December 1, 1965

To the Graduate Council:

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

Robert L. Peters
Major Professor

We have read these problems
and recommend their acceptance:

Lewis H. Dickson

Don O. Richardson

Wm. M. Miller

Accepted for the Council:

Dean of the Graduate School

GRADE A MILK PRODUCERS IN SULLIVAN COUNTY, TENNESSEE:

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

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

PROBLEM C: FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION BY SULLIVAN COUNTY GRADE A MILK PRODUCERS

Three Related Special Problems in Lieu of Thesis

In Partial Fulfillment

of the Requirements of the Degree

Master of Science

---

by

Charles D. Holland

December 1965

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PROBLEM A

CHARACTERISTICS OF SULLIVAN COUNTY GRADE A MILK PRODUCERS AND THEIR FARMS

A Special Problem in Lieu of Thesis

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

Charles D. Holland

December 1965

CHAPTER I

INTRODUCTION

Sullivan County was one of several Tennessee counties participating in a statewide dairy study under the guidance of the Agricultural Extension Training and Studies Department and the Dairy Department of the University of Tennessee.

Dairying is the largest source of agricultural income in Sullivan County. The dairy enterprise is made up of both Grade A and manufacturing milk producers (19:7).*

The average size of farms for the county in 1959 was 57 acres. The United States Census of Agriculture for 1959 listed 2,575 farms as comapred to 3,499 farms in 1954 (19). The number of Grade A milk producers in the county has continued to decline. In March of 1963, the Federal Milk Market Administrator listed 74 Grade A milk producers as comapred to only 64 as of December, 1964 (3). Many of the small dairymen were selling their farms for housing development projects.

I. THE SITUATION AND NEED FOR THE STUDY

In recent years dairying has continued to rank fourth in importance as a source of agricultural income in Tennessee. Annual receipts

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

averaged about 85 million dollars for the period 1959-1963. There were approximately 444,000 dairy cows in Tennessee in 1965. Average milk production per Tennessee cow that year was only 4,700 pounds, while the average American cow was producing 7,545 pounds. Research suggests that production per cow of less than 6,000 pounds is unprofitable, and that cows producing below that amount should be culled and replaced (2).

The 1959 Agricultural Census (9) showed that the number of milk cows and heifers in Sullivan County was decreasing. There were 9,969 animals reported in 1954 and only 7,221 animals in 1959. Although the total number of milk cows had decreased, the milk and butterfat production per cow had increased. This accounted for the increase in value of products sold from the dairy industry. In 1959, the value of dairy products sold in Sullivan County was $1,667,430 as compared to $988,264 in 1954.

Data concerning dairymen in Sullivan County were not available for those planning the County Extension Program.

II. THE PURPOSE OF THE STUDY

The study was designed to find out the characteristics of Grade A milk producers who produced in high, medium and low thirds in annual pounds of butterfat produced per cow in 1963.

The present study was conducted specifically to consider educational level, age, sex, gross family income and other relevant factors related to high, medium and low butterfat production per cow.

III. REVIEW OF LITERATURE

A small amount of relevant literature was found to be available concerning the characteristics of Grade A milk producers in Tennessee and neighboring state. Givan (5) found that the average Tennessee Grade A milk producer was 47 years old, operated a farm consisting of about 250 acres of land and had a herd of 41 mature cows. He also found that only about one percent of the sampled Grade A producers were under 25 years of age, and about six percent over 65. The largest proportion, approximately one-third, were in the 45-54 year age group.

In a Virginia study of Grade A milk producers in 1958, it was found that the average dairymen was between 40 and 50 years of age, had 9 years of formal education, milked 40 cows in a stanchion-type barn, used some artificial breeding and expected to increase the size of his herd (11).

Hale (6) reported in a study made in Bradley County that a strong relationship existed between the average production of milk per cow and the average tons of silage produced and fed per cow.

O'Neal (14) found by studying 20 Grade A milk producers in Anderson County that the level of milk production was related to the dairymen's managerial ability. He also found a relationship between the level of milk production and the quality of feed fed to the lactating cows.

IV. METHODS

A comprehensive survey (see Appendix) consisting of 45 questions, some containing several sub-parts, was completed by personal interview with each of the 60 Grade A milk producers in Sullivan County in 1964. Correct data were not available for two other dairymen. Four of the dairymen operated two farms or dairy operations each. Only one survey was filled out for each of the four individuals. Pounds of milk, pounds of butterfat and average bacterial count figures for each of the dairymen were obtained from the local milk producers' association for calendar year 1963. Dairymen studied were grouped into thirds based on average pounds of butterfat produced per cow in 1963 (see Table I). In addition to the regular survey, the interviewer answered eight other questions concerning the respondent after the interview was completed. These questions dealt with the respondent's attitude, level of adopting new dairy practices and how well the interviewer knew the respondent. In the main, data were analyzed in terms of numbers and percents only. Where applicable, averages or medians also were computed.

TABLE I

NUMBER OF SULLIVAN COUNTY GRADE A DAIRYMEN ACCORDING TO AVERAGE PER COW BUTTERFAT PRODUCTION IN 1963

Average per Cow Butterfat Production Group	Number of Producers Interviewed
Low	20
Medium	20
High	20
Total	60

CHAPTER II

FINDINGS

I. DEGREE TO WHICH INTERVIEWER KNEW GRADE A MILK PRODUCERS

The interviewer rated each respondent as to how well he knew him. Table II shows that 52 percent of the dairymen were know at least "fairly well," 31 percent "not very well," and 17 percent "not at all." Fifteen percent of the high producers and 70 percent of the low producers were known "not at all" or "not very well."

II. RESPONDENT ATTITUDE TOWARD SURVEY

Table III shows that 78 percent of the respondents had a "friendly" attitude toward the survey. There were 3 dairymen who had "indifferent" attitudes, one in each group.

III. EDUCATIONAL LEVEL

The average grade level for high producers (12.0) exceeded both the average levels for medium (10.0 grades) and low (10.4 grades) producers (see Table IV).

There was quite a range in educational level among the 60 dairymen. One dairymen was in the "1 - 4" grade level; while, at the other end of the scale, another held a "bachelor's" degree. Twenty were in the "12" grade level.

TABLE II

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

Degree to Which Interviewer Knew Respondent	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Very well	1	2	1	5	0	0	0	0
Fairly well	30	50	16	80	8	40	6	30
Not Very Well	19	31	1	5	11	55	7	35
Not At All	10	17	2	10	1	5	7	35
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 SULLIVAN 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	47	78	16	80	17	85	14	70
Somewhat Friendly	10	17	3	15	2	10	5	25
Indifferent	3	5	1	5	1	5	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE IV

EDUCATIONAL LEVELS OF ALL SULLIVAN 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.	%
1-4 (elementary)	1	2	0	0	0	0	1	5
5-7	4	7	1	5	3	15	0	0
8	14	23	1	5	6	30	7	35
9-11	8	13	3	15	3	15	2	10
12	20	33	9	45	5	25	6	30
1-3 (college)	12	20	6	30	2	10	4	20
Bachelor's	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Educational Level	10.8 grades		12.0 grades		10.0 grades		10.4 grades	

*Percents are rounded to nearest whole number.

Of the 20 high producers, 18 had an educational grade level of "9 - 11 or more." The largest number of lower producers had a grade level of "8."

IV. AGE GROUPS

Table V shows that the average age of all producers interviewed was 47 years. The average age of high producers was 43 years; for medium was 49 years; and for low was 51 years.

Only nine producers, 5 of them high producers, were under 35 years of age. Two were "65 or more" years old, one each in medium and low categories.

The age category which included the largest percentage of dairymen was the "45 - 54" bracket with 38 percent.

V. GROSS FAMILY INCOME

As pointed out in Table VI, there were 7 producers who had gross family incomes of "$2,000 - $3,999." Only four producers did not answer the question. While only 15 percent of the high producers had incomes under $8,000, 30 percent of the medium and 40 percent of the low groups had such incomes.

When average gross family incomes for the three groups are compared, it is noted that high producers had a considerably higher one ($16,700) than did either medium ($14,053) or low ($10,059).

TABLE V

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

Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Under 25	2	3	1	5	1	5	0	0
25 - 34	7	12	4	20	2	10	1	5
35 - 44	13	22	7	35	3	15	3	15
45 - 54	23	38	4	20	8	40	11	55
55 - 64	13	22	4	20	5	25	4	20
65 or more	2	3	0	0	1	5	1	5
Total	60	100	20	100	20	100	20	100
Average age	47 years		43 years		49 years		51 years	

*Percents are rounded to nearest whole number.

TABLE VI

TOTAL 1963 GROSS FAMILY INCOMES OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE INCOMES*

Family Income Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	4	7	0	0	1	5	3	15
$2,000-3,999	7	11	3	15	2	10	2	10
$4,000-5,999	5	8	0	0	1	5	4	20
$6,000-7,999	5	8	0	0	3	15	2	10
$8,000-9,999	4	7	2	10	2	10	0	0
$10,000-11,999	7	12	1	5	3	15	3	15
$12,000-13,999	8	13	2	10	3	15	3	15
$14,000-15,999	5	8	3	15	2	10	0	0
$16,000-17,999	1	2	0	0	1	5	0	0
$18,000-19,999	3	5	1	5	0	0	2	10
$20,000-21,999	3	5	2	1	0	0	1	5
$22,000-23,999	3	5	2	10	1	5	0	0
$24,000-25,999	2	3	2	10	0	0	0	0
$26,000-29,999	1	2	1	5	0	0	0	0
$30,000-49,999	1	2	1	5	0	0	0	0
$50,000-99,999	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average for Those Reporting	$13,786		$16,700		$14,053		$10,059	

*Percents are rounded to nearest whole number.

VI. SEX GROUPS

Of the total number of respondents interviewed there were 55 males and 5 females. One woman fell in the medium and 4 in the low production groups. From the data presented, the men appear to be higher producers (as Grade A dairymen) than the women.

VII. MAJOR OCCUPATIONS

Seventy-three percent of the dairymen interviewed were classified as "full-time farmers." In Table VII, it is seen that relatively little difference existed in the three production groups compared.

Major occupations appeared to have no visible relation to production though full-time farmers did predominate.

VIII. MAJOR FARM ENTERPRISES

Dairying was the major farm enterprise for 85 percent of the 60 dairymen interviewed. The other 9 fell into the following categories: Tobacco - 1; nonfarmer - 1; other - 7. The "other" category consisted of people who were employed by local industry and dairying was not their major source of income.

Little difference was noted when production groups were compared.

TABLE VII

MAJOR OCCUPATIONS OF ALL SULLIVAN 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	44	73	14	70	16	80	14	70
Part-time Farmer	7	12	3	15	1	5	3	15
Business Man	3	5	2	10	1	5	0	0
Housewife or Widow	3	5	0	0	1	5	2	10
Other	3	5	1	5	1	5	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

IX. TOTAL FARM ACREAGE

Data in Table VIII point out the fact that the size of farms of high producers (204 acres) averaged slightly higher than those in medium (180) and low groups (199). However, it should be noted that more than two-thirds (70 percent) of the higher producers had farms totaling less than 200 acres; while only about one-half (55 percent) of the low producers had farms so small.

X. TOTAL CROPLAND ACREAGE

Cropland acreage was somewhat limited on almost all Grade A farms in the county. Fifty-two percent of the farms fell in the "50-99" acre interval; while only 5 percent had in excess of 300 acres of cropland. When production groups were compared, little difference was noted in average acres of cropland. (See Table IX).

XI. NUMBER OF COWS MILKED

The average size of milking herd for all dairymen was 35 cows. The "12 - 29" cow herd size was the most popular category since 43 percent were included.

Study of Table X shows that there was little difference to be seen when high, medium and low producers were compared on the basis of size of herd.

TABLE VIII

TOTAL FARM ACREAGE CATEGORIES OF ALL SULLIVAN 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	9	15	1	5	5	25	3	15
100-149	15	25	9	45	4	20	2	10
150-199	13	22	4	20	3	15	6	30
200-249	6	10	1	5	2	10	3	15
250-299	6	10	2	10	3	15	1	5
300-349	7	12	0	0	2	10	5	25
350-399	0	0	0	0	0	0	0	0
400-449	1	1	0	0	1	5	0	0
450-499	0	0	0	0	0	0	0	0
500-549	3	5	3	15	0	0	0	0
Total	60	100	20	100	20	100	20	100
Average Acres in Farm	194		204		180		199	

*Percents are rounded to nearest whole number.

