1732

March 22, 1972

To the Graduate Council:

I am submitting herewith three related problems in lieu of thesis written by Lester Ray Brewer entitled: "Problem A: Characteristics of Marshall County Beef Producers and Their Farms; Problem B: Management Practices of Marshall County Beef Producers; Problem C: Factors Influencing Beef Management Practice Adoption by Marshall County Beef 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. Dotson

Major Professor

We have read these problems and recommend their acceptance:

Horace C. Smith Jr.

Haly M. Jamison

Cecil E. Bailey Jr.

Accepted for the Council:

Vice President for
Graduate Studies and Research

PROBLEM A: CHARACTERISTICS OF MARSHALL COUNTY BEEF PRODUCERS AND THEIR FARMS

PROBLEM B: MANAGEMENT PRACTICES OF MARSHALL COUNTY BEEF PRODUCERS

PROBLEM C: FACTORS INFLUENCING BEEF MANAGEMENT PRACTICE ADOPTION BY MARSHALL COUNTY BEEF PRODUCERS

Three Related Special Problems in Lieu of Thesis

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

---

by

Lester Ray Brewer

June 1972

ACKNOWLEDGEMENT

The author hereby expresses appreciation to the Marshall County beef producers whose cooperation made this study possible.

Gratitude is expressed to Dr. Robert S. Dotson, Chairman of the Graduate Committee, for his counseling and guidance in the designing and writing of these problems. Appreciation is also extended to other members of the graduate committee, Dr. Haley M. Jamison, Dr. C. E. Carter, Jr., and Professor Horace C. Smith. Their patience and suggestions were gratefully received.

Appreciation is expressed to Dr. Webster Pendergrass, Vice-President for Agriculture, The University of Tennessee, and Dr. Vernon W. Darter, Dean, Agricultural Extension Service, The University of Tennessee, and also Agricultural Extension District Supervisors, Milburn E. Jones and Owen Hodges, for granting in-service training leave for the purpose of doing graduate study.

The writer is grateful to the Marshall County Agricultural Extension Committee for granting permission to be out of the county and to the County Extension Staff for assuming additional responsibilities during this time. A special appreciation of gratitude is expressed to Mrs. Faye Batten, Extension Secretary, for typing the draft.

Last, but not least, the writer is extremely grateful for the patience, encouragement, and assistance of his wife, Willadean, and children, Danny, Mike, and Debbie, in the preparation of this study.

L. R. B.

1028092

ABSTRACT

PROBLEM A: CHARACTERISTICS OF MARSHALL COUNTY BEEF PRODUCERS AND THEIR FARMS

This study was made in Marshall County, Tennessee, to determine the characteristics of Marshall County Beef producers and their farms. The study was based on a survey-type interview and reflects information for developing a county plan of action. The producers were classified into low, medium, and high groups, depending on the number of pounds of beef sold per cow in 1970.

A close analysis indicates that cattlemen interviewed in Marshall County had the following characteristics: (1) 60 percent were considered friendly toward the survey; (2) 58 percent were full-time farmers; (3) 48 percent indicated that beef was their major source of income; (4) the average educational level was 12 years; (5) over one-half were in the 45-54 age group; (6) more than one-half owned Angus cattle, and (7) the average total acreage per farm was 139.7.

Comparing the high and low producers, it was found that the average high producer: (1) had 1.7 more formal years of education; (2) owned 79.9 more acres of land; (3) kept 11 more beef cows, and (4) marketed 11.6 more calves.

Implications were drawn from the findings concerning their relevance for the Marshall County Agricultural Extension Program.

PROBLEM B: MANAGEMENT PRACTICES OF MARSHALL COUNTY BEEF PRODUCERS

The purpose of this Marshall County survey was to determine which recommended beef production practices were being used by cattlemen in the county. Forty beef producers were interviewed at random and comparative analyses made in reference to pounds of beef sold in 1970 per cow bred.

Average management ratings for all practices were computed so that further comparisons could be made. The ratings were given to each cattleman on each of 31 management practices.

A close analysis indicated the following regarding management practices: (1) 20 percent of the high producers kept replacement heifers, while the low producers did not keep any (2) 20 percent of the high producers had increased herd size over the previous year as compared to 10 percent for the low producers, and (3) the management level averaged by the high producers was considerably above that of the low producers. More high producers were "using" other recommended practices, including: (1) waiting until replacement heifers were at least 15 months of age before breeding; (2) using a systematic rotational grazing program; (3) using recommended fly control practices; and (4) using recommended procedures in castration.

Other comparisons showed that high producers were doing a better job than low in: (1) keeping bulls whose records met minimum requirement of the breeder's performance tested bull sale; (2) using one or more performance tested bulls; and (3) checking frequently first calf heifers.

The cattlemen had an average weaning percent per female bred of 88 percent; high producers reporting 86 percent; medium 95 percent; and low, 83 percent.

Other implications from the study were drawn and educational use of the data was recommended.

PROBLEM C: FACTORS INFLUENCING BEEF MANAGEMENT PRACTICE ADOPTION BY MARSHALL COUNTY BEEF PRODUCERS

The purpose of this study was to identify some factors influencing beef producers of Marshall County to adopt recommended practices. The forty randomly selected beef producers were interviewed and divided into high, medium, and low production groups according to pounds of beef sold in 1970, per cow bred.

Of the things liked most about beef cattle production, the joy of watching cattle grow and the relatively low labor requirement per unit were most often mentioned. Other reasons given were: (1) the efficient use of available pasture, and (2) the relatively good return on investment. The most often mentioned dislike was the relatively slow turnover of money invested.

