 1965 was secured for all sixty of the dairymen interviewed. The average bacterial count category and the median count category for the high, medium and low producers can be seen in Table XLI.

The median count for all dairymen (76,321/ml) was relatively high. The bacterial count was higher in Lincoln County than in other counties where similar studies were made.

TABLE XLI

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY AVERAGE BACTERIAL COUNT CATEGORIES
IN 1965 AND TOTAL MEDIAN

Average Bacterial Count Category (Number/ml.)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0-9999	22	37	9	45	9	45	4	20
10,000-19,999	11	19	4	20	2	10	5	25
20,000-29,999	6	10	4	20	0	0	2	10
30,000-39,999	3	5	1	5	0	0	2	10
40,000-49,999	2	3	0	0	1	5	1	5
50,000-69,999	5	8	0	0	3	15	2	10
70,000-99,999	3	5	1	5	1	5	1	5
140,000-179,999	1	2	0	0	0	0	1	5
180,000-249,999	2	3	0	0	2	10	0	0
250,000-2,000,000	5	8	1	5	2	10	2	10
Total	60	100	20	100	20	100	20	100
Total Median Count	76,321/ ml		37,605/ ml		70,948/ ml		120,408/ ml	

* Percents are rounded to nearest whole number.

CHAPTER III

SUMMARY

This report concerned the characteristics of Grade A milk producers in Lincoln County, Tennessee. The information was obtained through a personal interview of 60 of the 85 Grade A dairy producers in the county who produced milk throughout the year 1965. The 60 dairymen were selected at random from a list of names of Grade A dairy producers. In addition to the survey data, milk plants were contacted and data concerning total milk production, butterfat test and bacterial count of each producer were obtained. The producers were divided into three production groups according to butterfat sold per cow, and the characteristics of these dairymen were analyzed by production groups.

I. REVIEW OF FINDINGS

In summarizing the data concerning the characteristics of Grade A dairymen in Lincoln County who produced in the high, medium and low thirds, according to average pounds of butterfat sold per cow in 1965, it was found that the dairymen:

1. Generally were known by the Agricultural Extension Agents; 85 percent of the high producers being known very well or fairly well, as compared to only 40 percent of the low producers.

2. Had a receptive attitude toward the survey, with 98 percent being friendly or somewhat friendly.

3. Had an average of 10.4 years of formal education.

4. Averaged 52 years of age.

5. Had an average gross family income of \$25,794 with the high group averaging \$32,105 as compared to \$20,367 for the low production group.

6. Received a major share of their income from dairying, and 92 percent were full time farmers.

7. Operated a farm averaging about 346 acres with about 214 acres in cropland. High producers had the largest acreages with an average total acres of 413 and 242 acres of cropland. The low producers averaged 268 total acres and 168 acres of cropland.

8. Milked an average of 53 cows, with no important difference between production groups.

9. Were generally keeping their own replacement heifers, with 100 percent of high producers and 80 percent

of the low producers reported replacement heifers on hand.

10. Produced an average of 240 pounds of butterfat and 5,386 pounds of milk per cow, with the high group averaging approximately 333 pounds of butterfat and 7,597 pounds of milk, compared to 154 pounds of butterfat and 3,547 pounds of milk for the low group.

11. Had a median bacterial count of 76,321.

Seventy four percent of the producers were using bulk tanks, 71 percent were using stanchion type milking facility and 29 percent were using elevated-stall barns. Silos were present on 65 percent of the farms with 31 percent of the farms having upright silos.

The high producers showed a greater interest in improving their dairy production practices.

II. IMPLICATIONS

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

1. A careful consideration of the characteristic differences between high and low producers can be of assistance in planning educational programs for all Lincoln County dairymen, especially those in the low production group.

2. A high percent of the producers can be expected to be receptive to Extension teaching; however, the need for motivation and attitude changes is clear with regard to many of the producers in the low group.

3. The wide range in educational levels from no school to the Bachelor's level indicate some possible difficulties in communication and suggests varied educational approaches should be considered.

4. The age differences (from 25 to over 65, with an average of 52 years) point out the need for very careful planning if educational programs are to be most effective.

5. Further evaluation of characteristics and other data revealed in the interview could be helpful in planning for work with the Grade A dairymen in Lincoln County on individual and group basis.

CHAPTER I

INTRODUCTION

Grade A milk production is an important agricultural enterprise in Lincoln County. Lincoln County has long been one of the leading dairy counties in the middle portion of the state and ranked eighth on a statewide basis according to the 1964 Agricultural Census, Preliminary Report. Some of the present producers have been selling Grade A milk since

PROBLEM B:

MANAGEMENT PRACTICES OF LINCOLN COUNTY

GRADE A MILK PRODUCERS

In 1927 Borden's started buying Grade C milk in Lincoln County. Local cheese plants started buying milk in the early 1930's. Kraft Foods started operating in the County around 1935. Kraft's Swiss Cheese operation in Lincoln County is the largest Swiss Cheese plant in the southeast.

Today, Lincoln County Grade A producers are selling to Meadowgold Dairies of Huntsville, Alabama, Barber's Dairy of Birmingham, Alabama, Dark's Dairies of Sylacauga, Alabama,

CHAPTER I

INTRODUCTION

Grade A milk production is an important agricultural enterprise in Lincoln County. Lincoln County has long been one of the leading dairy counties in the middle portion of the state and ranked eighth on a statewide basis according to the 1964 Agricultural Census, Preliminary Report. Some of the present producers have been selling Grade A milk since the early 1940's. The first graded milk was sold to Camp Forrest at Tullahoma, Tennessee during World War II. Soon after the war, Grade A markets in Alabama opened to Lincoln County producers.

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Today, Lincoln County Grade A producers are selling to Meadowgold Dairies of Huntsville, Alabama, Barbers Dairy of Birmingham, Alabama, Dark's Dairies of Sylacauga, Alabama,

Avalon Dairies of Fayetteville, Tennessee and Nashville Milk Producers Association of Nashville, Tennessee. Most of the Grade A dairymen have increased the size of their herds and obtained more modern equipment since starting in Grade A production.

Rapid changes in technology and in the economic structure of the dairy industry has presented problems that few producers thought about when they started Grade A production. No previous attempt had been made to learn what producers were or were not doing. Therefore, it was felt that a closer look at the present situation concerning the management practices of Grade A dairymen should provide information for improving educational and other programs designed to help present and future dairymen do a more efficient job.

I. THE PURPOSE OF THE STUDY

The purpose of this study was to determine which recommended practices Lincoln County Grade A producers were using and were not using in high, medium, and low production groups in terms of annual pounds of butterfat sold per cow (1965 figures).

II. REVIEW OF LITERATURE

There seemed to be little information available regarding management practices of Grade A dairymen in Tennessee. According to data that could be found in the literature, there was limited information on this subject available in other states as well, especially comparative information including all producers, high, medium and low.

In Virginia (15:4) it was found that 139 Grade A dairymen who were members of a mail-in, record-keeping system had an annual net farm income ranging from \$17,869 to a minus \$7,462. Most other information had to do with members of record-keeping systems such as Dairy Herd Improvement Association (D.H.I.A.).

In a Michigan study (16), it was found that artificial insemination (A.I.) sired cows were superior to non-A.I. cows within the same herd.

According to a Pennsylvania Project III statement for 1964-65 (6:2) it was noted that the average D.H.I.A. herd tested in that state significantly outproduced the average for all other herds. Pennsylvania reported bench-mark data for cows bred artificially and naturally, and gave feed

costs per cow for hay, silage, grain and pasture.

In 1964 Miller (16) found that herds on continuous D.H.I.A. test (five or more years in 1962) showed a superiority of 1,327 pounds of milk and 54 pounds of fat per cow over new herds (started on test in 1962) and of 1,749 pounds of milk and 70 pounds of fat per cow over non-tested herds. The average of the new herds was 422 pounds of milk and 16 pounds of fat per cow more than the average of the non-tested herds over a two-year period (1962 to 1964).

III. METHODS

A complete list of Grade A dairymen was obtained from all the companies purchasing Grade A milk in Lincoln County. The list revealed that there were 85 Grade A dairymen in the County who sold milk during the entire year of 1965. A random sample of 60 dairymen was taken from this group. Each of these was contacted personally and interviewed using a schedule (see Appendix) consisting of questions designed to reveal characteristics, production practices and factors influencing practice adoption. Total milk production, butterfat test and bacterial count figures for each dairyman in the sample were obtained from the five companies purchasing

all the Grade A milk in Lincoln County. This study is an analysis and interpretation of the answers to questions related to the production practices of these Grade A dairymen.

The 60 dairymen were divided as follows: (1) 20 high producers with average annual butterfat sold (1965 figures) per cow figures ranging from 264 to 606 pounds; (2) 20 medium producers ranging from 200 to 263 pounds; and (3) 20 low producers ranging from 115 to 199 pounds.

Rating Explanation

Twenty-three recommended dairy production practices were included in the interview schedule in an effort to determine the practice adoption level of producers in the high, medium and low thirds.