TABLE IX

TOTAL CROPLAND ACREAGE CATEGORIES OF ALL SULLIVAN 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	4	7	3	15	0	0	1	5
50-99	27	45	8	40	11	55	8	40
100-149	14	23	5	25	4	20	5	25
150-199	9	15	2	10	3	15	4	20
200-249	3	5	0	0	1	5	2	10
250-299	0	0	0	0	0	0	0	0
300-349	2	3	1	5	1	5	0	0
350-399	1	2	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Average Acres In Cropland	112		112		113		112	

*Percents are rounded to nearest whole number.

TABLE X

TOTAL NUMBERS OF COWS MILKED BY ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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.	%
12-29	26	43	8	40	12	60	6	30
30-49	25	42	9	45	5	25	11	55
50-69	6	10	2	10	2	10	2	10
70-100	3	5	1	5	1	5	1	5
Total	60	100	20	100	20	100	20	100
Average Herd Size	35 cows		34 cows		32 cows		38 cows	

*Percents are rounded to nearest whole number.

Registered Cows

Nearly one-third (32 percent) of the dairymen reported no registered cows in their herds. However, only 1 high producer did not have registered cows - 40 percent of those in the medium and 50 percent of those in the low groups so reporting. Eighty-five percent of the high producers had more than 10 registered cows, for an average of 23; while only 25 percent of the low producers had more than 10 cows for an average of 6 per herd (see Table XI).

Breed of registered cows. Thirty-two percent of dairymen interviewed did not milk any registered cows in 1963. Only 1 high producer reported not milking any registered cows. There were 8 medium producers and 10 low producers without registered milk cows.

Table XII shows the largest number of registered cows to be of the Holstein breed. There were 8 registered Guernsey herds. Eleven dairymen reported having both Guernsey and Holsteins.

The high producers milked more registered Holsteins than the medium or low producers. Also, four of the Guernsey dairymen were in the high production level compared with 3 and 1 for medium and low producers, respectively.

Grade A milk producers of Sullivan County are using primarily two breeds of dairy animals. There were no registered Jersey's, Brown Swiss or Aryshires.

TABLE XI

TOTAL NUMBERS OF REGISTERED COWS MILKED BY ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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	19	32	1	5	8	40	10	50
1-9	14	23	2	10	7	35	5	25
10-19	12	20	7	35	3	15	2	10
20-29	9	15	5	25	2	10	2	10
30-39	3	5	2	10	0	0	1	5
40-49	2	3	2	10	0	0	0	0
70-75	1	2	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Average Number	12 cows		23 cows		6 cows		6 cows	

*Percents are rounded to nearest whole number.

TABLE XII

BREEDS OF REGISTERED COWS MILKED IN 1963 BY ALL SULLIVAN 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	19	32	1	5	8	40	10	50
Guernsey	8	13	4	20	3	15	1	5
Holstein	19	31	10	50	6	30	3	15
Jersey	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Guernsey and Holstein	11	18	4	20	3	15	4	20
Guernsey, Holstein and/ or Jersey	2	3	1	5	0	0	1	5
Holstein and Jersey	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

Grade Cows

The average number of Grade cows milked by the 60 dairymen was 23. The high producers had an average of only 12 grade cows; medium, 27; and low producers had the highest number with 31.

This bears out the apparent relationship between milk production and the number of registered cows milked as indicated above in Table XI.

Breed of grade cows. As shown by data in Table XIII there were 20 percent of the high producers had no grade cows at all. Seventy percent of the high producers did milk some grade Guernseys, Holsteins or both as compared to 55 percent of the low producers.

More of the medium and low producers milked grade cows than registered cows. Members of these production groups also used some grade Jersey and Brown Swiss cows. Some milked all four breeds.

There seems to be a relationship between high milk production and number of registered cows milked.

XII. HEIFERS ONE YEAR OLD OR OLDER

Table XIV gives the total number of heifers one year or older kept by the 60 dairymen. Three of the dairymen bought all of their replacement animals. The largest number of heifers kept was in the "1 - 10" bracket, only 3 dairymen (high producers) having more than 21 heifers.

TABLE XIII

BREEDS OF GRADE COWS MILKED IN 1963 BY ALL SULLIVAN 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.	%
None	4	7	4	20	0	0	0	0
Guernsey	3	5	1	5	2	10	0	0
Holstein	16	27	8	40	2	10	6	30
Guernsey and Holstein	17	28	5	25	7	35	5	25
Guernsey, Holstein and/or Jersey	13	22	2	10	5	25	6	30
Holstein and Jersey	3	5	0	0	3	15	0	0
Brown Swiss and/or Holstein and/or Jersey and/or Guernsey or other	2	3	0	0	0	0	2	10
All Four Above	1	2	0	0	1	5	0	0
All Four and Other	1	1	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XIV

TOTAL NUMBERS OF HEIFERS ONE YEAR OR OLDER KEPT BY ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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	3	5	0	0	3	15	0	0
1-10	37	62	11	55	12	60	14	70
11-20	17	28	6	30	5	25	6	30
21-30	2	3	2	10	0	0	0	0
31-40	0	0	0	0	0	0	0	0
41-50	1	2	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Average Number Kept	9 heifers		12 heifers		7 heifers		8 heifers	

*Percents are rounded to nearest whole number.

The high producers kept the largest average number of heifers for replacement animals (12). This may be due to the fact that this group of producers had been using artificial insemination longer than most of the medium (7 heifer average) and low (8 heifer average) producers.

Registered Heifers

Fewer of the medium and low producers were found to be keeping registered heifers than was true for high producers. This may be related to the fact that these groups also had fewer regristered cows. The high producers kept an average of 9 registered heifers; whereas, the medium and low producers had an average of only 1 each.

Breed of registered heifers. Table XV shows that more high producers in Sullivan County kept registered heifers than was true for medium (40 percent) or low (45 percent) did not own any registered heifers of any breed.

The dairymen who had registered heifers were raising the animals from cows in their herds. They were primarily Guernsey and Holstein heifers. Four producers had heifers of the above breeds plus Jerseys.

The general trend of dairymen in the county was to go to one breed of cows, either Guernsey or Holstein.

TABLE XV

BREEDS OF REGISTERED HEIFERS KEPT IN 1963 BY ALL SULLIVAN 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	25	42	2	10	12	60	11	55
Guernsey	9	15	5	25	2	10	2	10
Holstein	22	37	13	65	5	25	4	20
Guernsey and Holstein	3	5	0	0	1	5	2	10
Guernsey, Holstein and/ or Jersey	1	1	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

Grade Heifers

Ninety-five percent of the low producers had an average of 7 grade heifers one year of age or older per herd; 70 percent of the medium had 5 per herd, and 70 percent of the high had only 3 per herd, on the average. This further points to the probable merits of keeping more registered heifers as indicated earlier above.

Breed of grade heifers. Three medium and low producers reported not having any grade heifers. The Grade A dairymen are keeping fewer grade heifers and more registered heifers for her replacements.

Holstein heifers kept far exceed all other breeds. Guernseys are second in popularity with a Brown Swiss or Jersey widely scattered. Table XVI gives the results.

XIII. HEIFERS UNDER ONE YEAR OF AGE

Table XVII shows that the average number of heifers kept under one year of age was about the same as that for heifers kept that were one year old or older (Table XIV). When production groups were compared, again it was noted that more high producers kept an average of more heifers per herd (12) than medium (7) or low (8).

Registered Heifers

The average number of registered heifers under one year of age was 4 for all dairymen. More high producers (95 percent) had an average of 9 with only 1 each for the medium (25 percent reporting) and low

TABLE XVI

BREEDS OF GRADE HEIFERS KEPT IN 1963 BY ALL SULLIVAN 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.	%
None	9	15	6	30	2	10	1	5
Guernsey	6	10	2	10	3	15	1	5
Holstein	30	50	11	55	9	45	10	50
Guernsey and Holstein	9	15	1	5	3	15	5	25
Guernsey, Holstein and/ or Jersey	4	7	0	0	2	10	2	10
Holstein and Jersey	1	2	0	0	1	5	0	0
Brown Swiss and/ or Holstein and/or Jersey and/or Guernsey or other	1	1	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XVII

TOTAL NUMBERS OF HEIFERS UNDER ONE YEAR OF AGE KEPT BY ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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	6	10	0	0	3	15	3	15
1-10	39	65	12	60	14	70	13	65
11-20	9	15	5	25	2	10	2	10
21-30	5	8	3	15	1	5	1	5
31-40	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100
Average Number Kept	9		12		7		8	

*Percents are rounded to nearest whole number.

(30 percent reporting heifers) producers.

Most of the dairymen had mixed herds (registered and grade cows) and tended to keep heifers from the higher producing cows, whether registered or not.

Grade Heifers

The average number of grade heifers under one year kept by all dairymen was 5.

The medium (6 heifers) and low (7 heifers) producers had an average of more grade heifers than the high producers (only 3).

XIV. BULLS KEPT

Seventy-eight percent of the dairymen did not keep a bull, while 18 percent reported keeping 1 bull and four percent had 3 or more.

Table XVIII shows the numbers of bulls kept according to high, medium and low production categories.

East Tennessee Artificial Breeders Association had been formed in the county in 1947. Many of the small dairymen were using artificial breeding 100 percent. The dairymen who kept a bull reportedly used him to breed heifers, cows that were hard to settle artificially, or cows from which they didn't desire to keep a replacement calf. Since heat periods of yearling heifers turned out to pasture are often hard to detect, some said they ran a bull with the heifers for breeding purposes.

TABLE XVIII

TOTAL NUMBERS OF BULLS KEPT BY ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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	47	78	14	70	15	75	18	90
1	11	18	5	25	4	20	2	10
2	0	0	0	0	0	0	0	0
3	1	2	1	5	0	0	0	0
4	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100
Average Number of Bulls Kept	1.4		1.3		1.6		1.0	

*Percents are rounded to nearest whole number.

All of the high producers who kept bulls were using a registered bull. The medium and low producers were using both registered and grade bulls.

Breed of Registered Bulls

Fourteen dairymen reported owning registered bulls. Four were Guernseys and 10 Holsteins. Only 1 Guernsey bull was kept by a medium or low producer. This indicates that only the high Guernsey producers are keeping bulls; whereas high, medium and low Holstein producers are keeping bulls.

Breed of Grade Bulls

Four grade Holsteins and 2 grade Jersey bulls are all that were kept by the dairymen interviewed. One Holstein bull was kept by a medium producer and 3 by low producers. The Jersey bulls were kept by low producers.

The author did not see any of the grade bulls, but if they are of poor quality this may account for part of the reason why these producers are in the medium and low categories.

XV. TYPE OF MILKING FACILITIES

Table XIX shows that 65 percent of dairymen interviewed used the "stanchion" milk barn. All other dairymen were using the newer type milking parlor or "elevated stall".

TABLE XIX

TYPES OF MILKING FACILITIES USED BY ALL SULLIVAN 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	38	63	13	65	12	60	13	65
Elevated Stall	21	35	7	35	7	35	7	35
Stanchion and Elevated	1	2	0	0	1	5	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

The type of milking facilities used did not appear to affect milk production. There is no appreciable difference to be seen when high, medium and low producers are compared.

XVI. SIZE OF BULK TANK

All Grade A milk producers of Sullivan County who shipped milk to any of the plants had bulk tanks. The producers who marketed their milk through the Southeast Milk Producers Association were told to have bulk tanks by January 1958.*

Table XX shows that 72 percent of the dairymen interviewed had bulk tanks with a capacity between 250-499 gallons. There appeared to be no appreciable difference between the high, medium and low producers who all appeared to use the "popular" size of tanks. The medium and low producers reportedly had more need for the larger tanks during the peak milk production period of the spring months. Throughout the remainder of the year some of these producers could have used smaller tanks.

XVII. PIPELINE SYSTEM AND WEIGHING DEVICES

As seen in Table XXI, only 17 percent of the dairymen interviewed had pipeline milk systems. The other 83 percent of the producers were carrying the milk to the bulk tank.

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*Statement made by Mr. Charles Kilby in a personal interview granted in October 1965.

TABLE XX

NUMBERS AND PERCENTS OF ALL SULLIVAN 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.	%
100-249	9	15	2	10	4	20	3	15
250-499	43	72	14	70	14	70	15	75
500-749	7	11	4	20	1	5	2	10
750-999	0	0	0	0	0	0	0	0
1000-1249	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 XXI

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

Had Pipeline Systems	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Yes	10	17	4	20	3	15	3	15
Had Weighing Device	2	3	1	5	1	5	0	0
Used Device	2	2	1	5	1	5	0	0
Didn't Use	0	0	0	0	0	0	0	0
Didn't Have Weighing Device	8	14	3	15	2	10	3	15
No	50	83	16	80	17	85	17	85
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

Of the 10 producers having pipeline systems only 2 had a weighing device on the system. Both of them used the weighing devices to weigh the milk produced from each cow milked. They were in high and medium categories.