Of all persons from whom advice was sought, County Agents, cattle buyers, and local veterinarians were most often used. Eighty-seven percent of the high producers listed County Agents as their main source of information, as compared to 60 percent for the low producers. Among other sources, farm magazines and The University of Tennessee bulletins or publications also were mentioned frequently.

These findings, together with those from the two related studies, indicate a basis for development of a useful educational plan for cow-calf producers in Marshall County, Tennessee.

TABLE OF CONTENTS

CHAPTER	PAGE
PROBLEM A: CHARACTERISTICS OF MARSHALL COUNTY BEEF PRODUCERS AND THEIR FARMS	1
I. INTRODUCTION	2
The Study Area	2
Importance of Beef Production	2
The Purpose of the Study	3
Review of Related Literature	3
Methods	3
II. FINDINGS	6
Respondent's Attitude Toward the Survey	6
Major Occupations of Cattlemen	6
Major Sources of Income	9
Educational Levels	9
Age Groups	9
Gross Family Income Level	13
Total Farm Acreage Categories	13
Cropland Acreage Categories	13
Cows Kept	17
Number	17
Registered cows	17
Breeds of registered cows	17
Grade cows	21
Breeds of grade cows	21

CHAPTER PAGE

Beef Bulls Kept 21

Number 21

Breeds of registered bulls 25

Breeds of grade bulls 25

Replacement Heifers Kept 25

Number 25

Breeds of registered replacement heifers 30

Weights of replacement heifers 30

Changes in Size of Beef Cattle Herds

Numbers of beef cattle added and reasons for adding in 1970 34

Numbers 34

Reasons 34

Size of decrease in herds that were smaller 34

Number of cows sold and prices received 34

III. SUMMARY 37

Review of Findings 37

Implications 39

PROBLEM B: MANAGEMENT PRACTICES OF MARSHALL COUNTY BEEF PRODUCERS 40

I. INTRODUCTION 41

The Purpose of the Study 41

Review of Literature 41

Methods 43

CHAPTER PAGE

Rating explanation 44

II. FINDINGS 46

Management Levels of Beef Producers 46

Average management level ratings 46

Management practice diffusion ratings 46

Breeding practices 46

Calving season practices and calfhood identification. 52

Feeding, pasturing, and grazing practices 52

Parasite control practices 53

Vaccinating practices 53

Miscellaneous practices 53

Breeding Management Practices 54

Females of breeding age in herd 54

Cows bred to calve 54

Number of bulls used 58

Calf Management Practices 58

Number of calves weaned 58

Number of calves marketed 58

Places calves were sold 58

Average weight of calves sold 62

Prices received per pound of calf sold 62

Average gross returns per herd 65

Feeding Management Practices 65

Kinds of concentrates purchased and fed 65

Tons of legume hay grown 65

CHAPTER PAGE

Tons of grass hay grown 68

Pasture Management Practices 68

Fescue-white or ladino clover for pasture acreage . . . 68

Fescue-lespedeza for pasture 68

Lespedeza for pasture 68

Use and Management of Equipment and Facilities 73

Restraining equipment 73

Sources of water 73

III. SUMMARY 76

Implications 78

PROBLEM C: FACTORS INFLUENCING BEEF MANAGEMENT PRACTICE ADOPTION BY MARSHALL COUNTY BEEF PRODUCERS 79

I. INTRODUCTION 80

The Purpose of the Study 80

Review of Literature 80

Methods 81

II. FINDINGS 82

Interest in Improving Herd Management 82

Need for Additional Attention to Beef Herd Management . . 82

Degree to Which Interviewer Knew Cattlemen 82

Sources of Management Advice 85

Individual Source of Information 85

Advice Sought 89

Things Liked About Beef Production 89

CHAPTER PAGE

Things Disliked About Beef Production 89

III. SUMMARY 94

Review of Findings 94

Implications 95

BIBLIOGRAPHY 97

APPENDIX 100

VITA 115

LIST OF TABLES

TABLE		PAGE
I.	Numbers of Marshall County Beef Producers Interviewed Using Cow-Calf System According to Ranges in Pounds of Beef Sold in 1970 Per Cow Bred	5
II.	Interviewer's Estimates of the Attitudes of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers Toward the Survey by Percents	7
III.	Major Occupations of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents . .	8
IV.	Major Sources of Income of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents	10
V.	Educational Levels of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents and Average Educational Grade Levels	11
VI.	Age Groups of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents	12
VII.	Total 1970 Gross Family Incomes of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents	14
VIII.	Total Farm Acreage Categories of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents and Average Farm Acres	15

TABLE PAGE

IX. Total Cropland Acreage Categories of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents and Average Farm Acres 16

X. Totals and Average Numbers of Beef Cows Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 18

XI. Numbers and Average Numbers of Registered Beef Cows Kept by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 19

XII. Breeds of Registered Cows in Herds Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 20

XIII. Numbers of Grade Cows Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 22

XIV. Predominant Breeds of Grade Cows in Herds Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 23

XV. Total Number of Beef Bulls Kept by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 24

XVI. Numbers of Registered Bulls Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents and Average Numbers 26

TABLE PAGE

XVII. Breeds of Registered Bulls Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 27

XVIII. Predominant Breeds of Grade Bulls Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 28

XIX. Total Number of Replacement Heifers Kept by Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 29

XX. Breeds of Registered Heifers Belonging to All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 31

XXI. Estimated Weights of Replacement Heifers Kept by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 32

XXII. Changes in Numbers of Beef Cattle Kept in 1970 Over the 1969 Total by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents . . 33