The following rating scheme was used to classify management levels of individuals on each of the 23 practices: (1) no points were given if the person interviewed had not read or heard of the specific practice; (2) one point was given if the person had only heard of the practice; (3) two points were given if the person was only interested in it; (4) three points were given if the person had not tried it but planned to do so; (5) four points were given if the

person had tried the practice but was not using it at the time of the interview; and (6) five points were given if the person had tried the practice and was still using it.

Average practice diffusion ratings of the production groups are compared in this report. For this purpose, the practice diffusion process is considered in the following stages: "unaware", 0-.49 points; "aware", .5-1.49 points; "interested in it", 1.5-2.49 points; "planning to try", 2.5-3.49 points; "tried", 3.5-4.49 points; and "using", 4.5-5.0 points.

An average practice diffusion rating was determined for each producer by adding up his total score and dividing by 23 (the number of practices studied). Group total average practice diffusion ratings also were computed for the purpose of comparing various groups. Other data reported are simple numbers, percents and averages. The comparisons of principal interest are those between high and low producers.

For each of the 23 production practices, the respondent was given a card with the practice typed on it as it appeared on the interview schedule. This was done in order to further help the respondent understand the practice as

the interviewer discussed it with him. The interviewer explained only the basic details regarding the practice and tried to determine and record the actual degree to which the respondent was really carrying out the practice.

Average Practice Diffusion Rating Intervals

Table XLII gives the average practice diffusion ratings for the sixty Lincoln County dairymen divided into high, medium and low thirds according to the average butterfat sold per cow.

It is noted that all dairymen were, on the average, in the beginning of the "tried" stage with an average rating of 3.90; the high producers were a little above the middle of the "tried" stage (4.13), while the low producers were about the beginning of the "tried" stage (3.66).

Another note of interest in Table XLII is that 85 percent (seventeen producers) of the high producers were in the "tried" and "using" stages (3.5-5.00); while only 50 percent (ten producers) of the low group rated this high.

Relation to Production

The average individual dairy management practice

CHAPTER II

FINDINGS

I. MANAGEMENT LEVELS OF MILK PRODUCERS

Average Practice Diffusion Rating Intervals

Table XLII gives the average practice diffusion ratings for the sixty Lincoln County dairymen divided into high, edium and low thirds according to the average butter-fat sold per cow.

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Another note of interest in Table XLII is that 85 percent (seventeen producers) of the high producers were in the "tried" and "using" stages (3.5-5.00); while only 50 percent (ten producers) of the low group rated this high.

Relation to Production

The average individual dairy management practice

TABLE XLII

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

Average Practice Diffusion Rating Interval**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
1.50-2.49	3	5	0	0	0	0	3	15
2.50-2.99	3	5	1	5	2	10	0	0
3.00-3.49	7	12	2	10	1	5	4	20
3.50-3.99	18	30	4	20	9	45	5	25
4.00-4.49	20	33	9	45	5	25	6	30
4.50-5.00	9	15	4	20	3	15	2	10
Total	60	100	20	100	20	100	20	100
Average	3.90		4.13		3.90		3.66	

*Percents are rounded to the nearest whole number.

**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 practice, but not using; and 5 = using the practices.

diffusion ratings and total average for all Lincoln County dairymen interviewed, high, medium and low producers are shown in Table XLIII. Also, Table XLIV gives a breakdown of the percents of Lincoln County dairymen in each of the stages of the diffusion process for each of the management practices studied.

In Table XLIII it is noted that, on the average, all producers rated in the "tried" stage (4.01) for the seven practices in question, however, it also will be noted that all producers rated below the "tried" stage (3.11 and 3.43 respectively) for practices 11 and 12.

Sanitation practices. The next group of practices in Table XLIII are generally classified as sanitation practices and includes practices 18, 19 and 20. It is noted that all producers were, on the average, in the "using" stage (4.93) with regard to practice 20, "flies systematically controlled", and only in the "tried" stage on practice 19 (3.15), "separate feeding and loafing areas provided" and practice 18 (3.10), "strip cup always used". It will be noted in Table XLIV that 98 percent were in the "using" stage on practice 20, while only 43 and 48 percents were in the "using" stage on practices 18 and 19 respectively.

TABLE XLIII

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS AND TOTAL AVERAGE RATINGS FOR ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS*

Dairy Management Practices	All Dairymen Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
1. Artificially inseminated 1/2 or more of cows	3.50	3.95	3.30	3.25
2. All cows bred to same breed bull	3.63	3.85	3.75	3.30
3. 60-day dry period pro- vided cows	4.87	4.85	5.00	4.75
4. 12-14 month calving period provided	4.93	5.00	4.95	4.80
5. 75 percent of cows freshen in fall	4.20	4.30	4.10	4.20
6. 75 percent herd replacements raised	4.83	5.00	4.55	4.95
7. Adequate milk records kept	2.32	3.10	2.15	1.70
8. Fed cows according to pro- duction	2.78	3.60	2.55	2.20
9. Keeping adequate herd records	3.63	4.10	3.60	3.20
10. Calves permanently identified	3.02	3.05	3.20	2.80
11. Adequate supply of silage provided	3.11	3.40	3.25	2.70

TABLE XLIII (continued)

Dairy Management Practices	All Dairymen Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
12. High quality silage provided	3.43	3.35	4.00	2.95
13. Silage supplemented with enough hay	4.83	4.75	4.75	5.00
14. High quality hay provided	4.77	4.70	4.95	4.65
15. Hay and/or silage provided when on pasture	3.62	3.95	3.60	3.30
16. Adequate improved pasture provided	4.73	4.90	4.45	4.85
17. Sufficient summer pasture provided	4.08	4.00	4.50	3.75
18. Strip cup always used	3.10	3.45	3.10	2.75
19. Separate feeding and loafing area provided	3.15	3.40	3.25	2.80

TABLE XLIII (continued)

Dairy Management Practices	All Dairymen Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
20. Flies systematically controlled	4.93	5.00	5.00	4.80
21. Calves vaccinated for brucellosis	5.00	5.00	5.00	5.00
22. Milking system checked each 6 months	3.70	4.00	3.35	3.75
23. Professional advice obtained	3.47	4.25	3.45	2.70
Total Average Rating	3.90	4.13	3.90	3.66

*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 XLIV

PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED IN VARIOUS STAGE OF
THE DIFFUSION PROCESS ON EACH OF THE PRACTICES STUDIED*

Dairy Management Practice	Unaware of It Percent	Aware of It Percent	Inter- ested in It Percent	Planning to Try Percent	Tried and Not Using Percent	Using It Percent	Total Percent
1. Artificially inseminated 1/2 or more of cows	5	23	8	0	7	57	100
2. All cows bred to same breed bull	5	23	2	5	3	62	100
3. 60 day dry period provided cows	0	2	0	2	2	94	100
4. 12-14 month calving period provided	0	2	0	0	2	96	100
5. 75 percent of cows freshen in fall	0	10	12	0	5	73	100
6. 75 percent of herd replacements raised	0	4	0	0	3	93	100
7. Adequate milk records kept	6	47	15	0	3	29	100
8. Fed cows according to production	3	30	27	0	5	35	100

TABLE XLIV (continued)

Dairy Management Practice	Unaware of It Percent	Aware of It Percent	Inter-ested in It Percent	Planning to try Percent	Tried and Not Using Percent	Using It Percent	Total Percent
9. Keeping adequate herd records	2	5	23	8	27	35	100
10. Calves permanently identified	2	35	15	0	5	43	100
11. Adequate supply of silage provided	0	15	37	2	7	39	100
12. High quality silage provided	20	5	12	0	2	61	100
13. Silage supplemented with enough hay	0	1	2	2	2	93	100
14. High quality hay provided	2	2	2	0	3	91	100
15. Hay and/or silage provided when on pasture	2	14	23	0	6	55	100

TABLE XLIV (continued)

Dairy Management Practice	Unaware of It Percent	Aware of It Percent	Inter-ested in It Percent	Planning to Try Percent	Tried and Not Using Percent	Using It Percent	Total Percent
16. Adequate improved pasture	0	0	7	0	6	87	100
17. Sufficient summer pasture provided	0	15	10	5	8	72	100
18. Strip cup always used	2	33	12	2	8	43	100
19. Separate feeding and loafing areas	2	22	28	0	0	48	100
20. Flies systematically controlled	0	2	0	0	0	98	100
21. Calves vaccinated for brucellosis, etc.	0	0	0	0	0	100	100
22. Milking system checked every 6 months	2	12	22	2	0	62	100
23. Professional advice obtained	3	22	17	0	0	58	100

*Percents are rounded to nearest whole number.

Other practices. Practices 21, 22 and 23 in Table XLIII, page 82, had to be grouped as "other practices" for the purpose of this study and are here discussed separately. Practice 21, "calves vaccinated for brucellosis, blackleg, etc." had an average rating "using" (5.00) for all producers. It can be noted in Table XLIV that 100 percent of all producers were "using" Practice 21.

All producers were in the "tried" stage (3.70) regarding Practice 22, "milking system checked every 6 months".