XVIII. KIND OF SILO

Table XXII shows that 12 percent of the producers did not have silos - only one of the high producers did not have a silo.

The trench silo was the most popular kind in the county for dairymen with 48 percent using this type or in combination with upright. More high producers had upright silos than others.

XIX. STORAGE CAPACITY FOR SILAGE

None of the dairymen interviewed who had silos had less than 50 tons of storage capacity available. Twenty-seven percent had a storage capacity in the interval of "200-299" tons. High producers averaged more capacity (282 tons) than did medium (198 tons) or low (197 tons) producers.

XX. SOURCE OF WATER FOR COWS

None of the dairymen interviewed had drinking cups in the barn as a source of water for their cows. All of the dairymen used a stanchion or an elevated stall milking parlor for milking and after milking the cows were removed to a loafing shed or barn. Nine producers had

TABLE XXII

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

Type of Silo	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	7	12	1	5	4	20	2	10
Upright	13	22	7	35	4	20	2	10
Trench	23	38	9	45	6	30	8	40
Bunker	8	13	1	5	3	15	4	20
Upright and Trench	6	10	1	5	3	15	2	10
Upright and Bunker	2	3	1	5	0	0	1	5
All Three	1	2	0	0	0	0	1	5
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

water troughs in the loafing area. None of the producers used a pond as the only source of water. Ten watered their cows from a nearby stream.

XXI. AMOUNT OF LOAFING BARN AREA

One low producer provided less than 30 square feet of loafing barn area. Table XXIII shows that 67 percent had adequate loafing area per cow with 60 or more square feet.

Three of the high producers had "box (free) stalls" for their cows. The stalls are becoming more popular as bedding becomes harder to find and higher in price.

XXII. PERSON DOING MILKING

Of the 60 dairymen interviewed in Sullivan County, 26 had tenants doing the milking. Surprisingly, 12 were among the high producers. Table XXIV points out that there must have been some good tenants who were getting high milk and butterfat production. Where the owner and tenant both milked there were 2 in the high group with 5 each in the medium and low.

XXIII. WAY MILKER WAS PAID

As indicated in Table XXV, it was felt that there might be a relationship between milk production and the way milkers were paid. Thirty-seven percent of the dairymen did their own milking. Fifty

TABLE XXIII

NUMBERS AND PERCENTS OF ALL SULLIVAN 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.	%
Under 30	1	2	0	0	0	0	1	5
30-39	3	5	1	5	1	5	1	5
40-49	5	8	1	5	2	10	2	10
50-59	8	13	3	15	1	5	4	20
60-69	16	27	4	20	6	30	6	30
70 or more	24	40	8	40	10	50	6	30
Box (free) Stalls	3	5	3	15	0	0	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XXIV

PERSONS DOING THE MILKING ON FARMS OF ALL SULLIVAN 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	1	5	0	0	0	0
Owner	20	33	5	25	9	45	6	30
Tenant	26	43	12	60	6	30	8	40
Both	12	20	2	10	5	25	5	25
Other	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 XXV

WAYS MILKERS WERE PAID IN 1963 ON FARMS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Way Milker Was Paid	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
No Milker Employed	22	37	5	25	8	40	9	45
Percentage	7	12	3	15	1	5	3	15
Salary	29	48	10	50	11	55	8	40
Combination	2	3	2	10	0	0	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

percent of the high producers paid their milkers a salary as compared to 40 percent of the low producers. Twelve percent of all dairymen paid their milkers a percentage. None of the medium and low producers used a combination of salary and percentage and only 10 percent of the high producers.

XXIV. BUTTERFAT PRODUCTION

Table XXVI shows the average butterfat production for the high, medium and low producers.

Medium producers fell in the range of "250-349" pounds of butterfat per cow. Seventy percent of these producers were in the lower bracket. The average was 288 pounds per cow.

The low producers, as far as pounds of butterfat sold per cow was concerned ranged between "110-249". Forty percent of the low producers sold less than 200 pounds of butterfat. The average was 207 pounds per cow.

Only 25 percent of the high producers were in the categories between "400-500" pounds of butterfat. The average was 371 pounds per cow.

XXV. MILK PRODUCTION

It is seen in Table XXVII that the actual average milk production of the 60 dairymen interviewed was 7,550 pounds. The average American cow produced 7,545 pounds of milk in 1963 (2). High producers

TABLE XXVI

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE BUTTERFAT PRODUCTION CATEGORIES FOR 1963, AND TOTAL AVERAGES*

Average Butterfat Production Category, 1963 (Pounds sold/cow)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
110-149	1	1	0	0	0	0	1	5
150-199	7	12	0	0	0	0	7	35
200-249	10	17	0	0	0	0	10	50
250-299	16	27	0	0	14	70	2	10
300-349	13	22	7	35	6	30	0	0
350-399	8	13	8	40	0	0	0	0
400-449	3	5	3	15	0	0	0	0
450-500	2	3	2	10	0	0	0	0
Total	60	100	20	100	20	100	20	100
Total Average Production	288 lbs.		371 lbs.		285 lbs.		207 lbs.	

*Percents are rounded to nearest whole number.

TABLE XXVII

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE MILK PRODUCTION CATEGORIES FOR 1963, AND TOTAL AVERAGES*

Average Milk Production Category, 1963 (Pounds sold/cow)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
4,000-4,999	4	7	0	0	0	0	4	20
5,000-5,999	5	8	0	0	0	0	5	25
6,000-6,999	9	15	0	0	4	20	5	25
7,000-7,999	13	22	3	15	4	20	6	30
8,000-8,999	12	20	2	10	10	50	0	0
9,000-9,999	6	10	4	20	2	10	0	0
10,000-10,999	6	10	6	30	0	0	0	0
11,000-11,999	4	7	4	20	0	0	0	0
12,000-12,999	0	0	0	0	0	0	0	0
13,000-13,999	1	1	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Actual Total Average Production	7,550 lbs.		9,500 lbs.		7,500 lbs.		5,650 lbs.	

*Percents are rounded to nearest whole number.

averaged selling 9,500 pounds of milk per cow in 1963, while low producers averaged only 5,650 pounds. The close relation between butterfat production and milk production is clearly evidenced by these data.

XXVI. BACTERIAL COUNT

Table XXVIII shows that high producers had a lower median bacterial count (17,500 per milliliter of milk) than did either medium (30,000) or low (20,000) producers.

The total median bacterial count for all producers was 23,333.

From these data it would appear that there may be a positive relationship between production and average bacterial count.

XXVII. STAGE IN THE ADOPTION PROCESS

One can see at a glance at figures in Table XXIX that there is a relationship between milk production and a dairyman's stage in the adoption of new dairy management practices. Table XXIX shows that 30 percent of the high producers were "among the first few" to adopt such practices as compared to only 5 percent of the low producers. Also 90 percent of the high producers were "sooner than average" or better as compared to only 35 percent of the low producers. On the average, high producers were "soon after the first few" (3-8 points), medium were "sooner than average" (3.0 points) and low were "a little later than most" (2.1 points).

TABLE XXVIII

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY AVERAGE BACTERIAL COUNT CATEGORIES IN 1963, AND TOTAL MEDIAN COUNTS*

Average Bacterial Count Category (Number/ml.)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0-9,999	15	25	7	35	4	20	4	20
10,000-19,999	13	22	4	20	3	15	6	30
20,000-29,999	6	10	1	5	3	15	2	10
30,000-39,999	6	10	2	10	2	10	2	10
40,000-49,999	8	13	1	5	4	20	3	15
50,000-69,999	6	10	2	10	2	10	2	10
70,000-99,999	3	5	1	5	1	5	1	5
100,000-139,000	1	2	0	0	1	5	0	0
140,000-179,999	2	3	2	10	0	0	0	0
Total	60	100	20	100	20	100	20	100
Total Median Bacterial Count**	23,333		17,500		30,000		20,000	

*Percents are rounded to nearest whole number.

**Median counts are rounded to the nearest thousand.

TABLE XXIX

INTERVIEWER'S OPINION OF STAGES OF THE ADOPTION PROCESS REPRESENTED BY ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS, IN TERMS OF NEW RECOMMENDED DAIRY MANAGEMENT PRACTICES, 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)	7	12	6	30	0	0	1	5
Soon after first few (4 points)	12	20	6	30	5	25	1	5
Sooner than average (3 points)	21	35	6	30	10	50	5	25
A little later than most (2 points)	17	28	2	10	5	25	10	50
Among the last few (1 point)	3	5	0	0	0	0	3	15
Total	60	100	20	100	20	100	20	100
Average Stage	3.1 points		3.8 points		3.0 points		2.1 points	

*Percents are rounded to nearest whole number.

XXVIII. INTEREST IN DAIRY HERD MANAGEMENT IMPROVEMENT

Interest in dairy herd management improvement was considerably higher among the high producers that the low producers. Table XXX shows that 70 percent of the high producers were "very interested" in improving their herds, whereas only 15 percent of the low producers fell in this level.

Only 1 high producer was in the level of "indifferent." While 11 low producers were either "indifferent" or "not interested" at all. When the scaling system is used, it is not that, on the average, high producers were closest to the "very interested" (2.7 points) category, medium were "somewhat interested" (2.1 points) and low were "indifferent" (1.5 points).

XXIX. RATINGS GIVEN THEIR DAIRY HERDS BY DAIRYMEN

Table XXXI shows that 5 percent of the high producers rated their herds as "fair" as compared to 65 percent of the low producers. Ninety percent of the high group rated their herds "good" or better, while only 35 percent of the low producers rated their herds so high.

On the average, high producers were in the "good" category (1.9 points) and low were in the "fair" category (1.4 points) -- medium producers falling in between (1.6 points).

TABLE XXX

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

Degree of Interest in Improving Dairy Management Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	0	0	0	0	0	0	0	0
Not Interested (0 points)	3	5	0	0	1	5	2	10
Indifferent (1 point)	13	22	1	5	3	15	9	45
Somewhat Interested (2 points)	21	35	5	25	10	50	6	30
Very Interested (3 points)	23	38	14	70	6	30	3	15
Total	60	100	20	100	20	100	20	100
Average Interest	2.1 points		2.7 points		2.1 points		1.5 points	

*Percents are rounded to nearest whole number.

TABLE XXXI

RATINGS OF THEIR DAIRY HERDS MADE BY ALL SULLIVAN 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	2	3	1	5	1	5	0	0
Poor (0 points)	0	0	0	0	0	0	0	0
Fair (1 point)	24	40	1	5	10	50	13	65
Good (2 points)	29	49	17	85	6	30	6	30
Excellent (3 points)	5	8	1	5	3	15	1	5
Total	60	100	20	100	20	100	20	100
Average Rating	1.6 points		1.9 points		1.6 points		1.4 points	

*Percents are rounded to nearest whole number.

XXX. INTERVIEWER'S RATINGS OF DAIRY HERD

The interviewer also rated the herds of dairymen interviewed. None of the medium or low producers were rated higher than "fair." One high producer was rated "excellent" with 11 being rated "good."

The interviewer did not know 44 (73 percent) of the dairy herds well enough to rate them. Of this group, eight were high producers, 17 medium and 19 low producers. The large number of medium and low producers indicates that fewer of these people visited the Extension Office, attended dairy meetings and shows.

The average rating of all herds rated by the interviewer was about "good" (1.8 points). The high producers rated "good" (2.1 points), while medium and low producers rated "fair" (1.0 points each).

CHAPTER III

SUMMARY

A total of 60 Grade A milk producers was interviewed in Sullivan County in 1964. The generally-stated purpose guiding the study was to determine the characteristics of Grade A milk producers and their farms in Sullivan County. It also was purposed to compare the characteristics of high, medium and low producers.

A review of available literature disclosed the following concerning the characteristics of Grade A milk producers in general:

1. The average size of Tennessee dairy farms previously surveyed was about 250 acres, with the largest farms located in the Memphis milkshed and the smallest ones in the Knoxville and Bristol milksheds

2. Statewide herd size was approximately 41 cows, with the Jersey breed found most frequently in the Chattanooga area, while the Holstein predominated in herds in other sections of the state

3. The largest proportion of state dairymen fell in the 45-55 year age interval

4. The number of Grade A milk producers and cows had deceased, and the total milk production had increased during recent years

5. The average state dairyman had 9 years of formal education

6. Artificial insemination had been used to some degree by almost all state dairymen

7. Milk production was related to the dairyman's managerial ability along with the quantity and quality of feed fed to the dairy animals.