XXIII. Reasons for Having More Beef Cattle in 1970 Than in 1969 Reported by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 35

XXIV. Approximate Sale Price Per Cow Sold in 1970 by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 36

TABLE PAGE

XXV. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Average Management Level Ratings and Total Averages 47

XXVI. Average Beef Management Practice Diffusion Ratings and Total Average Ratings for All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers . . . 48

XXVII. Numbers of Females of Breeding Age in Beef Herds in 1970 of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 55

XXVIII. Numbers of Females Bred to Calve in 1970 of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 56

XXIX. Number of Bulls Used on Females During the Breeding Season by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 57

XXX. Numbers, Averages, and Percents of Calves Raised to Weaning Age by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents . 59

XXXI. Total Number of Calves Marketed During 1970 by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 60

XXXII. Different Places Where Calves Were Sold by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 61

TABLE PAGE

XXXIII. Average Weight Per Calf Sold or Kept by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 63

XXXIV. Prices Per Pound Received for Calves Sold by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 64

XXXV. Kinds of Concentrates Purchased and Fed Previous Year by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 66

XXXVI. Actual Tons of Legume Hay Grown for Beef Herds by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 67

XXXVII. Actual Tons of Grass Hay Grown for Beef Herds by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 69

XXXVIII. Total Acres Fescue-White or Ladino Clover for Pasture Production for Beef Herds of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 70

XXXIX. Total Acreage Fescue-Lespedeza for Pasture Production for Beef Herds by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents . 71

XL. Total Acreage of Lespedeza for Pasture Production for Beef Herds by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents . 72

TABLE PAGE

XLI. Types of Silos, Restraining, and Other Equipment in Workable Condition Used by All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 74

XLII. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers, According to Sources of Water for Herds 75

XLIII. Interviewer's Judgement of the Interest of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers in Improving the Management of Beef Herds, by Percents 83

XLIV. Interviewer's Opinion of Whether or Not All Marshall County Beef Producers Interviewed, High, Medium, and Low Producers Should Pay More Attention to the Management of Beef Herds, by Percents 84

XLV. Degrees to Which Interviewer Knew All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers by Percents 86

XLVI. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers Who Received Useful Information from Other Sources on Beef Cattle Management 87

XLVII. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers Who Sought Advice from Certain Individuals Concerning Beef Cattle Production . 88

TABLE PAGE

XLVIII. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers According to Whether They Talked to Anyone About Beef Cattle Production and Marketing 90

XLIX. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers, Mentioning Things They Liked Most About Beef Cattle Production 91

L. Percents of All Marshall County Cattlemen Interviewed, High, Medium, and Low Producers, Mentioning Things They Disliked Most About Beef Cattle Production 92

PROBLEM A: CHARACTERISTICS OF MARSHALL COUNTY BEEF PRODUCERS AND THEIR FARMS

CHAPTER I

INTRODUCTION

I. THE STUDY AREA

Marshall County consists of 241,280 acres of land, of which 82.5 percent was in farms in 1964. The average size farm was 143 acres (16:355)*. There were 125 grade A dairies in Marshall County and 400 manufacturing milk producers. Dairying represented 41 percent of the agricultural income in 1970 (3:9).

Under provisions of the Smith-Lever Act, the Cooperative Extension Service exists to diffuse among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same (2:3). To accomplish this mission, The University of Tennessee Extension Service in Marshall County has made an attempt to identify the needs, problems, and solutions relative to beef production. Extension workers have the responsibility of diffusing verified research and practical information on subjects relating to agriculture and home economics and encouraging adoption and application of same.

II. IMPORTANCE OF BEEF PRODUCTION

There were no data on the exact dollar value of beef cattle in Marshall County in 1971. The latest (1964) census report indicated a trend

---

*Numbers in parentheses refer to similarly number items in the Bibliography; those after the colon are page numbers.

toward fewer, but larger farms with an increase in numbers of cows and calves. Since dairying comprised 41 percent of the agricultural income, it might be assumed that the other 59 percent was divided among beef, swine, and crops. The census listed 20,213 beef cows in Marshall County in 1964. There was no further break-down in the beef category.

III. THE PURPOSE OF THE STUDY

The purpose of this study, then, was to determine the characteristics of Marshall County beef producers and their farms.

IV. REVIEW OF RELATED LITERATURE

This is the first survey-type study made in Marshall County on beef production practices.

An earlier study by Keyes in 1966 of 36 Campbell County, Tennessee, beef producers disclosed that the average age of cattlemen in that county was 52 years, and that the average educational level was 10.5 grades (5:18). A study in Macon County, Tennessee, revealed the average age was 51 years and 9.7 grade level (7:17). Another Tennessee survey made by Ranney in 1964 revealed an average age of 52.8 years and 9 years of formal education (9:26). Matthews in 1968 found that the beef producers in Lawrence County, Tennessee, were, on the average, 55.2 years of age.

V. METHODS

A list of all beef cattle producers in Marshall County was obtained and a random sample of 40 was drawn for personal interview. An interview

schedule relative to the characteristics of beef production was adopted from earlier studies prior to making the survey. Questions were designed to give the interviewer an insight into the nature, degree of efficiency, levels of production, and other information concerning the farmers' methods of operation. A copy of the interview schedule is included in the Appendix.