A wide variation in average practice diffusion ratings (Table XLIII) is noted from practice to practice from all dairymen. On the average, the range ran from the "interested" stage (2.32) for practice 7, "adequate milk records kept", to the "using" stage (5.0) for practice 21, "calves vaccinated for brucellosis, etc." It will be noted that all producers averaged in the "using" stage with regard to eight practices: (1) Practice 21, "calves vaccinated for brucellosis" (5.00); (2) Practice 20, "flies systematically controlled" (4.93); (3) Practice 4, "12-14 month calving period provided" (4.93); (4) Practice 3, "60 day dry period provided cows" (4.87); (5) Practice 6, "75 percent of herd replacements raised" (4.83); (6) Practice 13, "silage supplemented

with enough hay" (4.83); (7) Practice 14, "high quality hay provided" (4.77); and (8) Practice 16, "adequate improved pasture provided" (4.73).

The high producers had a higher average rating than did the low producers in 21 of the 23 practices, and were equal in one of the other two practices. They averaged .47 points higher than the low producers in all practices. These apparently critical practices may give some indication regarding the reasons for differences in production. Some observations regarding the practices will follow below.

Breeding practices. Practices 1 through 6 listed in Table XLIII, page 82, and XLIV, page 85, are related to breeding. In the main, all producers averaged near the top of the "tried" stage (4.32) for these practices. It can be noted that the percent "planning to try" and "using it" ranged from 57 percent on Practice 1, to 96 percent on Practice 3 and 4.

In general it seemed that producers were doing a reasonably good job in breeding management of their dairy herd.

Keeping and using records. Practice 7 through 10 are

related to records and their use. There is a general assumption that farmers do not like to keep records. The results of this study indicate that this is true for Lincoln County dairymen. In Table XLIII, page 82, it is noted that all producers were, on the average, only "planning to try" (2.93) the practice for the four practices in question.

Table XLIV, page 85, shows that 68, 63 and 52 percent of the dairymen were below the "planning to try" stage for practice 7, 8 and 10 respectively. The percents of dairymen "using" these practices, 29, 35, 35 and 43 for practices 7 through 10, indicate that all producers were generally low in regard to adopting these practices. This information indicates these practices should be given careful consideration in planning educational programs to help Lincoln County dairymen.

Feeding practices. Dairy specialists have often been heard to say that the average Tennessee dairy cow is better "bred" than "fed". Practices 11 through 17 are related to providing the cows with adequate amounts of quality feed. Evaluation of what the dairymen who were interviewed said about their feeding practices tends to indicate this is not

necessarily true in regard to Grade A dairy cows in Lincoln County. Three exceptions can be noted in regard to this statement in Practices 11, 12 and 15.

All producers were, on the average, in the "planning to try" (3.47) on Practice 23, "professional advice obtained." The high producers were in the "tried" stage (4.25) on Practice 23, as compared to the low producers in the "planning to try" (2.70) stage.

Relation to herd size. Table XLV shows by herd size the total average ratings for each of the 23 dairy management practices. In comparing the four herd-size categories on total average ratings, it will be noted that all herd size categories tended to be managed by dairymen operating at the "tried" level.

The most pronounced positive relations exist between herd size and management level can be noted in Practice 7, adequate milk records kept, Practice 11, adequate supply of silage provided, and Practice 12, high quality silage provided.

II. BREEDING OF HEIFERS

Method

All of the producers were asked how their heifers were

TABLE XLV

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF LINCOLN COUNTY
BY HERD SIZE CATEGORIES FOR INDIVIDUAL DAIRY MANAGEMENT PRACTICES*

Dairy Management Practices	All Dairymen Average Rating (N=60)	11-29 Cows Average Rating (N=15)	30-49 Cows Average Rating (N=15)	50-69 Cows Average Rating (N=14)	70-111 Cows Average Rating (N=16)
1. Artificially inseminated 1/2 or more of cows	3.50	3.60	3.93	2.64	3.75
2. All cows bred to same bull	3.63	3.20	3.80	3.07	4.36
3. 60 day dry period provided cows	4.87	5.00	5.00	4.50	4.94
4. 12-14 month calving period provided	4.93	5.00	5.00	5.00	4.69
5. 75 percent cows freshen in fall	4.20	3.60	4.53	3.86	4.75
6. 75 percent herd replace- ment raised	4.83	4.20	4.73	4.93	5.00
7. Adequate milk records kept	2.32	1.73	1.93	2.50	3.07
8. Fed cows according to production	2.78	2.60	2.40	2.71	3.38
9. Keeping adequate herd records	3.63	3.80	3.20	4.00	3.56

TABLE XLV (continued)

Dairy Management Practices	All Dairymen Average Rating (N=60)	11-29 Cows Average Rating (N=15)	30-49 Cows Average Rating (N=15)	50-69 Cows Average Rating (N=14)	70-111 Cows Average Rating (N=16)
10. Calves permanently identified	3.02	3.13	3.27	2.70	2.88
11. Adequate supply of silage provided	3.11	2.06	2.80	3.64	3.94
12. High quality silage provided	3.43	1.53	3.20	4.43	4.56
13. Silage supplemented with enough hay	4.83	4.86	4.80	4.93	4.75
14. High quality hay provided	4.77	5.00	4.80	4.85	4.44
15. Hay and/or silage provided when on pasture	3.62	3.00	3.07	4.14	4.06
16. Adequate improved pasture	4.73	5.00	4.80	4.43	4.69
17. Sufficient summer pasture provided	4.08	3.80	4.26	4.43	3.88
18. Strip cup always used	3.10	3.00	3.07	3.21	3.13

TABLE XLV (continued)

Dairy Management Practices	All Dairymen Average Rating (N=60)	11-29 Cows Average Rating (N=15)	30-49 Cows Average Rating (N=15)	50-69 Cows Average Rating (N=14)	70-111 Cows Average Rating (N=16)
19. Separate feeding and loafing areas provided	3.15	3.20	2.93	3.36	3.13
20. Flies systematically controlled	4.93	5.00	5.00	5.00	4.75
21. Calves vaccinated for brucellosis, etc.	5.00	5.00	5.00	5.00	5.00
22. Milking system checked every 6 months	3.70	3.60	3.40	3.64	4.13
23. Professional advice obtained	3.47	3.00	3.53	4.00	3.31
Total Average Rating	3.90	3.65	3.85	3.96	4.11

*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.

bred and Table XLVI gives the results. Seventy percent (42 producers) said they used a bull in natural service on all their heifers. Only 3 percent (2 producers) used both artificial and natural methods of breeding heifers. There were no important differences between high and low producers on the method of breeding naturally or artificially.

Type of Bull

Table XLVII reveals that 65 percent of all dairymen were using dairy bulls to breed their heifers. Twenty-eight percent were using beef bulls, and 7 percent were using both beef and dairy bulls. Seventy percent of the high producers were using dairy bulls to breed their heifers as compared to 60 percent of the low producers.

III. BREEDING OF COWS

Type of Bull

Eighty-three percent (50 producers) reported their cows were bred to only dairy bulls, while 14 percent (8 producers) used beef bulls only. Table XLVIII shows that 90 percent of the high producers were using dairy bulls, while 80 percent of the medium and low producers were using dairy bulls.

TABLE XLVI

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
IN 1965 BY METHOD OF BREEDING HEIFERS*

Method of Breeding Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not answered	1	2	1	5	0	0	0	0
Artificially	15	25	6	30	5	25	4	20
Naturally	42	70	13	65	14	70	15	75
Both	2	3	0	0	1	5	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XLVII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
IN 1965 BY TYPE OF BULL USED ON HEIFERS*

Type of Bull Used	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Dairy	39	65	14	70	13	65	12	60
Beef	17	28	5	25	6	30	6	30
Both	4	7	1	5	1	5	2	10
Total	60	100	20	100	20	100	20	100

* Percents are rounded to nearest whole number.

TABLE XLVIII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
IN 1965 BY TYPE OF BULL USED ON COWS*

Type of Bull Used	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Dairy	50	83	18	90	16	80	16	80
Beef	8	14	0	0	4	20	4	20
Both	2	3	2	10	0	0	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

IV. FEEDING OF COWS

Percent of Protein in Dairy Ration

Table XLIX shows that 68 percent (41 producers) were feeding a 15 percent or higher ration. Eighty percent of the high producers fed a 15 percent ration or over, as compared to 65 percent of the low producers.

Method of Providing Concentrates

It is noted in Table L that 58 percent (35 producers) indicated that they bought all their concentrates while 32 percent (19 producers) were mixing all their own rations. There was no important difference in the method of providing concentrates when comparing high and low production groups.

The large number purchasing concentrates is explained by the fact that many farms in Lincoln County do not have sufficient land to produce the grain needed. Also many dairymen will sell their own grain and buy a commercial feed.

Grinding of Hay

Table LI shows that 63 percent of all the producers were not grinding their hay. Seventy percent of the high producers and 60 percent of the low producers were not grinding their hay.