I. REVIEW OF FINDINGS

Following is a brief summary of the major findings of the present study as related to the characteristics of Grade A milk producers in Sullivan County:

1. The average educational grade level for all producers was 10.8; high producers (12.0) leading medium producers (10.0) by two grade levels and low by (1.6) grades

2. The average age of producer was 47 years; high producers being the youngest group and averaging 43 years, medium 49 years and low 51 years

3. The average gross income for all producers was $13,786; the high averaging $16,700; medium $14,053 and low producers $10,059

4. About three-fourths of the dairymen, regardless of production group, were full-time farmers

5. There was little difference between average farm sizes of the high, medium and low producers, the total average being 194 acres per farm

6. Average acres of cropland was only about 112 acres, regardless of production group considered

7. The average herd size was 35 cows, low producers milking 38 cows as compared to 34 for the high producers

8. The high producers had 75 percent more registered cows than the other two groups

9. The high producers kept an average of 12 heifers per herd for replacements, which was 4 to 5 more animals per herd than the other groups kept for replacement

10. Fifty percent of the high producers had registered Holstein cows, 20 percent had registered Guernsey's as compared to only 20 percent for both breeds for the low producers

11. Only 1.4 bulls were kept by all dairymen, the average number of registered bulls being 1.2

12. Twenty percent of the high producers had pipeline milking systems some with weighing devices they used; while only 15 percent of the low producers had pipeline systems none with weighing devices

13. Eighty-five percent of the high producers, 65 percent of the medium and 60 percent of the low producers had upright and/or trench silos

14. High producers averaged having 85 tons more silage storage capacity than low

15. The average butterfat production sold per cow was 288 pounds, high producers averaging 371 pounds and low only 207

16. The average annual milk production per cow for all herds was 7,550 pounds, the high producers averaging 9,500 pounds, medium 7,500 pounds and low 5,650 pounds respectively

17. High producers had lower median bacterial counts (17,500) than medium (30,000) or low (20,000)

18. On the average, high producers rated "soon after the first few" in adoption of new dairy management practices, medium rated "sooner than average" and low rated "a little later than most."

II. IMPLICATIONS

Assuming that the Grade A milk producers interviewed in Sullivan County were typical, the following implications may be drawn from the findings:

1. New ways and means must be found to raise the degree of interest in improving their management level among the low producers from "not interested" or "indifferent" to interested levels

2. The wide educational range and the average educational grade level of 10.8 are important considerations in the planning of intensive educational efforts

3. The wide age range and the relatively mature average age of those in the study (47 years), further have implications for Extension planning.

PROBLEM B

MANAGEMENT PRACTICES OF SULLIVAN COUNTY GRADE A MILK PRODUCERS

A Special Problem in Lieu of Thesis

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

Charles D. Holland

December 1965

CHAPTER I

INTRODUCTION

Sullivan County was one of several Tennessee Counties participating in a statewide project under the guidance of the Agricultural Extension Training and Studies Department and the Dairy Department of the University of Tennessee.

Dairying is the largest source of agricultural income in Sullivan County. The value of dairy and dairy products sold in 1959 was $1,667,430. The number of Grade A milk producers in 1963 was approximately 64. All other dairy sales are traditionally made by manufactured milk producers. Prior to this study, no attempt had been made to learn what practices county milk producers were or were not following. County Extension personnel realized that they were not well acquainted with some of the 64 dairymen (19:7).*

It was felt that such data would provide information for improving educational and other programs desgined to help present and future dairymen do a more efficient job in Sullivan County.

I. PURPOSE OF THE STUDY

This study was designed to find out what management practices were being used by Grade A milk producers in Sullivan County. More

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

specifically, it was desired to study the management practices of Grade A producers in three production groups in terms of their relationship to age, education, size of farm, occupation, sex, family income, herd value and other relevant factors.

II. REVIEW OF LITERATURE

There seemed to be little information regarding dairy management practices of dairymen in Tennessee. Although some of the states have limited information available for certain practices.

Parry (15:9) has indicated many continued rapid changes taking place in the Tennessee dairy industry since 1949. Census statistics show the number of dairy farms has been decreasing yearly, while herd size has increased and milk production per cow has risen steadily. Technological advances and the cost-price squeeze have contributed to larger farms and to the greater total investment needed for efficient operation (19:7).

Garlock (4:15) reported that the capital needed for "today's" farms (19) ranged from $50,000 to $100,000. Some farms have an even higher investment.

In a 1958 Virginia study (11:4), it was found that 139 Grade A dairymen who were members of a mail-in, record-keeping system had annual net farm incomes ranging from a minus $7,462 to $17,869.

Jackson and Wallenfeldt (9:2) stated that if milk is to be promoted as an ideal food for everybody, dairymen must carry out

sound production and management practices. These include milking clean, healthy cows that are adequately fed, control insects, using proper milking techniques and control bacteria through the use of adequate sanitation practices.

Miller and Meadows (12:3) found that there were production differences between dairy herds on official testing programs and those not testing. Milk production differences between the two groups were found to diverge more as time increased. Herds on continuous test increased production by 12 percent, as compared to 9 percent for non-tested herds for the same period of time. The years involved were 1962 to 1964.

Givan (5:5) reported an increased amount of milk sold by Tennessee dairymen from 1958 through 1963 by fewer producers with larger individual herds. The average state Grade A producer in 1963 was 47 years old, farmed about 250 acres of land, and had 41 mature cows, with each cow producing an average of 7,157 pounds of milk annually.

He also found that 86 percent of Tennessee dairymen worked less than 50 days per year off the farm and that over 75 percent of all the producers had a source of farm income in addition to dairying.

Partial mechanization of feeding was found on about 65 percent of all farms. Pipeline milkers were found on 47 percent of all farms.

Fifty-five percent of all producers planned to expand their operation. Expansion intentions were most prevalent among younger producers.

III. METHODS

A personal interview was conducted with each of 60 Grade A milk producers in Sullivan County. The survey that was used included questions relating to 23 recommended dairy management practices.

In order to ascertain each producer's practice adoption level on the 23 practices being carried out by the producers, the dairyman was given cards with each of the recommended practices typed on them, as they appeared on the schedule. This was done in order to help the dairymen understand each practice as the interviewer discussed it with him. The interviewer explained only the basic details regarding the practices and consciously tried to get the respondent to answer as he was really doing with regards to the practice.

Using production records for 1963, the producers were divided into low, medium and high categories according to annual average pounds of butterfat sold per cow. The average butterfat sold by all producers was 288 pounds. Low producers ranged from 128-254 pounds, with an average of 207 pounds. Medium producers ranged from 256-313 pounds, with an average of 285 pounds. The high producers were in the category ranging from 216-490 pounds, with an average of 371 pounds of butterfat sold per cow.

The following rating and coding scheme was used to classify managment levels of individuals on each of the 23 items: 1) no points were given if the person interviewed had not heard of the specific

recommended dairy practice; 2) one point was given if the person had only heard of the practice but was not interested in it; 3) two points were given if the person was interested in it but had not made plans to try it; 4) three points were given if the person had not tried the practice 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 recommended practice and was still using it.

Thus the numeric ratings given to adoption stages for individual practices ranged from 0 through 5, and have been referred to in this report as practice diffusion ratings. Average practice diffusion ratings were figured by dividing the sum total of all practice scores by 23 (the number of practices), and are listed for all producers, high, medium, and low groups. Where appropriate, other data were compared in simple numbers, percents and averages. Main comparisons are made between the high and low producers only. Medium producers are mentioned where appropriate.

The practice diffusion ratings are comparable to various stages of the adoption process. The following scale shows the relation between the diffusion stages and rating intervals: 0 to .5 = "unaware"; .5 to 1.5 = "aware"; 1.5 to 2.5 = "interested"; 2.5 to 3.5 = "planning to try"; 3.5 to 4.5 = "tried"; and 4.5 through 5.0 = "using or adopted".

CHAPTER II

FINDINGS

I. MANAGEMENT LEVELS OF MILK PRODUCERS

Average Practice Diffusion Ratings

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

It is noted in Table XXXII that all dairymen were, on the average, in the upper part of the "tried" stage with an average of 4.20. The high producers were in the lower range of the "using" stage 4.47, and the low producers were at the middle of the "tried" stage 3.96.

Sixty-four percent of all producers were in the "tried" stage. Fifty-five percent (11 dairymen) of the high producers were in the "using" stage, while only 20 percent (4 dairymen) of the medium producers and 10 percent (2 dairymen) of the low producers were in this category. Fifteen percent (3 dairymen) of the low producers were between the "planning to try" and "tried" stages. Only one high and one medium producer also were in this bracket.

Relation to Production

As shown in Tables XXXIII and XXXIV, some dairy management practices rated higher than others and the adoption level varied from

TABLE XXXII

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

Average Practice Diffusion Rating Interval**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
3.00-3.49	5	8	1	5	1	5	3	15
3.50-3.99	14	24	1	5	6	30	7	35
4.00-4.49	24	40	7	35	9	45	8	40
4.50-5.00	17	28	11	55	4	20	2	10
Total	60	100	20	100	20	100	20	100
Actual Total Average Rating	4.20		4.47		4.17		3.96	

*Percents are rounded to nearest whole number.

**In the rating scale used: 0 = unaware; 1 = awareness; 2 = interested in practice; 3 = planning to try practice; 4 = tried the practice but not using; and 5 = using the practice.

TABLE XXXIII

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

Dairy Management Practice	All Dairymen Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
1. Artificially inseminated ½ or more of cows	4.47	4.80	4.45	4.15
2. All cows bred to same breed bull	4.00	4.75	3.85	3.40
3. 60-day dry period provided cows	5.00	5.00	5.00	5.00
4. 12-14 month calving period provided	5.00	5.00	5.00	5.00
5. 75 percent cows fall freshened	4.88	5.00	4.95	4.70
6. 75 percent herd replacements raised	4.75	5.00	4.75	4.50
7. Adequate milk records kept	3.48	4.65	3.50	2.30
8. Fed cows according to production	3.40	4.15	3.80	2.25
9. Adequate herd records kept	4.07	4.25	4.45	3.50
10. Calves permanently identified	3.38	4.45	3.75	1.95
11. Adequate supply of silage provided	3.98	4.35	3.40	4.20
12. High quality silage provided	4.43	4.75	4.20	4.35
13. Silage supplemented with enough hay	4.73	4.75	4.85	4.60
14. High quality hay provided	4.93	5.00	4.90	4.90
15. Hay and/or silage provided on pasture	3.92	4.50	3.30	3.95
16. Adequate improved pasture provided	3.43	3.45	3.95	2.90
17. Sufficient summer pasture provided	3.43	3.25	3.35	3.70
18. Strip cup always used	4.12	4.20	3.90	4.25
19. Milking system 6-month checked	3.98	3.35	4.10	4.50
20. Separate feeding and loafing areas provided	4.13	4.10	4.10	4.20
21. Flies systematically controlled	4.92	5.00	4.90	4.85
22. Professional advice obtained	4.67	5.00	4.75	4.25
23. Calves vaccinated for brucellosis, etc.	3.62	3.95	3.20	3.70
Annual Total Average Rating	4.20	4.47	4.17	3.96

*In the rating scale used: 0 = unaware; 1 = awareness; 2 = interested in practice; 3 = planning to try practice; 4 = tried the practice but not using; and 5 = using the practice.

TABLE XXXIV

PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED WITH RATINGS ON THE VARIOUS DAIRY MANAGEMENT PRACTICES IN RATING CATEGORIES*

Dairy Management Practice	Unaware of it Percent	Aware of it Percent	Interested in it Percent	Planning to Try Percent	Tried and Not Using Percent	Using Percent	Total Percent
1. Artificially inseminated ½ or more cows	0	8	0	0	18	74	100
2. All cows bred to same breed bull	5	13	2	0	17	63	100
3. 60-day dry period provided cows	0	0	0	0	0	100	100
4. 12-14 month calving period provided	0	0	0	0	0	100	100
5. 75 percent cows fall freshened	0	0	1	0	7	92	100
6. 75 percent herd replacements raised	0	5	0	0	5	90	100
7. Adequate milk records kept	0	30	1	0	27	42	100
8. Fed cows according to production	0	25	13	0	20	42	100
9. Adequate herd records kept	0	10	12	0	18	60	100
10. Calves permanently identified	8	23	5	2	8	54	100
11. Adequate supply of silage provided	3	7	15	0	13	62	100
12. High quality silage provided	5	5	1	0	7	82	100
13. Silage supplemented with enough hay	0	2	3	0	10	85	100
14. High quality hay provided	0	0	0	0	7	93	100
15. Hay and/or silage provided on pasture	0	10	15	0	23	52	100
16. Adequate improved pasture provided	0	13	30	0	13	44	100
17. Sufficient summer pasture provided	0	25	10	2	23	40	100
18. Strip cup always used	3	10	0	0	32	55	100
19. Milking system 6-month checked	3	3	22	0	7	65	100
20. Separate feeding and loafing areas provided	2	15	3	0	8	72	100
21. Flies systematically controlled	0	0	1	2	0	97	100
22. Professional advice obtained	2	5	0	0	5	88	100
23. Calves vaccinated for brucellosis, etc.	7	17	10	0	8	58	100
Total Average	2	10	6	0	12	70	

*Percents are rounded to nearest whole number.

practice to practice by the Sullivan County Grade A milk producers. Related practices will be grouped together for convenience in presentation.