The sample was divided into high producers, medium producers, and low producers, depending on pounds of beef sold per cow bred in 1970. The range of beef sold was from 350 pounds to 600 pounds (see Table I). No distinction was made between methods of marketing at the time the survey was made. However, marketing methods were included in the survey and will be discussed later in this document.

It will be noted in Table I that 75 percent of the farmers marketed their calves at between 450 and 600 pounds of weight. Twenty-five percent of the farmers marketed calves between 350 and 450 pounds. These preliminary figures suggest an educational program is needed in the Marshall County area for more net profit. Because of the weight of date available from the survey, main comparisons will be made between high and low producers to focus on any major differences which may exist.

TABLE I

NUMBERS OF MARSHALL COUNTY BEEF PRODUCERS INTERVIEWED USING COW-CALF SYSTEM ACCORDING TO RANGES IN POUNDS OF BEEF SOLD IN 1970 PER COW BRED

Beef Production Group	Number of Producers in County	Range of Beef Sold Within Each Group (Pounds)
Low	10	350-440
Medium	15	450-475
High	15	480-600
TOTAL	40	350-600

CHAPTER II

FINDINGS

I. RESPONDENT'S ATTITUDE TOWARD THE SURVEY

Having been in the county only a short time prior to the survey, the interviewer (county leader) was received with a somewhat reluctant attitude at first. But when the objectives of the survey were explained, farmers became more receptive and even friendly toward the survey. Study of data in Table II indicates that 62 percent of all interviewees (80 percent of the high and 60 percent of the low producers) were "friendly toward the survey." An additional 20 percent of all (13 percent of the high and 20 percent of the low) producers were "somewhat friendly."

II. MAJOR OCCUPATIONS OF CATTLEMEN

It is important to note in Table III that over one-half of the cattlemen were full-time farmers (58 percent). Eighty percent of the low and only 53 percent of the high producers interviewed were full-time farmers. Some of the low production group of producers appeared to be clinging to a rather hopeless situation. Some of their wives were employed as an extra source of income.

TABLE II

INTERVIEWER'S ESTIMATES OF THE ATTITUDES OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS TOWARD THE SURVEY BY PERCENTS*

Attitude Toward Survey	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Friendly	62	80	46	60
Somewhat friendly	20	13	27	20
Indifferent	18	7	27	20
TOTAL	100	100	100	100

*Percents are rounded to the nearest whole number.

TABLE III

MAJOR OCCUPATIONS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Major Occupation	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	2	0	7	0
Full-time farmer	58	53	47	80
Part-time farmer	27	33	26	20
Retired	8	7	13	0
Business	5	7	7	0
TOTAL	100	100	100	100

III. MAJOR SOURCES OF INCOME

For 48 percent of all farmers interviewed beef production was the major source of income. As seen in Table IV, 53 percent of the high and 30 percent of the low producers listed beef as the major source of income.

It is interesting to note that 38 percent of the cattlemen (13 percent of the high and 70 percent of the low) did not give their major source of income.

IV. EDUCATIONAL LEVELS

Table V reflects an interesting picture as to the educational levels of beef producers. A close study will reveal that the high producers, on the average, had 1.7 years more education than the low producers. The average educational level of the low producer was lower that the average educational level of the high producer. It will be noticed than 20 percent of the low producers had some college level work as compared to 26 percent of the high producers. By way of control, Matthews states that only 4 percent of all producers in Lawrence County, Tennessee, had gone beyond the high school level (9:12). The average level for the present study was high school graduation, 12th grade. The median level for the county in 1960 was 8.8 years of schooling (16).

V. AGE GROUPS

As seen in Table VI, 35 percent of all producers were in the 45-54 year age interval. This agrees with Matthews (9:12). He found that all producers averaged 55.2 years of age. A very noticeable figure was

TABLE IV

MAJOR SOURCES OF INCOME OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Major Source of Income	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	38	13	40	70
Beef	48	53	53	30
Wage Earner	8	13	7	-
Business	2	7	-	-
Horses	2	7	-	-
Swine	2	7	-	-
TOTAL	100	100	100	100

TABLE V

EDUCATIONAL LEVELS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS AND AVERAGE EDUCATIONAL GRADE LEVELS

Educational Level	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	5	0	7	10
Grades 1 - 8	2	7	0	0
Grades 9 - 12	65	67	60	70
1 - 4 Years College	23	13	33	20
B.S. Degree	5	13	0	0
TOTAL	100	100	100	100
Average Educational Level	12.0	12.5	12.3	10.8

TABLE VI

AGE GROUPS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Age of Respondent (years)	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	10	13	13	0
25 - 34	2	7	0	0
35 - 44	13	13	13	10
45 - 54	35	27	40	40
55 - 64	13	13	14	10
65 - 74	22	27	20	20
75 - over	5	0	0	20
TOTAL	100	100	100	100
Estimated median for those reporting (years)	53.6	55.0	53.3	55.0

only 2 percent of all producers were 25 to 34 years of age. Twenty-seven percent were retirement age or above. Median ages for high and low producers were 55 years for each.

VI. GROSS FAMILY INCOME LEVEL

As seen in Table VII, 61 percent of the total producers reportedly had gross incomes ranging from $6,000 to $14,000. Forty-seven percent of the high producers reported income above $10,000. None of the low producers had incomes so high. The estimated median gross family income for all producers was $9,333, for high producers was $10,667 and for low producers was $7,833 in 1970.

VII. TOTAL FARM ACREAGE CATEGORIES

The average farm size for respondents in Marshall County was found to be 220.0 acres for all producers interviewed. This was 33.1 acres less than the average high producer acreage, but 46.8 acres more than the average for low producers (see Table VIII).