TABLE XLIX

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY PERCENTS OF PROTEIN USED
IN DAIRY RATIONS*

Percent Protein in Dairy Ration	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
9 Percent	1	2	0	0	1	5	0	0
10 Percent	1	2	0	0	0	0	1	5
12 Percent	2	3	0	0	0	0	2	5
13 Percent	1	2	0	0	0	0	1	5
14 Percent	14	23	6	30	5	25	3	15
15 Percent	2	3	1	15	1	5	0	0
16 Percent	35	58	11	55	12	60	12	60
18 Percent	4	7	2	10	1	5	1	5
All Other	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

TABLE L

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
BY METHOD OF PROVIDING CONCENTRATES*

Method of Providing Concentrates	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	1	2	0	0	1	5	0	0
Mix Own	19	32	6	30	7	35	6	30
Buy Them	35	58	13	65	11	55	11	55
Mix Some and Buy Some	5	8	1	5	1	5	3	15
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE LI

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

Grinding of Hay	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	2	3	1	5	0	0	1	5
Did Grind Hay	16	27	4	20	5	25	7	35
Did Not Grind Hay	38	63	14	70	12	60	12	60
Grind Some	4	7	1	5	3	15	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

Type of Hay Fed

Table LII shows that 48 percent (29 producers) of the dairymen indicated that they fed a legume-grass mixture. Ten percent of the high producers and 5 percent of the low producers were feeding only legume-hay.

It was found in similar studies done in Williamson (5:105) and Marshall (17:88) counties, Tennessee that high producers fed more legume-hay.

Method of Supplying Salt and Minerals

Data in Table LIII show that 43 percent (26 producers) of the dairymen supplied salt and minerals free choice. Forty percent (24 producers) of the dairymen supplied salt and minerals both mixed in the ration and free choice. Fifty percent (10 dairymen) of the high producers used both free choice and mixed in the ration, as compared to only 20 percent (4 dairymen) of the low group.

V. THE RELATION OF PRODUCTION AND MANAGEMENT

LEVELS TO AGE

Table LIV reveals a tendency for younger producers to have a slightly higher practice diffusion rating than those

TABLE LII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
ACCORDING TO TYPE OF HAY USUALLY FED*

Type of Hay Fed	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	3	5	3	15	0	0	0	0
Legume	4	7	2	10	1	5	1	5
Grass	8	14	1	5	4	20	3	15
Legume-grass	29	48	8	40	7	35	14	70
All 3	2	3	2	10	0	0	0	0
Legume and Legume-grass	2	3	1	5	1	5	0	0
Legume and Grass	12	20	3	15	7	35	2	10
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

TABLE LIII

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

Method of Supplying Salt and Minerals	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Mixed in Ration	10	17	4	20	1	5	5	25
Free Choice	26	43	6	30	9	45	11	55
Both	24	40	10	50	10	50	4	20
Total	60	100	20	100	20	100	20	100

*In the rating scale used: 1 = always; 2 = usually; 3 = sometimes; 4 = frequently; 5 = occasionally; 6 = rarely; 7 = never; 8 = planning to try the practice; 9 = tried the practice, but not using; 10 = using the practice.

TABLE LIV

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS
OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS
ACCORDING TO AGE GROUPS*

Age Group of Dairymen	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
25-34	4	3.94	3	4.22	0	----	1	3.13
35-44	10	3.78	2	3.80	5	3.68	3	3.94
45-54	22	4.25	9	4.36	10	4.09	3	4.46
55-64	16	3.52	4	3.65	3	3.87	9	3.34
65 or more	8	3.80	2	4.23	2	3.58	4	3.68
Actual Total	60	3.86	20	4.05	20	3.80	20	3.71

*In the rating scale used: 0 = unaware; 1 = aware of the 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.

in the older age group, irrespective of production level. High producers had higher average ratings than did the medium and low producers on the average.

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

With a few exceptions, there is noted a slight increase in the average practice diffusion ratings as the educational levels of all producers increase. This is shown in Table LV. It will be noted that in comparing production groups, high (4.13), medium (3.90), and low (3.66) all were in the "tried" stage.

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

Table LVI shows that high producers had higher practice diffusion ratings than the low group in seven of the farm-size categories. The exceptions were: 100 to 149, 350 to 399, 400 to 449, 450 to 499, and 600 or more farm-size class. The highest average diffusion ratings for both high and low production groups will be noted in the 300-349 farm-size category.

TABLE LV

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION
RATINGS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS
BY EDUCATIONAL LEVELS*

Educational Grade Level	All Dairymen Interviewed Average		High Producers Average		Medium Producers Average		Low Producers Average	
	No.	Rating	No.	Rating	No.	Rating	No.	Rating
None	4	3.57	1	4.04	1	3.65	2	3.30
1-4	2	4.17	1	4.43	0	----	1	3.91
5-7	4	3.93	1	4.91	2	3.61	1	3.57
8	6	3.44	0	----	2	3.63	4	3.35
9-11	6	3.81	1	4.13	2	3.87	3	3.67
12	27	3.92	10	3.89	12	3.94	5	3.91
1-3	8	4.15	3	4.36	1	4.96	4	3.78
Bachelor	3	4.35	3	4.35	0	----	0	----
Actual Average	60	3.90	20	4.13	20	3.90	20	3.66

*In the rating scale used, 0 = unaware; 1 = aware of the 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 LVI

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION
RATINGS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY
SIZE OF FARM CATEGORIES*

Size of Farm Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
50-90	3	3.51	1	4.48	1	3.65	1	2.39
100-149	6	3.61	0	----	3	3.74	3	3.48
150-199	6	3.67	1	4.48	1	3.91	4	3.41
200-249	12	3.88	5	3.93	2	4.04	5	3.76
250-299	5	3.84	1	3.78	4	3.86	0	----
300-349	6	4.41	2	4.91	2	3.72	2	4.61
350-399	2	4.11	0	----	1	4.13	1	4.09
400-449	2	2.39	0	----	1	2.78	1	2.00
450-499	5	4.26	3	4.20	1	4.28	1	4.43
500-549	4	3.97	3	4.14	1	3.43	0	----
550-599	1	4.09	0	----	0	----	1	4.09
600 or more	8	4.14	4	3.83	3	4.58	1	4.04
Total	60	3.90	20	4.13	20	3.90	20	3.66

*In the rating scale used, 0 = unaware; 1 = aware of the 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.

VIII. THE RELATION OF PRODUCTION AND MANAGEMENT

LEVELS TO OCCUPATION

It is noted in Table LVII that 55 producers (92 percent) were classified as full-time farmers, while the remaining five producers (8 percent) were classified as part-time farmers. On the average, part-time farmers had a slightly higher average practice diffusion rating than did the full-time farmers. As usual, the producers in the high group had a higher average practice diffusion rating than did those in the low production group.

IX. THE RELATION OF PRODUCTION AND MANAGEMENT

LEVELS TO SOURCE OF INCOME

Table LVIII reveals that dairying was the major source of income for 55 of the 60 farmers interviewed. Three producers received their major income from non-farm sources and two were not answered. It is interesting to note that the farmer receiving the major source of his income from banking had the highest average practice diffusion rating (4.87).

TABLE LVII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION
 RATING OF ALL LINCOLN COUNTY DAIRYMEN
 INTERVIEWED, HIGH, MEDIUM AND LOW
 PRODUCERS BY OCCUPATION*

Occupation of Dairymen	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
Full-time farmer	55	3.87	17	4.05	20	3.90	18	3.67
Part-time farmer	5	4.16	3	4.55	0	----	2	3.57
Total	60	3.90	20	4.13	20	3.90	20	3.66

*In the rating scale used, 0 = unaware; 1 = aware of the 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 LVIII

NUMBERS AND AVERAGE MANAGEMENT PRACTICE DIFFUSION RATINGS
OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY
MAJOR SOURCES OF INCOME*

Major Source of Income	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	Average No.	Average Rating	Average No.	Average Rating	Average No.	Average Rating	Average No.	Average Rating
Dairying	55	3.88	16	4.07	19	3.96	20	3.66
Banking	1	4.87	1	4.87	0	-----	0	-----
Mail Route	1	4.30	1	4.30	0	-----	0	-----
Fieldman	1	4.48	1	4.48	0	-----	0	-----
Other	2	3.28	1	3.78	1	2.78	0	-----
Actual Total	60	3.90	20	4.13	20	3.90	20	3.66

*
In the rating scale used, 0 = unaware; 1 = aware of the 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.

X. THE RELATION OF PRODUCTION AND MANAGEMENT

LEVELS TO GROSS FAMILY INCOME

Average practice diffusion ratings tended to increase, generally, as levels of total gross income went up, as those over \$26,000 total gross income did not operate below an average rating of 4.09. There were exceptions to this trend. Table LIX shows that the average ratings went from "planning to try" (3.16) stage for two producers in the income bracket of \$12,000-\$13,999 to a rating of "using" (4.87) for three producers in the bracket of \$50,000-\$99,999. It is interesting to note that ten high producers were in income brackets above \$26,000 and only three low producers were in this group.

XI. THE RELATION OF PRODUCTION AND MANAGEMENT

LEVELS TO DAIRY HERD RATING

Each respondent was asked to rate his herd as "excellent," "good," "fair" or "poor." The results of this rating are shown in Table LX. Seven producers rated their herds as "excellent;" thirty-five herds were rated "good;" sixteen herds were rated "fair" and one "poor." There was no marked trend when comparing the average practice diffusion ratings of all dairymen with how the dairymen rated their herds.