The average percents for all producers on the 23 dairy management practices as rated by the diffusion adoption scale were as follows: 2 percent were "unaware"; 10 percent were "aware"; 6 percent were "interested"; 0 percent were "planning to try"; 12 percent had "tried and were not using," and 70 percent were "using" the recommended practices.

Breeding practices. The first six practices in Table XXXIII and Table XXXIV are related to breeding. In the main, all producers averaged in the "using" stage for these practices. When high and low groups were compared, the only large difference was noted on Practice 2, "All cows bred to same breed bull." The former on the average were in the "using" stage (4.75), while the latter were in the "planning to try" stage (3.40). High producers had higher ratings on Practices 1, 2, 5 and 6. As shown in Table XXXIV, 20 percent of the producers were below the "planning to try" stage on Practice 2 according to the practice adoption scale. Thirteen percent of the producers were only "aware" of the practice. Practices 3 through 6 were being used by nearly all producers.

The keeping and use of records. Practices 7 through 10 in Table XXXIII are related to record keeping. In the main, all producers aver-

aged between the "planning to try" and "tried" stages on the four related practices. High producers averaged in the "tried" stage as compared to the low producers average of between "interested" and "planning to try."

In particular Practice 7, "Adequate milk records kept," Practice 8, "Fed cows according to production," and Practice 10, "Calves permanently identified," showed large differences between high and low producers (1.90 or larger). The largest difference between high and low producers was noted for Practice 10, "Calves permanently identified," which found the latter only in the "interested" stage (1.95); while the former averaged near the "using" level (4.45).

Data in Table XXXIV point out that less than 50 percent of all dairymen were actually "using" the practices related to record keeping. On Practice 7, 31 percent were in the "aware" and "interested" stages. Twenty-seven percent had "tried and were not using" the practice. Study of figures for Practice 8, shows that 38 percent of all dairymen were in the "aware" and "interested" stages; while another 20 percent had "tried" the practice, but had not adopted it. For Practice 9, adequate herd records kept," 10 percent were in the "aware" stage, 12 percent in the "interested" stage and 60 percent were "using" the practice. Also, 36 percent of the dairymen were below the "planning to try" stage for Practice 10.

Feeding practices. Practices 11 through 17 are related to feeding. In the main, all producers averaged in the "tried" stage on these practices. When high and low groups were compared, the largest

difference was noted in Practice 16, "Adequate improved pasture provided." The former producers averaged in the "planning to try" stage (3.45), while the latter were in the same stage at a lower level (2.90). Table XXXIII gives the results. It is seen that, for all producers, Practice 13, "Silage supplemented with enough hay," and Practice 14, "High quality hay provided," ratings were relatively high. Table XXXIV shows that all feeding practices were below the "tried" stage except Practice 14. Ninety-three percent of all producers were "using" the practice. Twenty-five percent of all producers were below the "plan to try" stage for both Practice 11, "Adequate supply of silage," and Practice 15, "Hay and/or silage provided when cows are on pasture." Practice 16, found 43 percent of all dairymen rated in the "aware" or "interested" stages (probably low producers as seen in Table XXXIII), with only 44 percent actually "using" the practice. Thirty-seven percent of the producers had never "tried" Practice 17, "Sufficient summer pasture provided."

Sanitation and milking system practices. Practices 18 through 21 deal with sanitation and milking systems. In the main, all producers were in the "tried" stage. No major differences (see Table XXXIII) were noted between high and low producers on the adoption scale for the four sanitation practices.

However, the fact that low producers out-rated high on three of the practices is interesting to note. It may indicate that these practices were less critical as far as milk production in Sullivan County in 1963 was concerned. Also, it is noted that nearly all of the pro-

ducers reportedly used Practice 21, "Flies systematically controlled," high producers leading low producers by ratings of 5.00 to 4.85. Practice 18, "Strip cup always used," was found to be "going out" as far as practice usage was concerned - many dairymen (32 percent) having tried and rejected it (see Table XXXIV).

As shown in Table XXXIV, there was some variation in the percents of producers using the different sanitation practices. Fewer dairymen were using Practice 18 (55 percent) than was true for any other sanitation practice. Twenty-eight percent of the producers were not even "planning to try" Practice 19, "Milking system 6-month checked." Also, Practice 20, "Adequate feeding and loafing area provided," had 20 percent not even "planning to try" it.

Other practices. Practice 22, "Professional advice obtained," averaged in the "using" stage for all producers. High producers were "using" the practice 100 percent (5.00) as compared to fewer (4.25) for the low producers (see Table XXXIII and XXXIV).

Table XXXIV likewise shows that 7 percent of the producers were below the "interested" stage for Practice 22. More will be said concerning this practice in the pages that follow.

As shown in Table XXXIII, Practice 23, "Calves vaccinated for brucellosis, blackleg, etc.," found the high producers rating an average 3.95 and the low rating 3.73. Only 58 percent of all producers were "using" this practice; while 34 percent were not even "planning to try" the practice.

Relation to Herd Size

Table XXXV shows a positive relationship between herd size for all dairymen up to the 70-100 cow category. The highest practice diffusion rating (4.43) for all dairymen was in the 50-69 cow interval. High producers rated on the average, higher than low in all categories, though some variation was noted concerning the relation of herd size and diffusion rating (e.g. 30-49 cow interval rating for high producers was lower than the 12-29 cow interval).

Table XXXVI shows by herd size the total average rating for each of the 23 dairy management practices. In comparing the four herd-size categories, a straight-line positive relation may be noted for practices in which ratings indicate the average to be "using." For example, while those in the 12-29 cow category rated only seven of the practices 4.50 or above, those in the 30-49 cow interval so rated nine practices, those in the 50-69 cow interval so rated twelve, and those in the 70-100 cow interval rated 13 practices that high.

II. BREEDING OF HEIFERS

Method

Fifty-four percent of all dairymen bred heifers "artificially," while 38 percent used natural breeding methods. Seventy-five percent of the high producers bred "artificially," as compared to 30 percent of the low producers. Only 15 percent of the high producers used "natural breeding" as compared to 60 percent of the low producers.

TABLE XXXV

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF SULLIVAN COUNTY DAIRYMEN BY HERD SIZE CATEGORIES*

Herd Size Category in Number of Cows	All Dairymen Interviewed No.	Avg. Rating	High Producers No.	Avg. Rating	Medium Producers No.	Avg. Rating	Low Producers No.	Avg. Rating
12-29	26	4.11	8	4.59	12	4.00	6	3.71
30-49	25	4.21	9	4.27	5	4.42	11	4.07
50-69	6	4.43	2	4.68	2	4.46	2	4.16
70-100	3	4.39	1	4.91	1	4.39	1	3.87
Total	60	4.20	20	4.47	20	4.17	20	3.96

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

TABLE XXXVI

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

Dairy Management Practice	All Dairymen Average Rating (N = 60)	12-29 Cows Average Rating (N = 26)	30-49 Cows Average Rating (N = 25)	50-69 Cows Average Rating (N = 6)	70-100 Cows Average Rating (N = 3)
1. Artificially inseminated ½ or more cows	4.48	4.58	4.48	4.00	4.67
2. All cows bred to same breed bull	4.00	3.85	3.96	4.33	5.00
3. 60-day dry period provided cows	3.40	3.38	3.20	4.17	3.66
4. 12-14 month calving period provided	3.98	3.58	4.16	5.00	4.00
5. 75 percent cows fall freshened	4.43	3.96	4.72	5.00	5.00
6. 75 percent herd replacements raised	4.73	4.81	4.60	5.00	4.67
7. Adequate milk records kept	4.93	4.96	4.96	4.83	4.67
8. Fed cows according to production	3.92	3.54	4.24	3.67	5.00
9. Adequate herd records kept	3.43	3.65	3.12	3.50	4.00
10. Calves permanently identified	3.43	3.19	3.40	4.17	4.33
11. Adequate supply of silage provided	4.75	4.46	4.96	5.00	5.00
12. High quality silage provided	5.00	5.00	5.00	5.00	5.00
13. Silage supplemented with enough hay	5.00	5.00	5.00	5.00	5.00
14. High quality hay provided	4.88	4.81	4.92	5.00	5.00
15. Hay and/or silage provided on pasture	3.38	3.46	3.40	2.83	3.67
16. Adequate improved pasture provided	3.62	3.38	3.68	5.00	2.33
17. Sufficient summer pasture provided	4.07	4.42	3.80	4.00	3.33
18. Strip cup always used	4.12	4.04	4.20	4.00	4.33
19. Milking system 6-month checked	3.98	4.35	3.68	3.50	4.33
20. Separate feeding and loafing areas provided	4.13	4.04	3.92	5.00	5.00
21. Flies systematically controlled	4.92	4.92	4.88	5.00	5.00
22. Professional advice obtained	4.67	4.46	4.80	5.00	4.67
23. Calves vaccinated for brucellosis, etc.	3.48	3.15	3.72	3.83	3.67
Total Average Rating	4.20	4.11	4.21	4.43	4.39

*In the rating scale used: 0 = unaware; 1 = awareness; 2 = interested in practice; 3 = planning to try practice; 4 = tried the practice but not using; and 5 = using the practice.

As seen in Table XXXVII only 5 producers (8 percent) used "both" methods of breeding heifers.

Type of Bull

Table XXXVIII shows that 55 percent of all producers used a "dairy" bull to breed heifers. One-third of the producers used a "beef" bull and only 13 percent used "both" types of bulls. Eighty-five percent of the high producers used a "dairy" bull to breed heifers as compared to 35 percent of the low producers. Ten percent of the high producers used "beef" bulls as compared to 50 percent of low producers.

III. BREEDING OF COWS

Method

Approximately 75 percent of the high producers bred their cows artificially as compared to approximately 25 percent of the low producers. One would suggest that low producers might have bred their better cows artificially and kept the heifers for herd replacements. Also, in the low production herds might have been poor cows bred naturally and the calves marketed as veals.

Type of Bull

Table XXXIX shows that 85 percent of the high producers are using "dairy" bulls to breed their cows as compared to 45 percent of the low producers, and only 15 percent of the low producers used "beef"

TABLE XXXVII

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 BY METHOD OF BREEDING HEIFERS*

Method of Breeding Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Artificially	32	54	15	75	11	55	6	30
Naturally	23	38	3	15	8	40	12	60
Both	5	8	2	10	1	5	2	10
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XXXVIII

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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	33	55	17	85	9	45	7	35
Beef	19	32	2	10	7	35	10	50
Both	8	13	1	5	4	20	3	15
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XXXIX

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1963 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	38	63	17	85	12	60	9	45
Beef	3	5	0	0	0	0	3	15
Both	19	32	3	15	8	40	8	40
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

bulls to breed cows. Thirty-two percent (19) of the dairymen used "both" types of bulls to breed cows.

IV. FEEDING OF COWS

Percent of Protein In Dairy Ration

As seen in Table XL, the most common dairy ration had the 16 percent protein concentrate with 80 percent of the dairymen using it. Fifteen percent of the low producers used a 14 percent ration as compared to none in the medium and high groups.

Method of Providing Concentrates

Forty-three percent of all dairymen mixed their own feed, 40 percent bought concentrates and 17 percent did some of each (see Table XLI). Fifty percent of the high producers bought all of their concentrates, as compared to 35 percent of the low producers. Also, only 5 percent of the high producers "mix some and buy some" feed concentrates as compared to 30 percent of the low producers.

Grinding of Hay

Table XLII shows that 83 percent of all dairymen "did not grind hay" in their concentrates. Ten percent of the high producers "did grind hay" with their rations, as compared to 25 percent of the low producers.