VIII. CROPLAND ACREAGE CATEGORIES

Table IX reflects the cropland acreage categories, and the most frequently mentioned interval was 100-199 acres. Seventy-four percent of the medium producers and 60 percent of the high producers were in this category. The average for all respondents was 139.7 acres, for high producers was 151.1 acres, and for low producers was 121.5 acres.

TABLE VII

TOTAL 1970 GROSS FAMILY INCOMES OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Total Gross Family Income	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	23	20	20	30
$4,000 - 5,999	8	0	7	20
6,000 - 7,999	18	12	13	30
8,000 - 9,999	23	20	26	20
10,000 - 11,999	10	20	7	0
12,000 - 13,999	10	7	20	0
14,000 - 15,999	2	0	7	0
16,000 - 17,999	2	7	0	0
20,000 - 21,999	2	7	0	0
30,000 - 49,999	2	7	0	0
TOTAL	100	100	100	100
Estimated median for those reporting	$9,333	$10,667	$9,500	$7,333

TABLE VIII

TOTAL FARM ACREAGE CATEGORIES OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS AND AVERAGE FARM ACRES

Total Farm Acreage	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
78 - 124	25	30	27	30
125 - 199	35	27	40	40
200 - 299	23	27	13	30
300 - 399	7	13	7	0
400 - 750	10	13	13	0
TOTAL	100	100	100	100
Average (acres)	220.0	253.1	218.2	173.2

TABLE IX

TOTAL CROPLAND ACREAGE CATEGORIES OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS AND AVERAGE FARM ACRES

Total Cropland Acreage	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
20 - 99	20	20	13	30
100 - 199	65	60	74	60
200 - 299	13	13	13	10
300 - 399	2	7	0	0
TOTAL	100	100	100	100
Average (acres)	139.7	151.1	140.5	121.5

IX. COWS KEPT

Number

Table X reflects the numbers of beef cows belonging to all Marshall County cattlemen interviewed. These are broken down into high, medium, and low producers. The average number of cows per farm surveyed was 35.2. The total number in the high producer category was 567 compared to 316 in the low producer category. It will be noted that the high producers averaged 37.8 cows per herd, while the low producers had 31.6 cows per herd. Thus, the high producers tended to have larger herds than others.

Registered Cows

Table XI indicated that only 25 percent of all farmers interviewed had registered cows in the herd. For the purpose of comparison, a study in Lawrence County found that 34 percent of the farmers had registered cows (9:19). Of the low producers who owned registered cows, 10 percent were in the 16-26 category and 10 percent in the 26-40 category. More high producers had more cows registered (88) than the low (58); but the low producers having registered cows had more registered percentage wise (18.4 vs 15.5 percent, respectively).

Breeds of Registered Cows

Table XII shows that by far the greatest number of registered cows were of the Angus breed, 18 percent, compared to 2 percent each for Polled Hereford, Horned Hereford, and Shorthorn. None of the low producers indicated having registered Angus. It will be noted that 80 percent

TABLE X

TOTALS AND AVERAGE NUMBERS OF BEEF COWS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Beef Cows	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
1 - 15	2	6	0	0
16 - 25	30	20	33	40
26 - 35	30	40	27	20
36 - 45	23	7	27	40
46 - 55	2	7	0	0
56 - 85	13	20	13	0
TOTAL	100	100	100	100
Average Number of Beef Cows Per Producer	35.2	37.8	35.0	31.6
Total Number of Cows	1408	567	525	316

TABLE XI

NUMBERS AND AVERAGE NUMBERS OF REGISTERED BEEF COWS KEPT BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Registered Beef Cows	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	75	73	73	80
1 - 15	5	7	7	0
16 - 25	7	13	0	10
26 - 40	13	7	20	10
TOTAL	100	100	100	100
Percent of cows registered in herds having registered cows	15.8	15.5	14.7	18.4
Average number of registered cows kept by those having registered cows	22.3	22.0	25.6	29.0
Total number of registered cows	223	88	77	58

TABLE XII

BREEDS OF REGISTERED COWS IN HERDS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Breed of Registered Cows	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	75	73	73	80
Angus	18	20	27	0
Hereford (Polled)	2	7	0	0
Hereford (Horned)	2	0	0	10
Shorthorn	2	0	0	10
TOTAL	100	100	100	100

of the low producers had no registered animals in the herd, compared to 73 percent each for the high and medium producers. Thus, high producers with registered cattle tended to have Angus.

Grade Cows

A close analysis of Table XIII indicates that high producers having grade cows had an average of 39.9 grade cows, compared to 28.7 for the low producers. The medium producers had an average of 34.4 grade cows per farm. Twenty percent of the high producers, 13 percent of the medium producers, and 10 percent of the low producers did not keep any grade cows. Therefore, fewer high producers tended to have more grade cows than others.

Breeds of Grade Cows

Thirty percent of all producers listed Angus as their predominant breed of grade cows (see Table XIV). This was twice as many as for any other breed. Horned Herefords and Shorthorns were mentioned as the next most predominant breeds. Sixty percent of the low producers mentioned Angus as being predominant, compared to 13 percent of the high producers. The "mixed" breeds were mentioned more often than either the AngusxHereford crosses or the AngusxCharolais crosses.