TABLE LIX

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION
RATINGS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY TOTAL
FAMILY INCOME REPORTED*

Total Gross Family Income Category	All Dairymen Interviewed Average		High Producers Average		Medium Producers Average		Low Producers Average	
	No.	Rating	No.	Rating	No.	Rating	No.	Rating
Not Answered	9	3.17	1	3.22	3	3.27	5	3.10
2,000-3,999	2	4.22	0	----	1	3.78	1	4.65
6,000-7,999	2	4.22	1	4.48	1	3.96	0	----
8,000-9,999	4	3.58	0	----	2	3.87	2	3.30
10,000-11,999	3	4.09	1	4.13	1	4.43	1	3.70
12,000-13,999	2	3.16	1	3.48	1	2.83	0	----
14,000-15,999	2	4.09	0	----	1	3.70	1	4.48
18,000-19,999	1	4.43	0	----	0	----	1	4.43
20,000-21,999	9	3.84	2	3.52	3	3.85	4	4.00
22,000-23,999	5	4.13	4	4.34	0	----	1	3.30
24,000-25,999	4	3.52	0	----	3	4.16	1	2.00
26,000-29,999	3	4.51	2	4.39	0	----	1	4.74
30,000-49,999	11	4.09	6	4.04	3	4.33	2	3.85
50,000-99,999	3	4.87	2	4.91	1	4.78	0	----
Actual Total	60	3.90	20	4.13	20	3.90	20	3.66

*In the rating scale used, 0 = unaware; 1 = aware of the 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 LX

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION
 RATINGS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
 HIGH, MEDIUM AND LOW PRODUCERS BY RATINGS THEY
 GAVE THEIR OWN DAIRY HERDS AS TO
 CONDITION AND VALUE*

Ratings Dairymen Gave Their Own Herds	All Dairymen Interviewed Average No. Rating		High Producers Average No. Rating		Medium Producers Average No. Rating		Low Producers Average No. Rating	
Not Answered	1	4.13	1	4.13	0	----	0	----
Poor (0 point)	1	4.48	0	----	0	----	1	4.48
Fair (1 point)	16	3.65	2	4.35	5	3.63	9	3.50
Good (2 points)	35	3.91	11	3.93	15	3.99	9	3.72
Excellent (3 points)	7	4.80	6	4.41	0	----	1	3.65
Total	60	3.90	20	4.13	20	3.90	20	3.66

*In the rating scale used, 0 = unaware; 1 = aware of the 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.

It is interesting to note, that the seven herds rated as "excellent," six of the seven were in the high producers group.

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

All dairymen were rated by the interviewer as to his judgement of their interest in improving their dairy management. Table LXI shows the producers' practice diffusion ratings in relation to the interest ratings given each producer by the interviewer.

All producers rated as "very interested" and "somewhat interested" were at the "tried" stage compared to those rated as "indifferent" and "not interested" at the "planning to try" stage. The producers rated as "very interested" had average diffusion ratings higher than did those who were rated as "somewhat interested," "indifferent" and "not interested." It is interesting to note that only one high producer was rated as "indifferent" compared to six low producers rated as "indifferent."

TABLE LXI

NUMBER AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION
RATINGS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED,
HIGH, MEDIUM AND LOW PRODUCERS BY INTEREST
OF RESPONDENT IN IMPROVING
HIS DAIRY MANAGEMENT*

Degree of Interest in Improving Dairy Manage- ment Level	All Dairymen Interviewed Average No. Rating		High Producers Average No. Rating		Medium Producers Average No. Rating		Low Producers Average No. Rating	
Very Inter- ested	12	4.46	5	4.66	3	4.46	4	4.20
Somewhat In- terested	38	3.88	14	4.00	15	3.83	9	3.78
Indifferent	9	3.38	1	3.22	2	3.65	6	3.31
Not Inter- ested	1	2.48	0	----	0	----	1	2.48
Total	60	3.90	20	4.13	20	3.90	20	3.66

* In the rating scale used, 0 = unaware; 1 = aware of the 23 recommended practices; 2 = interested in the practices; 3 = planning to try practices; 4 = tried the practices, but not using; and 5 = using the practices.

CHAPTER III

SUMMARY

A total of sixty Lincoln County Grade A dairymen who produced and sold milk throughout 1965 were interviewed regarding their dairy production practices.

Using 1965 information obtained from the milk plants and in the interview, the producers were divided into three equal production groups (high, medium and low) according to average annual butterfat sold per cow. Consequently, 20 producers were in each of the three groups.

Producers were questioned concerning their use of 23 recommended production practices, and, as a result, given dairy production management practice diffusion ratings ranging from zero, "unaware," to five, "using." Average practice diffusion ratings were established for all producers and for the three production groups. The practice diffusion ratings were used in comparing the management levels of high, medium and low and all 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) gross family income; (10) herd rating; and (11) interest in improving their dairy management.

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

Feeding information obtained 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, and (5) methods of supplying salt and minerals.

Literature regarding management practices of Grade A dairymen, especially comparative information between high and low producers, was limited in Tennessee, with the exception of similar studies in seven other counties, and other areas as well. Information from other states had little information on the subject. The information dealt largely with Dairy Herd Improvement Association members or producers enrolled in farm record systems in Pennsylvania and Virginia,

and the fact their record keeping and other practices helped them out produce non-members.

I. REVIEW OF FINDINGS

The following is a brief summary of the major findings related to the production and management practices of Grade A dairy producers in Lincoln County:

1. High producers tended to be operating at higher management levels than either the medium or low producers.
2. High producers had higher average practice diffusion ratings on 21 of the 23 production practices than did the low producers.
3. The high producers had ratings of 0.6 diffusion points or more greater than the low producers in the following nine practices: (a) artificially inseminated 1/2 or more of cows; (b) adequate milk records kept; (c) fed cows according to production; (d) keeping adequate herd records; (e) adequate supply of silage provided; (f) hay and/or silage provided when on pasture; (g) strip cup always used; (h) separate feeding and loafing areas provided, and (i) professional advice obtained.
4. The younger dairymen tended to have slightly

higher practice diffusion ratings than the older ones.

5. Dairymen with higher levels of education tended to have slightly higher practice diffusion ratings than others, with a few exceptions.

6. Part-time farmers and producers had a slightly higher practice diffusion rating than full-time farmers.

7. The practice diffusion ratings of producers tended to go up as gross family income increased.

II. IMPLICATIONS

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

1. The data indicated a strong relationship between recommended practices and levels of production.

2. The adoption of practices related to record keeping seemed to have a greater influence on level of production than did most other practices.

3. Lincoln County Grade A dairymen are generally aware of recommended practices, but additional educational efforts are needed if they are to be expected to adopt more recommended practices.

4. Further study of the reasons for the rejection of certain practices need to be made, and the practices re-evaluated, and further educational work done to help producers realize the value of the practices.

PROBLEM C:

FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION

BY LINCOLN COUNTY GRADE A MILK PRODUCERS

CHAPTER I

INTRODUCTION

This report is based on further analysis of data from a survey of 60 Grade A dairymen in Lincoln County, Tennessee. The interview type survey included a random sample of 60 of the 85 Grade A dairymen in Lincoln County who marketed Grade A milk the entire year of 1965.

PROBLEM C:

FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION

BY LINCOLN COUNTY GRADE A MILK PRODUCERS

Dairying is important as an agricultural enterprise in Lincoln County and represents 27 percent of total county farm income. The county's major products are milk, live-stock products, and crops (23).^{*} The dairy industry in the county has undergone many changes during the past several years, even though Lincoln County has been known as one of the leading dairy counties in Middle Tennessee.

Some of the more significant changes during this period were: (1) elevated stalls were increasing in number; (2) bulk tanks and pipeline milking systems were replacing

^{*}Numbers in parentheses refer to numbered references in the Bibliography; those after the colon are page numbers.

CHAPTER I

INTRODUCTION

This report is based on further analysis of data from a survey of 60 Grade A dairymen in Lincoln County, Tennessee. The interview type survey included a random sample of 60 of the 85 Grade A dairymen in Lincoln County who marketed Grade A milk the entire year of 1965.

Dairying is important as an agricultural enterprise in Lincoln County and represents 27 percent of total county farm income. In 1964, dairy products ranked third in enterprise value, as compared to the income from livestock, livestock products, and crops (23).^{*} The dairy industry in the county has undergone many changes during the past several years, even though Lincoln County has been known as one of the leading dairy counties in Middle Tennessee.

Some of the more significant changes during this period were: (1) elevated stalls were increasing in number; (2) bulk tanks and pipeline milking systems were replacing

^{*}Numbers in parentheses refer to numbered references in the Bibliography; those after the colon are page numbers.

the can and cooler system; (3) more rigid health restrictions were imposed; (4) dairymen were required to build a base and have a place on the market before selling Grade A milk; and (5) the total number of farms and dairymen decreased, but the average size herd and production per cow increased.

Members of the county Extension staff have made considerable efforts through the years to present educational information to Lincoln County Grade A dairymen. Some of the methods used include: farm meetings; tours and field days; hay and silage schools; A.B.A. meetings; D.H.I.A. meetings, mass media, youth activities; and individual contacts. Attempts have been made to evaluate the results of such teaching, but no previous attempts had been made to try to determine what factors influence Grade A dairymen to adopt recommended practices relative to dairy management.