TABLE XL

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

Percent Protein in Dairy Ration	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
14	3	5	0	0	0	0	3	15
15	2	3	1	5	1	5	0	0
16	48	80	17	85	15	75	16	80
17	0	0	0	0	0	0	0	0
18	6	10	2	10	4	20	0	0
20	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 XLI

NUMBERS AND PERCENTS OF ALL SULLIVAN 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.	%
Mix Own	26	43	9	45	10	50	7	35
Buy Them	24	40	10	50	7	35	7	35
Mix Some and Buy Some	10	17	1	5	3	15	6	30
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE XLII

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

Grinding of Hay	All Dairymen Interviewed		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%
Did Grind Hay	10	17	2	10	3	15	5	25
Did Not Grind Hay	50	83	18	90	17	85	15	75
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

Type of Hay Fed

Ninety-five percent (57 dairymen) of all producers fed a legume - grass mixture of hay to their cows. Five percent fed only legume hay, primarily alfalfa.

Alfalfa - orchardgrass, lespedeza - orchardgrass or orchardgrass - red clover constituted most of the hay mixtures used.

Method of Supplying Salt and Minerals

Ninety-five percent of all producers used both methods, "mixed in rations" and "free choice" to supply the necessary salt and minerals to their herds. Ten percent (2 dairymen) of the high producers supplied all salt and minerals "mixed in the grain ration." One high producer supplied salt and minerals to his animals by the "free choice" method.

Storage Capacity Available For Silage

Table XLIII shows that the average storage capacity, for dairymen having silage, was 228 tons. The high producers average capacity was 282 tons as compared to only 197 tons for the low dairymen. Only 1 producer (high) had storage capacity for more than 500 tons of silage.

Five percent (1 dairyman) of the high producers did not feed silage, nor did 30 percent (6 dairymen) of either the medium or low.

Of the producers having silage 27 percent had a storage capacity of "200-299" tons. Thirty-five percent of the high producers had a storage capacity of "300-499" tons as compared to 5 percent of the low producers.

TABLE XLIII

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AMOUNTS OF SILAGE STORAGE CAPACITY AVAILABLE*

Amount of Silage Storage Capacity Available in Tons	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None or not answered	7	12	1	5	4	20	2	10
50-99	5	8	2	10	2	10	1	5
100-149	12	20	2	10	5	25	5	25
150-199	9	15	3	15	2	10	4	20
200-299	16	27	4	20	5	25	7	35
300-499	10	17	7	35	2	10	1	5
500-749	1	1	1	5	0	0	0	0
Total	60	100	20	100	20	100	20	100
Average Capacity for Those Having Silos	228 Tons		282 Tons		198 Tons		197 Tons	

*Percents are rounded to nearest whole number.

V. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO AGE

Relatively slight differences are to be noted in the diffusion ratings of all producers under 55 years of age, though, a tendency may exist for younger dairymen to manage at higher levels when those over 55 years of age are included (see Table XLIV).

The average diffusion rating for all dairymen was 4.20. The highest rating of 4.56 was for the four producers in the "45-54" year age group. High producers in the age group of "25-34" averaged 4.48, compared to 3.43 for the low producers in the same group.

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

Table XLV shows that no apparent relationship existed between educational grade completed and the practice diffusion rating. All producers rated highest in the "9-11" grade level with a rating of 4.36. High producers rated higher in all grade levels with an average of 4.47 than did the medium, with 4.17 and the low, with 3.96.

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

As noted in Table XLVI, there seemed to be a positive relationship between the size of farm and the management level. This seemed to be true for all dairymen, high and medium producers, but no relationship existed for low producers.

TABLE XLIV

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL SULLIVAN 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.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Under 25	2	4.48	1	4.35	1	4.60	0	-
25-34	7	4.23	4	4.48	2	4.13	1	3.43
35-44	13	4.35	7	4.49	3	4.23	3	4.15
45-54	23	4.21	4	4.56	8	4.29	11	4.03
55-64	13	4.03	4	4.36	5	3.99	4	3.75
65 or More	2	3.78	0	-	1	3.52	1	4.04
Actual Total	60	4.20	20	4.47	20	4.17	20	3.96

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

TABLE XLV

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

Educational Grade Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
1-7	5	4.15	1	4.47	3	4.29	1	3.43
8	14	4.17	1	4.87	6	4.33	7	3.94
9-11	8	4.36	3	4.69	3	4.01	2	4.39
12	20	4.18	9	4.37	5	4.03	6	4.02
1-3 of College	12	4.22	6	4.44	2	4.33	4	3.82
B. S.	1	3.69	0	--	1	3.69	0	--
Actual Total	60	4.20	20	4.47	20	4.17	20	3.96

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

TABLE XLVI

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

Size of Farm Category	All Dairymen Interviewed No.	Avg. Rating	High Producers No.	Avg. Rating	Medium Producers No.	Avg. Rating	Low Producers No.	Avg. Rating
50-99	9	4.06	1	4.00	5	4.07	3	4.06
100-199	28	4.17	13	4.39	7	4.04	8	3.91
200-399	19	4.20	3	4.54	7	4.34	9	3.97
400-600	4	4.76	3	4.88	1	4.39	0	-
Actual Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale: 0 = unaware; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

The highest average diffusion rating of 4.88 was registered for three high producers in the 400-600 acre category. Likewise, the highest rating in the medium category was made by a single producer in the same interval. However, the highest rating in the low category was in the 50-99 acre interval.

VIII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO OCCUPATION

Table XLVII gives the practice diffusion ratings for 7 "part-time farmers" as 4.47, while 44 "full-time farmers" showed an average rating of 4.19. The 14 high producers who were "full-time farmers" rated 4.51, as compared to 3.93 for the 14 low producers.

No "housewife or widow" was among the high producers, while 1 was in the medium and 2 in the low groups with an average rating of 4.35 for the three.

There were no "professional," "retired" or "wage earner" Grade A dairymen in the county.

Occupations of dairymen appeared not to be related to management levels, though full-time farmers did predominate.

IX. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SOURCE OF INCOME

Table XLVIII shows that "dairying" was the major source of income for 51 of the 60 producers. For the 17 high producers listing dairying

TABLE XLVII

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

Occupation of Dairymen	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Full-time Farmer	44	4.19	14	4.51	16	4.13	14	3.93
Part-time Farmer	7	4.47	3	4.74	1	4.78	3	4.09
Business	3	4.23	2	4.43	1	3.83	0	-
Professional	0	-	0	-	0	-	0	-
Wage earner	0	-	0	-	0	-	0	-
Housewife or Widow	3	4.35	0	-	1	4.57	2	4.24
Other	3	3.59	1	3.22	1	4.13	1	3.43
Actual Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale used: 0 = unawareness; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try practices; 4 = tried the practices but not using; and 5 = using the practices.

TABLE XLVIII

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

Major Source of Income	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Dairying	51	4.21	17	4.55	17	4.15	17	3.94
Other Farm	1	4.78	0	-	1	4.78	0	-
Nonfarm	8	4.04	3	4.03	2	3.98	3	4.09
Actual Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale used: 0 = unawareness; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try practices; 4 = tried the practices but not using; and 5 = using the practices.

as a major source of income, the average rating was 4.55, as compared to 3.94 for 17 low producers. Only 1 dairymen (medium) reported "other farm" as a major source of income.

Eight dairymen had "nonfarm" income and rated 4.04 as compared to 51 who reported "dairying" as their major income with an average rating of 4.21.

X. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SEX

Of the total number of respondents interviewed there were 55 "males" and 5 "females." One woman was in the medium group, with a rating of 3.87, and 4 in the low group, averaging 4.21.

Table XLIX gives the "males" an average rating of 4.20 and the "females" 4.14.

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

Table L shows slight positive relations between production and management levels and gross family income. Of all dairymen who answered the question, the high producers rated higher for all gross family income categories than either the medium or low producers. One high and one medium producer were in the category of "$30,000-$99,999." Also, one-half of all the dairymen in the income category of "$12,000-$29,999" were high producers rating 4.45.

TABLE XLIX

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY SEX OF RESPONDENTS*

Sex of Respondent	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Male	55	4.20	20	4.47	19	4.18	16	3.90
Female	5	4.14	0	-	1	3.87	4	4.21
Actual Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale used: 0 = unawareness; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try the practices; 4 = tried the practices and 5 = using the practices.

TABLE L

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

Total Gross Family Income Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Not Answered	4	3.90	0	-	1	3.69	3	3.97
$2,000-11,999	28	4.13	6	4.43	11	4.16	11	3.94
$12,000-29,999	26	4.64	13	4.45	7	4.22	6	4.00
$30,000-99,999	2	4.65	1	4.91	1	4.39	0	-
Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale used: 0 = unawareness; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try the practices; 4 = tried the practices and 5 = using the practices.

XII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO DAIRY HERD VALUES

There seemed to be a slight positive relation between management levels and herd ratings, as shown in Table LI, for all producers, medium and low producers. However, the trend was reversed for high producers - a very slight negative relation being observed for management and herd rating.

The dairymen who rated their herds "fair" rated 3.97 while those who rated their herds "good" scored 4.32 and the "excellent" scored 4.47. None of those answering rated their dairy operation as "poor."

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

Table LII shows that the more that diarymen are interested in improving dairy management, the higher their score tends to be. This seemed to be true for each of the three production categories. For example, of all dairymen, those "not interest" had the lowest practice score, 3.87, while those "very interested" had the highest, 4.51.

It is interesting to note that 44 of the 60 dairymen appeared to be (mostly high and medium producers) interested in improving their dairy management levels, while 16 dairymen (mostly low and medium producers) seemed indifferent or not interested.

TABLE LI

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

Ratings Dairymen Gave Their Own Herds	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Not Answered	2	4.50	1	4.87	1	4.13	0	-
Poor	0	-	0	-	0	-	0	-
Fair	24	3.97	1	4.70	10	4.05	13	3.86
Good	29	4.32	17	4.44	6	4.18	6	4.12
Excellent	5	4.47	1	4.39	3	4.57	1	4.26
Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale used: 0 = unawareness; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

TABLE LII

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

Degree of Interest in Improving Dairy Management Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating	No.	Avg. Rating
Not Interested	3	3.87	0	-	1	3.52	2	4.05
Indifferent	13	3.79	1	4.00	3	3.71	9	3.79
Somewhat Interested	21	4.16	5	4.14	10	4.27	6	3.99
Very Interested	23	4.51	14	4.62	6	4.34	3	4.35
Total	60	4.20	20	4.47	20	4.17	20	3.96

*In the rating scale used: 0 = unawareness; 1 = awareness; 2 = interested in the 23 practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

CHAPTER III

SUMMARY

Sixty Grade A milk producers were interviewed in Sullivan County in 1964. The generally-stated purpose guiding the study was to determine management practices of Grade A milk producers in Sullivan County. It also was the purpose to compare practices of high, medium and low producers.

Twenty-three recommended dairy management practices were selected for the study. Ratings were given each respondent on each practice, and average ratings for all 23 practices were computed as a basis for comparatively studying management level.

A review of available literature disclosed the following general information concerning management practices of Grade A milk producers:

1. There is general agreement that dairymen must carry out good management and production practices if milk consumption is to be promoted (9:2)

2. Dairymen with herds on official testing programs tend to increase production faster than those with herds not tested (12:3)

3. More than one-half of all Grade A Tennessee producers reportedly planned to expand herds when checked in 1963 (5:5).

I. REVIEW OF FINDINGS

Following is a brief summary of the major findings of the study as related to management practices of Grade A milk producers in

Sullivan County:

1. On the average, about 70 percent of all producers were using each of the 23 recommended dairy management practices, high producers consistently operating at higher management levels

2. Of the 23 practices, only two were being used by all dairymen, namely "60-day dry period provided cows" and "12-14 month calving period provided"

3. Eighty-five percent of all producers were using the bundle of six practices related to breeding. High producers averaging in the "using" stage and low in the "tried" stage of the diffusion process

4. Seventy-five percent of high producers used artificial insemination to breed heifers as compared to 55 percent for medium and 30 percent of the low producers

5. High producers used a dairy bull 85 percent of the time to breed cows as compared to 60 percent for medium and 45 percent for low producers

6. Only about one-half of all producers were using the four practices relating to the keeping and use of records, high producers averaging in the "tried" stage and low in the "interested" stage

7. On the average about two-thirds of all producers were using the bundle of seven practices related to feeding, both high and low producers averaging in the "tried" stage, though more high dairymen were using the practices

8. Fifty percent of the high producers bought all of their concentrates while only 35 percent of the low producers bought their concentrates

9. Ninety percent of the high producers did not grind hay in their rations as compared to 75 percent of the low producers

10. High producers had an average silage storage capacity of 282 tons as compared to 197 tons for the low producers

11. Seventy-two percent of all dairymen were using the four practices grouped under the heading of sanitation and milking system, both high and low producers averaging in the "tried" stage

12. The vast majority (88 percent) reportedly sought dairy management advice, high producers averaging in the "using" stage and the low in the "tried" stage

13. Ninety percent of the high producers were interested in improving their dairy management level as compared to only 80 percent of the medium and 45 percent of the low producers.