X. BEEF BULLS KEPT

Number

As seen in Table XV, 20 percent of the total producers kept no bull with the herd. Seven percent of the high producers, 33 percent of the medium producers, and 20 percent of the low producers kept no beef

TABLE XIII

NUMBERS OF GRADE COWS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Grade Cows	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	15	20	13	10
1 - 25	33	20	40	40
26 - 35	22	33	14	20
36 - 45	18	7	20	30
46 - 85	12	20	13	0
TOTAL	100	100	100	100
Average number kept by those having grade cows	34.9	39.9	34.4	28.7
Total number grade cows	1,185	479	448	258

TABLE XIV

PREDOMINANT BREEDS OF GRADE COWS IN HERDS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Predominant Breed of Grade Cows	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
No grade cows	15	20	13	10
Angus	30	13	27	60
Hereford (Polled)	5	13	0	0
Hereford (Horned)	15	7	27	10
Shorthorn	15	33	0	10
Hereford (Horned and Polled)	2	7	0	0
Angus x Charolais	5	0	13	0
Angus x Hereford (Horned)	5	0	13	0
Mixed	8	7	7	10
TOTAL	100	100	100	100

TABLE XV

TOTAL NUMBER OF BEEF BULLS KEPT BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Beef Bulls	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	20	7	33	20
One	43	46	47	30
Two	20	27	7	30
Three or more	17	20	13	20
TOTAL	100	100	100	100
Average for those having beef bulls	1.9	1.8	1.1	2.4

bull. Dairy or mixed bulls were apparently used with these herds. The average bulls kept for each high, medium, and low producer was 1.8, 1.1, and 2.4, respectively. Ninety-three percent of the high and 80 percent of the low producers had at least one bull. Thus, more high producers kept fewer beef bulls than the low.

Breeds of Registered Bulls

Table XVI shows that 43 percent of the total producers did not have registered beef bulls. Twenty percent of the high and 10 percent of the low producers did not have registered beef bulls. High producers accounted for 27 registered bulls, while medium producers had 4 and low had 13. Twenty-eight percent of all producers said they had registered Angus bulls (see Table XVII). Percentage wise, those keeping Angus bulls for the four categories of producers were quite similar. The next most popular breed mentioned was Shorthorn.

Breeds of Grade Bulls

Table XVIII compares high, medium, and low producers on breeds of grade bulls kept. It will be noted that 93 percent of the high producers, 86 percent of the medium, and 90 percent of the low producers kept no grade bull.

XI. REPLACEMENT HEIFERS KEPT

Number

As seen in Table XIX, 53 percent of all farmers interviewed reportedly kept no replacement heifers. Forty-seven percent of the high producers and 60 percent of the medium producers kept no replacement

TABLE XVI

NUMBERS OF REGISTERED BULLS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS AND AVERAGE NUMBERS

Number of Registered Bulls	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	43	20	53	60
One	25	27	33	10
Two	15	27	7	10
Three	5	6	0	10
Four or over	12	20	7	10
TOTAL	100	100	100	100
Average number bulls kept by those having registered bulls	2.3	2.3	2.0	3.3
Total number of bulls	39	27	19	13

TABLE XVII

BREEDS OF REGISTERED BULLS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Breed of Registered Bulls	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Did not own registered bulls	43	20	53	60
Not answered	5	13	0	0
Angus	28	27	26	30
Shorthorn	10	20	0	10
Hereford (Horned)	5	7	7	0
Hereford (Polled)	5	13	0	0
Charolais	2	0	7	0
Angus and Horned Hereford	2	0	7	0
TOTAL	100	100	100	100

TABLE XVIII

PREDOMINANT BREEDS OF GRADE BULLS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Predominant Breed of Grade Bulls	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Did not own grade bulls	90	93	86	90
Not answered	5	0	7	10
Hereford (Horned)	3	0	7	0
Mixed breed	3	7	0	0
TOTAL	100	100	100	100

TABLE XIX

TOTAL NUMBER OF REPLACEMENT HEIFERS KEPT BY MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Replacement Heifers Kept	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	53	47	60	50
1 - 5	12	13	7	20
6 - 10	27	40	26	10
11 - 15	3	0	0	10
15 - over	5	0	7	10
TOTAL	100	100	100	100

heifers. Fifty percent of the low producers kept no replacement heifers. Little difference is noted when groups are compared regarding numbers of replacement heifers kept.

Breeds of Registered Replacement Heifers

There was no significant difference between the production levels relative to the percent not owning registered heifers. However, high producers kept registered Angus, while the low had Shorthorn and Hereford (see Table XX).

Weights of Replacement Heifers

Though few apparently had such records, 20 percent of the high producers retained calves in the herd weighing from 450 to 600 pounds. Table XXI has data showing that only 7 percent of the medium producers kept calves in the 450-600 pound category, while none of the low producers reportedly retained calves in this weight range.

XII. CHANGES IN SIZE OF BEEF CATTLE HERDS

Table XXII indicates that more than one-half of the total producers in Marshall County neither increased nor decreased their size of herd over the previous year. However, 40 percent of the low producers had increased the size of their herd, compared to 33 percent of the high producers. None of the lower producers had fewer cattle in 1970 when compared to 1969. Fourteen percent of the high and 27 percent of the medium producers reported fewer cows in 1970 than in 1969.