I. THE PURPOSE OF THE STUDY

The purpose of this study was to try to determine what factors, other than those identified earlier, influenced Grade A milk producers in Lincoln County to adopt or not to adopt recommended dairy management practices.

II. REVIEW OF LITERATURE

Studies have shown that farmers adopt new ideas or practices at different times (1). They tend to be at different stages in the adoption process at different times as it may relate to a recommended practice or bundle of practices.

Authorities (1:7) generally agree that the stages in the adoption process include the following: (1) awareness (referred to in this study as "aware"); (2) interest (referred to in this study as "interested"); (3) evaluation (referred to hereafter as "planning to try"); (4) trial (called "tried" in this study); and (5) adoption (hereafter called "using"). Research has indicated, in general terms, that as one proceeds from "unawareness" to "using" that more and more intensive or personal contacts are required where adoption of a practice is desired.

At the "aware" or interested stages, mass media sources, such as 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.

III. METHODS

A list of Grade A dairymen in Lincoln County was obtained from the processors buying milk and information concerning total milk sold, butterfat tests, and bacterial count figures were obtained from the milk companies and Health Department.

Sixty dairymen who produced milk throughout 1965 were selected randomly from the original list of 85 Grade A dairymen in Lincoln County. Those selected were 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 one of the related problems above. After the information was obtained, the producers were divided into thirds according to average butterfat sold per cow in 1965. The high group (20 producers) had average butterfat production ranging

downward from 606 to 264 pounds; the medium group (20 producers) had production from 263 to 200 pounds; and the low group (20 producers) were in the range from 199 to 115 pounds. Main comparisons in the present study will be between high and low producers. Analysis will be made based on simple numbers and percents, and averages shown where pertinent. Data, as usual, will be presented in tabular form.

II. THINGS DISLIKED ABOUT GRADE A MILK PRODUCTION

Likewise, each milk producer was asked to tell what he disliked most about Grade A dairy production. In Table LXIII it will be noted that 43 percent (18 dairymen) said Grade A dairying was "too confining." Thirty-five percent of the high producers gave this reason, compared to 40 percent of

CHAPTER II

FINDINGS

I. THINGS LIKED ABOUT GRADE A MILK PRODUCTION

Each producer was asked to tell what he liked most about Grade A dairy production. Table LXII shows that 38 percent (23 dairymen) completed the statement with regard to the fact that it provided them with a marketable product. The second thing most frequently mentioned was "it pays better than manufacturing milk," followed closely with "it provides a regular source of income." When comparing high producers with low producers, it is found that 35 percent listed "pays better than manufactured milk" compared to 15 percent of the low producers listing this reason.

II. THINGS DISLIKED ABOUT GRADE A MILK PRODUCTION

Likewise, each milk producer was asked to tell what he disliked most about Grade A dairy production. In Table LXIII it will be noted that 40 percent (24 dairymen) felt Grade A dairying was "too confining." Thirty-five percent of the high producers gave this reason, compared to 40 percent of

TABLE LXII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
MENTIONING THINGS THEY LIKED MOST ABOUT
GRADE A DAIRY PRODUCTION*

Things Liked Most About Grade A Dairying	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Provides me with a marketable product	23	38	5	25	11	55	7	35
Pays better than manufacturing milk	15	25	7	35	5	25	3	15
Regular source of income	13	22	6	30	2	10	5	25
It's what I know best	4	7	0	0	1	5	3	15
We use the milk in our home	2	3	1	5	0	0	1	5
Live for live- stock	2	3	0	0	1	5	1	5
Being our own boss	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.

TABLE LXVIII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH,
MEDIUM AND LOW PRODUCERS MENTIONING THINGS THEY DISLIKED
ABOUT GRADE A DAIRY PRODUCTION*

Things Disliked Most About Grade A Dairying	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Too confining	24	40	7	35	9	45	8	40
I'm physically unable to do the job right	9	15	5	25	2	10	2	10
I lack the technical knowledge and skill needed	3	5	0	0	1	5	2	10
Margin of profit too small	6	9	1	5	3	15	2	10
My facilities are not suited	4	7	3	15	1	5	0	0
It takes too large an investment	4	7	0	0	2	10	2	10
Inconsistencies and inade- quacies of inspector	2	3	0	0	1	5	1	5
Disease problems	1	2	0	0	0	0	1	5
Labor difficulties	2	3	1	5	0	0	1	5
Other (mud, work on cold winter days)	3	5	1	5	1	5	1	5
Blank	1	2	1	5	0	0	0	0
No dislike	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.

the low producers. The next most frequently mentioned item was "I'm physically unable to do the job right." Fifteen percent (9 dairymen) gave this as their dislike. Some other reasons given were: "lack of technical knowledge;" "my facilities aren't suited;" "margin of profit too small;" "inconsistencies and inadequacies of inspector;" and others.

III. REASONS WHY GRADE A DAIRYMEN DO NOT ADOPT RECOMMENDED PRACTICES

In order to determine the relative importance of some reasons as to why Grade A milk producers do not adopt recommended dairy production practices, each milk producer was asked to select three reasons from a given 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 selection. After the three reasons were selected, he was asked to rank them in order of importance as to why he thought Grade A dairymen do not adopt recommended dairy production practices, and to give any other reason he felt to be important.

Table XLIV shows a combined summary of numbers and percents of all dairymen, high, medium and low producers, who ranked each reason as either first, second or third in

TABLE LXIV

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN INTERVIEWED, HIGH,
MEDIUM AND LOW PRODUCERS RATING VARIOUS REASONS WHY GRADE A
DAIRYMEN DO NOT ADOPT RECOMMENDED DAIRY MANAGEMENT
PRACTICES, FIRST, SECOND OR THIRD RANKING*

Reason Why Dairymen Do Not Adopt Recommended Practices**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Facilities are not suited	56	93	17	85	18	90	21	105
More rewarding activities claim owner's time and money	31	52	13	65	11	55	7	35
Cost of practices out-weigh possible benefits	27	45	8	40	11	55	8	40
Do not have technical knowledge needed	27	45	7	35	8	40	12	60
Physically unable to do neces- sary supervision and management	16	27	7	35	4	20	5	25
Expect to sell dairy herd	8	13	3	15	2	10	3	15
Don't believe practices are sound	5	8	2	10	1	5	2	10
Uncertainty of ownership in undivided estate	4	7	1	5	3	15	0	0
Have tried, and found practices unsatisfactory	3	5	1	5	1	5	1	5
Expect to move away from farm	3	5	1	5	1	5	1	5

*Percents are rounded to the nearest whole number.

**Numbers and percents will not add up to totals since each dairyman gave three reasons.

importance. An examination of the data reveals that there was little difference between the high and low producers with regard to selection of reasons.

Reason 1, "facilities are not suited," was selected by 93 percent of all producers. It was the first reason for high, medium and low producers. Some of the respondents named the lack of silos and adequate housing as being in this category.

Reason 2, "more rewarding activities claim owners time and money," was selected by 52 percent of all dairymen. The general reference regarding these comments were in relation to other farm enterprises and off the farm work.

Reason 3, "cost of practices out weigh possible benefits," was selected by 45 percent of all dairymen. Most of the comments regarding this statement were in regard to the high cost of building improvements and facilities. They felt the cost of these would be hard to recover at their age.

Reason 4, "don't have technical knowledge needed," was also selected by 45 percent of all producers. More of the low producers (60 percent) mentioned this than did the high (35 percent) or the medium group (40 percent). Some of the references to this practice were: (1) labor source

available; and (2) so many technical changes in dairying.

The other reasons and percents of dairymen giving them were: (1) Reason 5, "physically unable to do the job" (27 percent); (2) Reason 6, "expect to sell dairy herd" (13 percent); (3) Reason 7, "don't believe practices are sound" (8 percent); (4) Reason 8, "uncertainty of ownership" (7 percent); (5) Reason 9, "have tried and found practice unsatisfactory" (5 percent); and (6) Reason 10, "expect to move away from farm" (5 percent).

Each respondent was asked to list other reasons why he thought Grade A dairy farmers do not adopt recommended dairy production practices. Twelve percent (7 dairymen) indicated other reasons as shown in Table LXV. Some reasons mentioned were: price of milk, type, and shortage of labor available and others.