II. IMPLICATIONS

The data suggests that further Extension efforts need to be made to reach and teach Grade A dairymen, especially those who may be classified as medium and low producers, reoriented to the following special needs:

1. Low producers were only "interested" in the cricital record keeping and using practices, while high producers had "tried" and rejected the same

2. Low producers, in the main, were using beef-type bulls on cows and heifers, while high were using dairy bulls

3. Low producers, generally, were "planning to try" the practice of providing adequate improved pasture, while high producers had "tried" and rejected it

4. Low producers had "tried" and rejected the practice of providing hay and/or silage on pasture, while high producers were "using" it.

In each of the cases sighted above medium producers tend to fall between low and high.

PROBLEM C

FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION BY SULLIVAN COUNTY GRADE A MILK PRODUCERS

A Special Problem in Lieu of Thesis

In Partial Fulfillment

of the Requirements of the Degree

Master of Science

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by

Charles D. Holland

December 1965

CHAPTER I

INTRODUCTION

In the two previous problems, characteristics and management practices of Sullivan County Grade A milk producers were considered. Further analyses of data obtained from a survey of all Grade A milk producers in Sullivan County, Tennessee, were needed in order to identify other factors influencing them to adopt or not to adopt recommended dairy management practices.

During the personal interview with the 60 dairymen, certain questions were asked each respondent concerning his "likes" and "dislikes" as far as Grade A dairy farming was concerned. Also, they were asked for reasons why some dairymen often do not adopt recommended practices and certain other relevant information.

Considerable effort has been made toward attempting to present new, research-based, educational information to Sullivan County Grade A dairymen by county and state Agricultural Extension personnel. Some of the methods that have been used were: demonstrations; tours; farm management schools; dairy meetings; hay and silage workshops; circular letters; news articles; radio and T. V. programs; 4-H and open dairy shows, and individual work with producers. Attempts have been made to partially evaluate the results of this teaching, but no previous attempts have been made to establish a "benchmark" concerning other factors

causing dairymen to accept or reject recommended dairy management practices.

I. PURPOSE OF THE STUDY

This study was designed to identify factors, other than those previously identified, that influence Sullivan County Grade A milk producers to adopt and use recommended dairy management practices.

II. REVIEW OF LITERATURE

Studies (1:4) have shown that farmers adopt new ideas or practices at different times. Farmers tend to be at different stages in the adoption process at different times as it may relate to a given recommended, proven practice or bundle of practices.

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

At the "aware" and "interested" stages, mass media sources such as farm magazines, newspapers, radio and television are helpful. At the "planning to try" and "tried" stages, personal contacts generally

become more important influences than mass media. When farmers move closer to the "using" stage, contacts with representatives of agricultural agencies, neighbors and friends and other influentials become more important (1:7).

III. METHODS

An interview-type survey was conducted with the 60 Grade A milk producers in Sullivan County. Each respondent was handed a card and asked to complete the following typed sentence on it: "The thing I like most about dairy farming is ____." Also, another card was handed the dairyman, and again he was asked to complete the following sentence typed on it: "The thing I dislike most about dairy farming is _____."

In order to obtain the various reasons why dairymen often do not adopt recommended management practices, a card set of ten reasons, one reason typed on each card, was handed to the dairyman. He was asked to select the three most important reasons why he thought Grade A dairymen did not use recommended management practices. After the producer made his selection the interviewer turned over the cards and recorded the reasons by number. He then asked the respondent if there were additional reasons also.

The producers were divided into high, medium, and low categories according to annual average pounds of butterfat sold per cow. Production records for 1963 were used. Findings will be presented in numbers and percents, and in averages where suitable. Main comparisons will be between high and low producers. The medium group will be considered where appropriate.

CHAPTER II

FINDINGS

I. THINGS LIKED MOST ABOUT GRADE A MILK PRODUCTION

As seen in Table LIII, 55 percent (33 dairymen) of all producers gave the following reason as their first like about Grade A dairying, "It provides a regular source of income and is a stable form of agriculture." The next large like among all producers, with 38 percent (23 dairymen) reporting was, "I love dairy cattle." The remaining 7 percent of all producers were in the "Other" or "It's what I know best" categories.

The first like for the majority of the producers, "It provides a regular source of income and is a stable form of agriculture," was not the first choice for the high producers. Only 45 percent of the high producers reported the reason as their first choice as compared to 65 percent of the medium and 55 percent of the low producers.

Fifty-five percent of the high producers reported the thing they liked most as "I love dairy cattle" as compared to only 30 percent of both the medium and low producers.

II. THINGS DISLIKED MOST ABOUT GRADE A MILK PRODUCTION

Forty percent of all dairymen gave the one thing that they disliked most about Grade A dairying as, "Too confining". The second

TABLE LIII

NUMBERS AND PERCENTS OF ALL SULLIVAN 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.	%
It provides a regular source of income and is a stable form of agriculture	33	55	9	45	13	65	11	55
I love dairy cattle	23	38	11	55	6	30	6	30
It's what I know best	1	2	0	0	0	0	1	5
Other	3	5	0	0	1	5	2	10
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

choice among the dislikes was "The return on my time and money is inadequate" for 28 percent of all dairymen. Sixteen percent of all dairymen reported "other" dislikes other than the ones shown in Table LIV.

Fifty percent (10 dairymen) of the high producers reported their main dislikes to be, "Too confining" as compared to 30 percent (6 dairymen) of the low producers, for the same dislike. It would appear that maybe the high producers took much more time and interest in their dairy operation than the low producers. Ten percent of the high producers disliked "Difficulties with labor" as compared to 5 percent of the medium and 10 percent of the low producers. Eight percent (4 dairymen) of all producers listed two dislikes, "Inspectors are inadequate and inconsistent", and "My facilities aren't suited to it," as greatest dislikes. All were either medium or low producers.

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

When the three most important reasons why dairymen often do not adopt recommended dairy managment practices, were summarized for all producers, it was found that 65 percent gave the reason, "Cost of practices outweighs possible benefits." As seen in Table LV, forty-seven percent of all producers also gave the reasons, "Don't have the technical knowledge needed" and "Facilities are not suited," to place them in a tie position as the second high reasons why dairymen may not adopt practices. No major differences were found between the high and

TABLE LIV

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

Thing Disliked Most About Grade "A" Dairying	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Too confining	24	40	10	50	8	40	6	30
The return on my time and money is inadequate	17	28	6	30	5	25	6	30
My facilities aren't suited to it	2	4	0	0	1	5	1	5
Inspectors are inadequate and inconsistent	2	4	0	0	1	5	1	5
Difficulties with labor	5	8	2	10	1	5	2	10
Other	10	16	2	10	4	20	4	20
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

TABLE LV

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

Reasons Why Dairymen Do Not Adopt Recommended Practices**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	4	7	4	20	0	0	0	0
1. Cost of practices outweighs possible benefits	39	65	13	65	14	70	12	60
2. Don't have the technical knowledge needed	28	47	9	45	10	50	9	45
3. Facilities are not suited	28	47	9	45	10	50	9	45
4. Physically unable to do supervision and management of job needed	23	38	8	40	4	20	11	55
5. More rewarding activities claim owner's time and money	21	34	7	35	9	45	5	25
6. Don't believe practices are sound	11	19	6	30	3	15	2	10
7. Expect to sell dairy herd	9	15	2	10	2	10	5	25
8. Expect to move away from farm	7	12	2	10	3	15	2	10
9. Have tried and found unsatisfactory	6	9	0	0	3	15	3	15
10. Uncertainity of ownership in divided estate	4	7	0	0	2	10	2	10

*Percents are rounded to nearest whole number.

**Numbers and percents do not add up to totals since all dairymen gave three most important reasons.

low producers for the three most frequently mentioned reasons.

The fourth reason singled out as to why recommended practices often are not adopted by dairymen was the reason, "Physically unable to do supervision and management of job needed," 38 percent of all producers agreeing. Only 40 percent of the high as compared to 55 percent of the low producers gave Reason 4, as their collective fourth choice. From the earlier Problem B, "Management Practices of Sullivan County Grade A Milk Producers," analysis, it was revealed that low producers were, on the average, the older dairymen. Therefore, one might have expected Reason 4 to be higher among the low producers. It was the second most frequently mentioned reason for low producers.

The six remaining reasons (Table LV) and percents of all producers mentioning them were: 1) Reason 5, "More rewarding activities claim owner's time and money" (34 percent, 35 percent of the high and 25 percent of the low); 2) Reason 6, "Don't believe practices are sound" (19 percent, 30 percent of the high and only 10 percent of the low); 3) Reason 7, "Expect to sell dairy herd" (15 percent, 10 percent of the high and 25 percent of the low); 4) Reason 8, "Expect to move away from farm" (12 percent, 10 percent of both high and low); 5) Reason 9, "Have tried and found unsatisfactory" (9 percent, none for the high and 15 percent for the low), and 6) Reason 10, "Uncertainty of ownership in divided estate" (7 percent, none for the high and 10 percent of the low).

In looking at the above six reasons, several points, seemed worthy of mention. The fact that more rewarding activities may be claiming the owner's time and money might indicate that other enterprises are competing with dairy in Sullivan County.

Furthermore, though high producers were operating at higher management levels, more of them questioned some of the frequently recommended practices. This would suggest that said practices might not have produced the results expected.

It was also interesting to note that so many seemed to indicate their plans to sell their dairy herd and/or move away from the farm. This points to a continuation of the trend to fewer Grade A dairymen in this county.

Other Reasons Why Dairymen Do Not Adopt Recommended Practices

None of the 60 Sullivan County Grade A milk producers gave any additional reasons why dairymen do not adopt recommended dairy management practices other than the set of ten found in the previous table (see Table LV).

IV. DAIRY MANAGEMENT ADVICE SOUGHT

Table LVI shows that three-fourths of all dairymen ranked the "milk plant field man" as their first choice when they sought advice concerning dairy management. Medium and low producers agreed with the choice. However, high producers most frequently mentioned the

TABLE LVI

NUMBERS AND PERCENTS OF ALL SULLIVAN 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 which Advice was Sought**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0. None sought	6	10	0	0	2	10	4	20
1. Milk plant field man	45	75	14	70	16	80	15	75
2. County agent	42	70	18	90	14	70	10	50
3. Neighbor or Friend	40	67	17	85	10	50	13	65
4. Health Department Sanitarian	36	60	16	80	12	60	8	40
5. Local veterinarian	35	58	16	80	11	55	8	40
6. Feed dealer or salesman	30	50	11	55	11	55	8	40
7. D.H.I.A. Supervisor or A.B.A. Technician	28	47	16	80	9	45	3	15
8. Extension dairymen	16	27	11	55	3	15	2	10
9. Banker or PCA Representative	8	13	5	25	1	5	2	10
10. Vo-Ag teacher	1	2	0	0	0	0	1	5

*Percents are rounded to nearest whole number.

**Numbers and percents do not add up to totals since most dairymen listed more than one source of information.

"county agent" as a source. Fifty percent or more of all producers sought advice from each of six different individuals named. The "county agent" was the second most frequently mentioned person called on, 70 percent of all producers listing his name. Ninety percent (18 dairymen) of the high producers, 70 percent (14 dairymen) of the medium and 50 percent (10 dairymen) of the low sought his advice. "Neighbors or friends" ranked third overall with 67 percent of all producers reporting. As was true above for the county agent, more of the high producers (85 percent) received advice from their neighbors or friends than did those in the medium (50 percent) and low (65 percent) groups.

The fourth high ranking individual to give advice was the "health department sanitarian." Sixty percent of all producers received helpful information pertaining to their dairy operation from this person. When groups are compared, it is found that 80 percent of the high and 40 percent of the low reported this individual.

The "local veterinarian" gave advice to 58 percent of all dairymen. Again it is seen that more high producers (80 percent) used this person as a source of advice than did the low (40 percent). A "feed dealer or salesman" ranked sixth as an individual whose advice dairymen sought. Fifty percent of all producers used a feed dealer or salesman, but very little difference was found among the groups.

The seventh source of advice was given by "D. H. I. A. (Dairy Herd Improvement Association) supervisor or A. B. A. (Artificial Breeding Association) technician." Forty-seven percent of all producers sought

advice from one and/or the other of these persons. While 80 percent of the high producers were using this source, only 15 percent of the low mentioned it. As found in the two related previous studies, more of the high producers bred their cows artificially and were on official testing programs, as compared to the medium and low producers. An "Extension dairyman" was mentioned by 27 percent of all producers as a source of advice. More of the high producers (55 percent apparently used this source for information than did the low (10 percent).