TABLE XX

BREEDS OF REGISTERED HEIFERS BELONGING TO ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Beed of Registered Heifers	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Did not own registered heifers	85	80	93	80
Angus	10	20	7	0
Shorthorn	3	0	0	10
Hereford (Horned)	3	0	0	10
TOTAL	100	100	100	100

TABLE XXI

ESTIMATED WEIGHTS OF REPLACEMENT HEIFERS KEPT BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Weight per Heifer Kept (Pounds)	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None kept	53	47	60	50
Not answered	35	26	33	50
300 - 449	2	7	0	0
450 - 600	10	20	7	0
TOTAL	100	100	100	100

TABLE XXII

CHANGES IN NUMBERS OF BEEF CATTLE KEPT IN 1970 OVER THE 1969 TOTAL BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Change in 1970 Herd Size Over the 1969 Total	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Larger	27	33	13	40
Same as 1969	58	52	60	60
Smaller	15	13	27	0
TOTAL	100	100	100	100

Numbers of Beef Cattle Added and Reasons for Adding in 1970

Numbers. Twenty-seven percent of all producers interviewed did increase herd size.

Reasons. Table XXIII shows that 30 percent of low and none of the high producers had "no reason" for increasing herd size. Twenty percent of the high and 10 percent of the low producers increased to "get more income." Thirteen percent of the high and none of the low producers had extra "pasture available" as a reason for increasing.

Size of Decrease in Herds That Were Smaller

In 1970, 15 percent of all interviewees had fewer cattle than in 1969. Only 13 percent of the high producers had fewer cows, 27 percent of the medium, and none of the low producers had fewer cows (Table XXII). The only cattleman reporting how many fewer cattle he had (a medium producer) indicated a decrease of 35 head in herd size.

Numbers of Cows Sold and Prices Received

Table XXIV reflects a trend in selling of cows in 1970. Price of feeder calves had begun to climb and farmers were retaining heifers for breeding stock. Fifty-five percent of all farmers did not report selling cows. Fifty-three percent of the high and 70 percent of the low producers did not sell cows. Of those cows sold in 1970, 20 percent each of high and low producers reported prices ranging from $151 to $250 per cow (see Table XXIV).

TABLE XXIII

REASONS FOR HAVING MORE BEEF CATTLE IN 1970 THAN IN 1969 REPORTED BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Reason Reported for Having More Cows	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Had not increased herd size	73	67	86	60
Increasing size of operation for income	10	20	0	10
Had no reason	10	0	7	30
Plenty of pasture available	7	13	7	0
TOTAL	100	100	100	100

TABLE XXIV

APPROXIMATE SALE PRICE PER COW SOLD IN 1970 BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Approximate Sale Price Per Cow (Dollars)	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	27	20	47	10
Did not sell cows	55	53	47	70
$125 - 150	5	7	7	0
151 - 250	13	20	0	20
TOTAL	100	100	100	100

CHAPTER III

SUMMARY

An attempt has been made to determine the characteristics of Marshall County beef producers and their farms as it relates to their production in pounds of beef sold in 1970 per cow bred. Forty cow-calf system producers were randomly selected and interviewed and data analyzed. Production ranged from 350 to 600 pounds.

I. REVIEW OF FINDINGS

Comparisons were made between 15 high, 15 medium, and 10 low producers based on pounds of beef sold per cow bred. The findings include those listed below.

1. Seventy-five percent of the farmers interviewed sold calves in the 450 to 600 pound range. Only 25 percent sold calves below 440 pounds.

2. Eighty percent of the high producers and 60 percent of the low were considered "friendly" and received the interviewer well.

3. Of the 40 farmers interviewed, 58 percent were full-time farmers. Fifty-three percent of the high and 80 percent of the low producers were full-time farmers.

4. Over one-half (53 percent) of the high producers listed beef as a major source of income. Only 30 percent of low producers listed beef as a major source of income.

5. The average educational level of the high producers was 12.5 years of formal education, compared to 10.8 years for the low producers.

The county median level in 1960 was listed as 8.8 years (16).

6. The average age of both high and low producers was 55 years.

7. High producers had a median gross family income of $10,667 compared to $7,333 for the low production group. The median for all interviewees was $9,333.

8. Average acreage for those interviewed was 220 acres, 253 for the high and 173 for the low producers. The high producers reported up to a high of 750 acres. The largest acreage reported for low producers was 300 acres. Also, high (151 acres) had more cropland than low (122 acres) producers.

9. High producers had 567 cows, compared to 316 for the low producers. The average number of beef cows per producer was 37.8 for the high category, 35 for the medium, and 31.6 for the low producers.

10. It is interesting to note that more high producers (27 percent) than low producers (20 percent) owned registered cows (15.8 percent than the latter (18.4 percent). The former having registered cows, however, had a smaller percent of herd registered. The high producers owned more total registered cows (88) than the low (58 cows).

11. Eighty percent of the high producers kept grade cows, compared to 90 percent of the low producers. Numbers kept by the former (40 cows) were larger than those for the latter (29 cows).

12. Of the total farmers interviewed, 30 percent kept predominately Angus grade cows. Thirty-three percent of the high producers reported that Shorthorns were the predominate breed in their grade herds, while low producers had grade Angus cattle.

13. Only 7 percent of the high and 20 percent of the low producers reported no bull. Ninety-three percent of the high and 80 percent of the low producers reported from one to three bulls with the herd.

14. Eighty percent of high and 40 percent of the low producers reported having one or more registered bulls of different breeds, mainly Angus and Shorthorn.

15. Twenty-seven percent of the high and none of the low producers kept heifers reportedly weighing from 300 to 600 pounds.

16. Some of both low and high producers had sold cows in the $150 to $250 range during the 1970 production year.

II. IMPLICATIONS

1. More attention should be given to management aspects of the beef program in Marshall County.

2. An educational program would be well-received.

3. More of the low producers might seek outside income. Eighty percent of the low producers were full-time farmers.

4. More younger farmers will be needed in the beef business. Eighty-eight percent of the total farmers interviewed were over 35 years of age.