IV. DAIRY MANAGEMENT ADVICE SOUGHT

It is generally recognized that Grade A dairymen discuss problems regarding the management of their herds with different individuals (1:7). A study of Table LXVI will reveal that 90 percent of the dairymen interviewed talked to one or more of the individuals listed regarding the management

TABLE LXV

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
LISTING OTHER REASONS WHY GRADE A DAIRYMEN
DO NOT ADOPT RECOMMENDED DAIRY
MANAGEMENT PRACTICES*

Listing of Other Reasons	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	51	85	16	80	18	90	17	85
Other reasons and/or com- ments in- cluded	7	12	3	15	2	10	2	10
No other reasons	2	3	1	5	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

TABLE LXVI

NUMBERS AND PERCENTS OF ALL LINCOLN 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**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None sought	6	10	0	0	4	20	2	10
Health Department Sanitarian	50	83	16	80	16	80	18	90
Neighbor or friend --other dairyman	48	80	19	95	13	65	16	80
Local veterinarian	45	75	17	85	11	55	17	85
Milk plant fieldman	40	67	13	65	13	65	14	70
Feed dealer or salesman	30	50	11	55	6	30	13	65
A.B.A. technician	30	50	12	60	7	35	11	55
County agent	19	32	11	55	4	20	4	20
Extension dairyman	14	23	9	45	4	20	1	5
D.H.I.A. supervisor	14	23	10	50	3	15	1	5
Banker or P.C.A. representative	6	10	3	15	1	5	1	5
Vo-Ag teacher	5	8	3	15	1	5	1	5
Other	2	3	0	0	1	5	1	5
Average Number of Individuals Con- tacted for advice	5.05		6.2		4.0		4.95	

*Percents are rounded to the nearest whole number.

**Number and percents will not add up to the totals
since dairymen talked to one or more individual.

of their dairy herds. Each dairymen talked to an average of 5.05 individuals. The high producers sought advice from more people, 6.2 on the average, than did the medium, 4.0, or the low, 4.95.

As far as all producers were concerned, more reported talking to the health department sanitarian than any other individual. Because of the relatively high standards set by the Lincoln County, Tennessee and Madison County, Alabama, it became necessary for Lincoln County Grade A dairymen to go to this individual for advice. Other studies regarding adopters of new farm ideas have reported that more people talk to neighbors and friends than any other individual (1:7). Three of the other seven similar studies made in Tennessee counties reported findings that the producers interviewed talked to a neighbor or friend most often to obtain advice concerning dairy management (17:123; 13:116; 5:119).

When production groups are compared, it is noted that the high producers (95 percent) most frequently talked to "neighbors or friends," while low producers (90 percent) consulted the "health department sanitarian"--90 percent of the high producers talked to "neighbor or friend" compared to

65 percent for medium, and 80 percent for the low production group.

It has been mentioned that "neighbors and friends" and "county agent" have been the most reliable ways of diffusing information to dairymen and it is borne out in the figures in Table LXVI. Fifty-five percent (11 dairymen) of those in the high group and 20 percent of the medium and low groups, respectively, sought the agents advice.

V. ADDITIONAL SOURCES OF DAIRY MANAGEMENT INFORMATION USED

Table LXVII shows that 98 percent indicated that they received certain dairy management information from sources as listed in the table. All dairymen reported that they received information from an average of 4.87 different sources. The high producers averaged 5.65, medium 4.20 and the low producers 4.75 sources.

Farm magazines were the most popular source reported with 97 percent of all producers indicating this source. Little difference is seen between groups with respect to farm magazines, with 100 percent of high and low producers and 90 percent of the medium group reporting.

TABLE LXVII

NUMBERS AND PERCENTS OF ALL LINCOLN 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**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Farm magazine	58	97	20	100	18	90	20	100
Farm meetings	44	73	16	80	13	65	15	75
Field days and tours	35	58	14	70	14	70	7	35
Radio	29	48	11	55	7	35	11	55
University bulletins and publications	26	43	14	70	7	35	5	25
Daily newspapers	24	40	6	30	7	35	11	55
Weekly newspapers	22	37	7	35	5	25	10	50
Commercial (feed company) bulletins	19	32	10	50	5	25	4	20
Newsletters	17	28	9	45	3	15	5	25
Television	16	27	4	20	5	15	7	35
Other (breed paper)	2	3	2	10	0	0	0	0
No other source	1	2	0	0	1	5	0	0
Average Number of Sources of Information	4.87		5.65		4.200		4.75	

*Percents are rounded to the nearest whole number.

**Numbers and percents will not add up to the totals since dairymen received information from more than one source.

Farm meetings were reported by 73 percent of all producers. It is interesting to note that 80 percent of the high producers and 65 and 75 percent respectively for medium and low producers reporting. Field days and tours, radio and University bulletins were reported 58, 48 and 43 percent respectively for all dairymen. A major difference can be noted between the high and low group in regard to field days and tours and University bulletins. The largest difference noted between groups in Table LXVIII were those reporting information received from University bulletins. Seventy percent of the high producers received information from University bulletins, compared to only 25 percent of the low producers.

VI. DEGREE TO WHICH INTERVIEWER WAS FAMILIAR
WITH DAIRY SITUATION

Table LXVIII reveals that the interviewer was "very familiar" or "fairly familiar" with 64 percent of the dairy situations. Eighty-five percent of the high producers were included in this group, compared to 40 percent of the low group. On the other hand, the interviewer was either "not very familiar" or "not familiar" with a total 33 percent

TABLE LXVIII

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY
DEGREES TO WHICH INTERVIEWER WAS FAMILIAR
WITH THE DAIRY SITUATIONS
OF THE RESPONDENTS

Degree to Which Interviewer Knew Dairy Situation	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Very familiar	8	14	5	25	2	10	1	5
Fairly familiar	30	50	12	60	11	55	7	35
Not very familiar	17	28	2	10	5	25	10	50
Not familiar	3	5	1	5	0	0	2	10
Not answered	2	3	0	0	2	10	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

including 15 percent of the high group, as compared to 60 percent of the low group. The fact that high producers were, in the main better known is consistent with the findings reported elsewhere (24:25).

VII. PRODUCERS' NEED FOR INCREASING ATTENTION TO MANAGEMENT OF HERD

In Table LXIX, it will be noted that, in the interviewer's opinion, 68 percent of the Grade A dairymen "should pay more attention" to the management details of their dairy herds. Closer attention to herd details should result in greater production and, therefore, increase income in the interviewer's opinion.

VIII. DAIRYMEN'S PLANS FOR FUTURE MANAGEMENT

The dairymen interviewed were asked what plans they had for the future management of their dairy herds. The number of practices which they planned to use are shown in Table LXX. Thirty-seven percent of all dairymen indicated they had plans for using one or more of the practices in the future. Twenty-seven and 8 percent had plans for using at least two and three practices, respectively. Fifteen

TABLE LXIX

NUMBERS AND PERCENTS OF ALL LINCOLN 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 to Management of Dairy Herd	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Should pay more attention	41	68	12	60	15	75	14	70
Uncertain	16	27	6	30	5	25	5	25
Should not pay more attention	3	5	2	10	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

TABLE LXX

NUMBERS AND PERCENTS OF ALL LINCOLN COUNTY DAIRYMEN
INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS
ACCORDING TO DAIRYMEN'S PLANS FOR FUTURE
MANAGEMENT OF THE DAIRY HERD

Plans for Management	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
No evidence of any kind	36	60	10	50	14	70	12	60
Plan for using at least (2 practices)	16	27	6	30	4	20	6	30
Plan for using at least (3 practices)	5	8	3	15	1	5	1	5
Plan for using at least (4 practices)	1	2	0	0	0	0	1	5
Not answered	2	3	1	5	1	5	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to the nearest whole number.

CHAPTER III

percent of the high group had plans for using three practices as compared to only 5 percent of the low group.

What are some of the factors that influence Grade A dairymen to adopt recommended dairy management practices? A random sample of 50 of the 85 Grade A dairymen in Lincoln County who produced milk throughout 1963 were asked for certain information in a personal interview that might help to answer this question.

Other studies reviewed disclosed that farmers tend to be at different stages in the adoption process at different times with relation to a given recommended practice or group of practices, and that they may be influenced to proceed toward actual acceptance and use of said practices accordingly. The more advanced the stage, the greater the value of personal contact. Recognizing this fact, efforts were made to try to identify people and information media with which the respondents had been in contact during the previous year.

Each producer was further asked what he "liked" and "disliked" most about Grade A milk production. They were

CHAPTER III

SUMMARY

What are some of the factors that influence Grade A dairymen to adopt recommended dairy management practices? A random sample of 60 of the 85 Grade A dairymen in Lincoln County who produced milk throughout 1965 were asked for certain information in a personal interview that might help to answer this question.

Other studies reviewed disclosed that farmers tend to be at different stages in the adoption process at different times with relation to a given recommended practice or group of practices, and that they may be influenced to proceed toward actual acceptance and use of said practices accordingly. The more advanced the stage, the greater the value of personal contact. Recognizing this fact, efforts were made to try to identify people and information media with which the respondents had been in contact during the previous year.

Each producer was further asked what he "liked" and "disliked" most about Grade A milk production. They were

also asked to select and rank the three most important reasons from a group of ten, as to why Grade A dairymen in general do not adopt recommended practices. They were given an opportunity to add other reasons as desired.

The 60 Grade A dairymen were divided into high, medium and low groups (20 dairymen in each) according to average butterfat sold per cow, and the factors influencing the dairy management adoption of these groups were considered based on a comparison of data obtained from the personal interview.

I. REVIEW OF FINDINGS

In summarizing the information concerning factors influencing management practice adoption of Grade A dairymen in Lincoln County, the findings listed below seem relevant:

1. Of the things liked most by Grade A dairymen, "it provided them with a marketable product" was rated first by 38 percent of the dairymen (25 percent of the high producers and 35 percent of the low producers).