The ninth source where 13 percent of all producers obtained help was a local "banker or PCA (Production Credit Association) representative." A "vocational agriculture teacher" ranked tenth, with only 2 percent of all diarymen reporting, as a source of advice.

It is interesting to note that the number of high producers outranked, the number of low producers for eight of the ten persons listed from whom advice was sought. Also, the average number of sources contacted for all producers was 4.7, for high was 6.2, medium 4.4 and low 3.4.

V. ADDITIONAL SOURCES OF DAIRY MANAGEMENT INFORMATION USED

As shown in Table LVII, the average number of additional sources from which all dairyman received information pertaining to the management of their dairy herds was 5.8. The high producers averaged 8.1, medium 4.8 and low 4.5.

TABLE LVII

NUMBERS AND PERCENTS OF ALL SULLIVAN 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.	%
University Bulletins and Publications	26	43	13	65	5	25	8	40
Commercial Bulletins	37	62	16	80	9	45	12	60
Farm Magazines	59	98	20	100	20	100	19	95
Daily Newspaper	37	62	15	75	11	55	11	55
Weekly Newspaper	24	40	15	75	4	20	5	25
Radio	32	53	17	85	8	40	7	35
Television	28	47	15	75	7	35	6	30
Farm Meetings	35	58	17	85	10	50	8	40
Field Day and Tours	32	53	16	80	8	40	8	40
Newsletters	38	63	18	90	14	70	6	30
Total	60	100	20	100	20	100	20	100
Average number of sources from which information was received during the past year.	5.8		8.1		4.8		4.5	

*Percents are rounded to nearest whole number.

Ninety-eight percent of all producers used "farm magazines" as an additional source of information during the year. Among the 60 dairymen, only one low producer did not use farm magazines.

More than three-fifths of all producers used "commercial bulletins," "daily newspaper" and "newsletters" as a source of useful information. For the three sources named, more high producers used these methods than was true for other groups, but "newsletters," were used by considerably more of the high producers (90 percent) than of the low (30 percent).

All other additional sources were used by from 40 to 58 percent of all producers. In every case a larger percent of high producers used the sources of information more than the medium and low groups (see Table LVII). The differences between percentages of high and low producers mentioning the Extension related items is striking. For example, at least twice as many high producers as low mentioned farm meetings, field days and tours. The same was true for radio and television. High producers again led in their use of University bulletins and publications, though more than one-half of all producers (57 percent) did not report this source.

VI. DEGREE TO WHICH INTERVIEWER WAS FAMILIAR WITH DAIRY SITUATIONS

As seen in Table LVIII, the interviewer was only "very familiar" with 2 percent of all producers, the one dairyman being a high producer, in regards to their dairy situations. An additional 25 percent

TABLE LVIII

NUMBERS AND PERCENTS OF ALL SULLIVAN COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY DEGREE 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	1	2	1	5	0	0	0	0
Fairly Familiar	15	25	11	55	3	15	1	5
Not Very Familiar	29	48	6	30	13	65	10	50
Not Familiar	15	25	2	10	4	20	9	45
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

were "fairly" familiar." Sixty percent of the high producers and only 5 percent of the low had dairy situations that were at least "fairly familiar."

The interviewer was "not very familiar" or "not familiar" with almost three-fourths of all producers (largely made up of the medium and low). This might suggest that the more Extension contacts that the interviewer had had with each dairymen the higher degree he knew the dairy situation and the higher their production level.

VII. PRODUCER'S NEED FOR INCREASING ATTENTION GIVEN TO THE MANAGEMENT OF THE HERD

In Table LIX, the interviewer's opinion was that 60 percent of all producers "should pay more attention" to the management of their herds. Forty percent (8 dairymen) were high producers and 80 percent (16 dairymen) low.

The interviewer was "uncertain" about 38 percent of all producers. Of this group, most (55 percent) were high producers, only 20 percent of the low being so classified. Also, only one producer (high) was placed in the category of "should not pay more attention" to management of the herd, indicating a relatively high level of management at the time of the survey.

TABLE LIX

NUMBERS AND PERCENTS OF ALL SULLIVAN 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	36	60	8	40	12	60	16	80
Should Not Pay More Attention	1	2	1	5	0	0	0	0
Uncertain	23	38	11	55	8	40	4	20
Not Answered	0	0	0	0	0	0	0	0
Total	60	100	20	100	20	100	20	100

*Percents are rounded to nearest whole number.

CHAPTER III

SUMMARY

Data concerning all 60 county Grade A milk producers were gathered by Extension personnel in Sullivan County for use as a basis in planning the Extension program. The purpose of the present analysis was to identify factors other than those already identified that have influenced Sullivan County Grade A milk producers to adopt and use or not to adopt recommended dairy management practices.

A review of the available literature revealed consensus on the following general points:

1. Farmers tend to adopt new ideas or practices at different times

2. They are expected to be at different stages in the diffusion process on the same and different practice at any one period of time

3. Mass media sources are helpful in influencing farmers in the "aware" and "interested" stages of the diffusion process

4. Intensive personal contacts become more and more important as individual farmers move from a state of unawareness -- to the "using" stage in the diffusion process for any practice

5. Neighbors and friends and representatives of agricultural agencies are influential in helping to affect individuals closest to the "using" stage.

I. REVIEW OF FINDINGS

The following is a short review of the findings in the study:

1. More than one-half of the producers (55 percent) gave, "It provides a regular source of income and is a stable form of agriculture," as the item they liked most about Grade A dairy farming

2. More than one-third (38 percent) reported, "I love dairy cattle," as the second most frequently liked item

3. Two-fifths (40 percent) of the dairymen disliked the fact that dairying is "Too confining"

4. The second most frequently reported (28 percent) dislike was "The return on my time and money is inadequate"

5. Two-thirds (65 percent) of all producers, selected "Cost of practices outweighs possible benefits" as most frequently mentioned reason why dairymen often do not adopt recommended management practices

6. Nearly one-half (47 percent) of all producers gave "Don't have technical knowledge needed" and "Facilities are not suited" as their second and third most frequently mentioned reasons why dairymen often do not use such practices

7. About one-third (34 percent) of all producers gave the reasons, "More rewarding activities claim owner's time and money," to explain why some often fail to accept practices

8. Thirty percent of the high producers and only 10 percent of the low gave the reason, "Don't believe practices are sound" as to why dairymen often do not adopt practices

9. Ten percent of the high and medium producers and one-fourth of the low expect to sell the dairy herd and/or leave farming

10. Three-fourths (75 percent) of all the producers obtained dairy management information from the milk plant field man, the leading individual source

11. The county agent was the second most frequently mentioned person contacted for advice, 90 percent of the high producers and 50 percent of the low reporting

12. One-half or more of all producers sought advice from each of six different sources of dairy management information, and the number of high producers exceeded that of the low in nearly every case

13. The average number of individual sources of advice contacted for all dairymen was 4.7, for high producers was 6.2 and for low was 3.4

14. Nearly all (98 percent) of the producers mentioned farm magazines most frequently as a source of additional management information

15. The average number of sources of all additional information mentioned by dairymen was 5.8, for high producers was 8.1 and for low was 4.5

16. One-half or more of all producers mentioned using important Extension related sources of information such as farm meetings, field days and tours

17. In the interviewer's opinion, 60 percent of all producers should pay more attention to the management of their herds, 40 percent of the high and 80 percent of the low.

II. IMPLICATIONS

The following implications may be drawn from the findings of the study for use in Extension program planning:

1. The likes and dislikes of Grade A dairymen in Sullivan County suggest their dissatisfaction with the drudgery and confinement related to Grade A milk production, and their high interest in finding economical short cuts and ways of saving time and labor

2. Low producers and others who felt they lacked necessary technical knowledge and those who need to pay more attention to management constitute audiences for intensive Extension teaching efforts

3. Since Extension personnel and Extension related activities are relied on for dairy management information more by high producers in the county than others, additional attention might be directed toward the latter.

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APPENDIX

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____ 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 <u>like</u> 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 <u>most</u> important?" Then underscore it.

6. Would you please complete this sentence? (Hand respondent card.)

   "The thing I <u>dislike</u> 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 <u>most</u> 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 <u>most importance</u>. Please give me the number on the back of the <u>card</u>. Also, please do this with the other two cards.

Rank	1	2	3
Card Number			

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

_____

_____

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

(1) is aware of certain recommended practices

(2) is interested in using them

(3) has tried them

(4) is still using them, or will use them when the need arises

(5) and his reasons for never trying the practices, or for not using them after trying them.

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

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

8. Grade A Dairy Production Practices	Read or Heard of		Interested in		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(1) Using artificial insemination in the breeding of 50% or more of your cows (exclude heifers)								

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

_____

(2) Breeding each cow to a bull of the same breed

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

_____

(3) Having a basis for weighing feed and grain according to production with special attention to assure that high producers receive enough grain (i.e. 1-3 or 1-4)

i. Reasons for 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 Heard of		Inter-ested in		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(6) Providing enough roughage (2½ lb. of hay equivalent per cwt. of body weight daily) by supplementing silage with hay (1-2 tons annually per cow)								

i. Reasons for never trying practice OR not using 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 improved pasture (e.g. orchard grass and ladino)								

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

_____

(10) Providing sufficient summer pasture (¼ to ½ A. per cow)								

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

_____

	Read of Heard of		Inter-ested in		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(11) Keeping adequate milk production records on a per cow basis (i.e. D.H.I.R., D,H.I.A., W.A.D.A.M.)								

i. Reasons for 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

_____

(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

_____

	Read of Heard of		Inter-ested in		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(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

(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 recommend 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

	Heard of		Interested in		Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(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_____

(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 dairymen___
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___
h. Farm meetings___
i. Field days and tours___
j. Newsletters___

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

0	12345678	9 10 11 12	1 2 3 4	Bachelor's	Master's
None	Grade Sch.	H. S.	Col. Underg.	Degree	Degree

Doctor's
Degree

13. Age of respondent?

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

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

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

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

	Total	Registered	Grade
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.)

	Number of Cows		Number of Heifers		Number of Bulls	
Breed	Regis.	Grade	Regis.	Grade	Regis.	Grade
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_____
b. 30 - 39 _____
c. 40 - 49 _____
d. 50 - 59 _____
e. 60 - 69 _____
f. 70 or above _____
g. Box (free) stalls ____

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?

Type of Silo	Size	Type of Cover			
		Roof	Plastic	Other	None
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_____
b. 2,000-3,999_____
c. 4,000-5,999_____
d. 6,000-7,999_____
e. 8,000-9,999_____
f. 10,000-11,999_____
g. 12,000-13,999_____
h. 14,000-15,999_____
i. 16,000-17,999_____
j. 18,000-19,999_____
k. 20,000-21,999_____
l. 22,000-23,999_____
m. 24,000-25,999_____
n. 26,000-29,999_____
o. 30,000-49,999_____
p. 50,000-99,999_____

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

a, Excellent_____
b. Good_____
c. Fair_____
d. Poor_____

Name of Respondent_____

Address_____County_____ Number_____

Date_____ Tenure status_____

QUESTIONS FOR THE INTERVIEWER TO ANSWER (Not in interview)

Name of Respondent_____

Address_____County_____ Number_____

Date_____

46. Pounds of milk sold last year_____ Percent B.F. Test_____
Average bacterial count last year_____

47. All people do not adopt practices at the same time. About where would you place the respondent with respect to adopting new recommended dairy practices?

a. Among the first few____
b. Soon after the first few____
c. Sooner than the average____
d. A little later than most____
e. Among the last few____

48. Is the respondent

a. Man____
b. Woman

49. Interest of respondent in improving his dairy management (in interviewer's judgement).

a. Very interested____
b. Somewhat interested____
c. Indifferent____
d. Not interested____

50. Respondent's attitude toward survey (in interviewer's judgement)

a. Friendly____
b. Somewhat friendly____
c. Indifferent____
d. Antagonistic____

51. Should the respondent pay more attention to management of his dairy herd in light of his situation?

a. Yes____ b. No____ c. Uncertain____

52. How well do you know the respondent?

a. Very well____
b. Fairly well___
c. Not very well____
d. Not at all____

53. How familiar are you with the respondent's dairy situation?

a. Very familiar____
b. Fairly familiar____
c. Not very familiar____
d. Not familiar____

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

a. Excellent____
b. Good____
c. Fair____
d. Poor____