2. "Confinement" was the greatest dislike given by 40 percent of the dairymen (35 percent of the high and 40 percent of the low).

3. Respondents felt that, in general, Lincoln County Grade A dairymen most often do not adopt recommended production practices because "facilities are not suited" (93 percent reporting), "more rewarding activities claim owners time and money" (52 percent reporting) and "cost of practices outweigh possible benefits" (45 percent reporting).

4. Ninety percent of the Lincoln County dairymen indicated they sought advice from various individuals, high producers preferring to seek, in order, advice from "neighbor or friend," "local veterinarian," "health department sanitarian," "milk plant fieldmen," "A.B.A. technician," and "county agent," while low producers sought advice most from the "health department sanitarian," "local veterinarian," "neighbor or friend," "milk plant fieldmen," and "feed dealer or salesman," in that order.

5. All producers indicated that they received information from some mass or group contact, including, in descending order, farm magazines, farm meetings, field days and tours, radio, and University bulletins.

6. The Extension agent was more familiar with the high producers (80 percent) than the low group (40 percent).

7. In the interviewers opinion, most Lincoln County

dairymen (68 percent) should have been paying more attention to the management of their dairy herds.

8. Thirty-seven percent of the dairymen had future plans for using one or more practices.

II. IMPLICATIONS

The Agricultural Extension educational program with Grade A milk producers in Lincoln County could be strengthened based on the information obtained from this study. The following factors should be considered in planning and conducting an educational program for dairymen:

1. Most dairymen liked Grade A milk production because it provided them with a marketable product. Although most dairymen disliked confinement, it may be assumed that the majority are interested in a regular income.

2. Careful consideration should be given to the main reasons given for Grade A dairymen not adopting recommended dairy production practices when planning Extension teaching.

3. Dairymen indicated that they used various sources of information regarding the management of their dairy herds. These should be explored and used more widely to encourage practice adoption.

4. Some dairymen stated they had plans for using one or more of the 23 practices considered. These plans should be studied and educational programs planned accordingly to help dairymen adopt these practices.

5. Grade A dairymen should be familiarized with the information gained from this and the two related studies, and plans made for Extension teaching.

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Knoxville, Tennessee

TENNESSEE GRADE "A" DAIRYING 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 Grade "A" dairymen. 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 Grade "A" dairy 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 underline it.

THE AGRICULTURAL EXTENSION SERVICE, UNIVERSITY OF TENNESSEE
Knoxville, Tennessee

TENNESSEE GRADE "A" DAIRYING 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 Grade "A" dairymen. 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 Grade "A" dairy 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 Grade "A" dairy 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 Grade "A" dairy farmers 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 Grade "A": dairy farmers 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.

Rand	1	2	3
Card Number			

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

	Read or		Inter-		Is using		Has	
	Heard of		ested in		or will		Tried	
	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(3) Having a basis for weighing feed and grain and feeding 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 never trying practice OR not using it after trying _____

(4) Providing an adequate (6-8 tons annually per cow) supply of silage (when fed with hay)								
--	--	--	--	--	--	--	--	--

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

	Read or		Inter-		Is using		Has	
	Heard of		ested in		or Will		Tried	
	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(6) Providing enough roughage ($2\frac{1}{2}$ # 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 it after trying _____

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

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

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

i. Reasons for not trying practice OR not using it after trying _____

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

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

	Read or		Inter-		Is using		Has	
	Heard of		ested in		or Will		Tried	
	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(10) Providing sufficient summer pasture ($\frac{1}{4}$ to $\frac{1}{2}$ A. per cow)								

i. Reasons for not trying practice OR not using it after trying _____

(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 never trying practice OR not using it after trying _____

(12) Raising at least 75% of all herd replacements								
--	--	--	--	--	--	--	--	--

i. Reasons for not trying practice OR not using it after trying _____

(13) Annually providing an average of sixty days per cow for dry period								
---	--	--	--	--	--	--	--	--

i. Reasons for never trying OR not using it after trying _____

(14) Maintaining a 12-14 month calving period for each cow in the herd								
--	--	--	--	--	--	--	--	--

i. Reasons for not trying practice OR not using it after trying _____

	Read or		Inter-		Is using		Has	
	Heard of		ested in		or Will		Tried	
	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(15) Having at least 75% of cows in the herd freshen in the fall								

i. Reasons for never trying OR not using it after trying _____

(16) Permanently identifying each calf as to sire and dam

--	--	--	--	--	--	--	--

i. Reasons for not trying practice OR not using it after trying _____

(17) Vaccinating all calves (at 4-10 months of age) for brucellosis, blackleg, etc.

--	--	--	--	--	--	--	--

i. Reasons for never trying OR not using it after trying _____

(18) Keeping adequate herd records

a) Calving

b) Health

c) Heat

--	--	--	--	--	--	--	--

i. Reasons for not trying practice OR not using it after trying _____

	Read or		Inter-		Is using		Has	
	Heard of		ested in		or Will		Tried	
	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(19) Using a strip cup on each cow before each milking								

i. Reasons for not trying practice OR not using it 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 not trying practice OR not using it after trying _____

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

i. Reasons for not trying practice OR not using it after trying _____

(22) Systematically using a recommended method of Fly Control around barns, loafing and milking areas								
---	--	--	--	--	--	--	--	--

i. Reasons for not trying practice OR not using it after trying _____

ii. TO INTERVIEWER: If recommended method is used, explain the system mentioned _____

	Read or		Inter-		Is using		Has	
	Heard of		ested in		or Will		Tried	
	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(23) Getting the advice of professional dairy workers								

i. Reasons for not trying practice OR not using it 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 P.C.A. representative _____
- j. Neighbor or friend (other dairyman) _____
- k. Health department sanitarian _____
- l. Other (please 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) bulletins _____
- c. Farm magazines _____
- d. Daily newspapers _____
- e. Weekly newspapers _____
- f. Radio _____

g. Television_____

i. Field day and tours_____

h. Farm meetings_____

j. Newsletters_____

12. What was the highest grade level that you completed?
(Circle one)

0	12345678	9 10 11 12	Bachelor's
None	Grade Sch.	H. S.	Degree
	Master's	Doctor's	
	Degree	Degree	

13. Age of respondent?

a. Under 25_____

d. 45 - 54_____

b. 25 - 34_____

e. 55 - 64_____

c. 35 - 44_____

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)

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

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

<u>Crop</u>	<u>Acres</u>	Bottom or	<u>Yield</u>	<u>Disposition</u>	
		<u>Upland</u>		<u>Used</u>	<u>Sold</u>
Corn (grain)	_____	_____	_____	_____	_____
Corn(silage)	_____	_____	_____	_____	_____
Grass(silage)	_____	_____	_____	_____	_____
Kind? _____					
Hay:					
Kind _____	_____	_____	_____	_____	_____
Kind _____	_____	_____	_____	_____	_____
Kind _____	_____	_____	_____	_____	_____

<u>Crop</u>	<u>Acres</u>	<u>Bottom or Upland</u>	<u>Yield</u>	<u>Disposition Used</u>	<u>Sold</u>
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 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 (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 of 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% _____
e. Other(specify) _____

24. Do you mix your own concentrates?

a. Yes _____ b. Some _____ c. 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 do 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 square feet)

- | | |
|-------------------|----------------------------|
| 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 above 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?

<u>Type of Silo</u>	<u>Size</u>	<u>Type of Cover</u>			
		<u>Roof</u>	<u>Plastic</u>	<u>Other</u>	<u>None</u>
Upright _____	_____	_____	_____	_____	_____
Trench _____	_____	_____	_____	_____	_____
Bunker _____	_____	_____	_____	_____	_____

42. Who does the milking?

- a. Owner _____ b. Tenant _____ c. Other (Please specify) _____

43. If 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. 0-1999_____ | 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 _____

NAME OF RESPONDENT _____

NUMBER _____

QUESTIONS FOR THE INTERVIEWER TO ANSWER:

38. All people do not adopt new practices at the same time. About where would you place the respondent with respect to adopting new recommended woodland practices?
- a. Among the first few _____
 - b. Soon after the first few _____
 - c. Sooner than the average _____
 - d. A little later than most owners _____
 - e. Among the last few _____
39. Is the respondent
- a. Man _____
 - b. Woman _____
40. Interest of respondent in improving his woodland (In interviewer's judgment)
- a. Very interested _____
 - c. Indifferent _____
 - b. Somewhat interested _____
 - d. Not interested _____
41. Respondent's attitude toward survey (In interviewer's judgment)
- a. Friendly _____
 - c. Indifferent _____
 - b. Somewhat friendly _____
 - d. Antagonistic _____
42. Should the respondent pay more attention to the management of his woodland in light of his situation?
- a. Yes _____
 - b. No _____
 - c. Uncertain _____

43. How well do you know the respondent?

- a. Very well _____ c. Not very well _____
b. Fairly well _____ d. Not at all _____

44. How familiar are you with the respondent's woodland situation?

- a. Very familiar _____ c. Not very familiar _____
b. Fairly familiar _____ d. Not familiar _____

45. If very or fairly familiar with their woodland situation, how would you rate the present condition and value of his woodland?

- a. Excellent _____ c. Fair _____
b. Good _____ d. Poor _____

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