PROBLEM B: MANAGEMENT PRACTICES OF MARSHALL COUNTY BEEF PRODUCERS

CHAPTER I

INTRODUCTION

I. THE PURPOSE OF THE STUDY

The purpose of this study was to determine which recommended practices Marshall County cattlemen were using. The producers were divided into high, medium, and low categories according to pounds of calf sold per cow in 1970.

II. REVIEW OF LITERATURE

The objective of any cattleman is to produce a healthy, fast-growing calf from every cow in the herd. This is essential for a sizeable net profit in the beef production business (14:1). Tyrrell suggests that cows should be bred from April 1 to July 1. This would give a calving program from January 9 to April 9, the following year (15:21). Also, this would allow the cow to carry the calf during the winter months, but would allow the calf to be large enough to take advantage of the grass season. Another excellent practice is to have a cow pregnancy checked. This should be done in September, October, or November if the breeding schedule above is followed.

The above practices must be followed by close attention immediately after calving to detect any abnormalities. Tyrrell suggests cows should be checked twice daily and should be moved to a clean, well-sodded lot (15:27).

Calves should be castrated at 30 days of age and should be dehorned to increase selling value. Tyrrell states that dehorned and castrated calves will bring from $3 to $5 per hundred weight over calves not dehorned or castrated (15:28).

Under certain conditions, Tyrrell recommends creep feeding of young calves. These conditions are: (1) the dam's milk is short; (2) the season is hot and dry; (3) feed grain is available and cheap; (4) a fall calving program is followed, and (5) low quality, slow growing calves are produced (15:33). He also recommends that cows be turned on permanent pasture in November to reduce feed costs. Thin cows should be given extra attention, 3 to 6 pounds of concentrate, 1 pound of protein supplement.

Performance testing was seen by Jamison to: (1) determine maximum production of each individual cow; (2) base selection of replacement heifers on average daily gain and quality records; (3) cull poor producing cows; (4) measure bull productivity; (5) increase financial returns of the herd by improving growth rate and quality of calves; (6) increase the calving percentage; (7) determine post-weaning performance of prospective herd sire and foundation females by means of actual feeding tests; (8) improve pasture, feeding, and general management of the beef cattle interprise; and (9) provide additional performance information to potential buyers (4:3).

A diffusion rating scale has been devised to determine levels of management. The rating scale ranges from 0 for "no use" to 5 for "full usage" of a practice. Keys, in a study of Campbell County beef producers, found that on the average all producers were operating at a

management level of 2.10, "interested," on a practice diffusion or management scale. Campbell County high producers operated at an average management level of 2.33, while low producers operated at a level of 2.01 (6:56).

A study by Luck in Macon County found that all producers had an average management level rating of 3.87. He found that high producers operated at 4.03, compared to 3.5 for low producers (8:106).

Another interview-type survey with beef producers in the Elk River area in 1964 reflected a significant difference in terms of dollars received and recommended practices used. A comparison was made between cattlemen using 75 percent of recommended practices and those using only 25 percent of the recommended practices. It was found that farmers using 75 percent of the recommended practices had a return of $50 per cow more than the low adopters. It was further estimated that if all farmers in the area had followed the recommended practices, the extra gross income from beef would amount to over three million dollars per year (10:31).

III. METHODS

A list of 300 beef producers in Marshall County was compiled from several sources. From this list, 40 farmers were selected at random. Those included in the sample were interviewed.

A summary of the interviewees was based on: (1) number of full-time and part-time operators; (2) percent increase following various recommended production practices; (3) number or percent of full-time and part-time operators marketing calves through organized feeder sales; (4) number of breeders in Tennessee Beef Cattle Improvement Program;

(5) number of breeders participating in one or more of the Performance Tested Bull Sales; (6) number of commercial herds in county using Performance Tested Bulls of approved merit; (7) number of cattlemen following post-weaning, grazing, and growing or backgrounding programs; (8) number of cattle feeding establishments; and (9) number of commercial operators with fall-dropped calves.

The farmers were personally interviewed, using a schedule of 50 questions (see Appendix). The producers were divided into high, medium, and low categories, depending on the pounds of beef sold per cow bred.

Rating Explanation

In an effort to determine the practice adoption levels of producers in total high, medium, and low production categories, 31 recommended practices were included in the schedule. The following rating system was used to classify individuals on each of the 31 practices: (1) no points were given if the person interviewed had not read or heard of the specific practice; (2) one point was given if the person had only heard of the practice; (3) two points were given if the person was only interested in the practice; (4) three points were given if the person had not tried it, but planned to do so; (5) four points were given if the person had tried the practice, but was not using it at the time of the interview; and (6) five points were given if the person had tried the practice and was still using it.

The practice diffusion rate was determined as follows: "unaware," .00-0.49 points; "aware," .50-1.49 points; "interested in the practice," 1.50-2.49 points; "planning to try," 2.50-3.49 points; "tried," 3.50-4.49 points, and "using," 4.50-5.00 points.

By adding up each producer's total score on the production practices and dividing by the number of practices, an average diffusion rate was determined for each producer. Also, a group total average diffusion rate was completed to compare the three production levels on each practice and all practices.

CHAPTER II

FINDINGS

I. MANAGEMENT LEVELS OF BEEF PRODUCERS

Average Management Level Ratings

Table XXV reflects the degrees or levels of management. It will be noted that the high producers had a total average rating of 3.91, compared to 3.30 for the low producers. For comparison, Matthews found in Lawrence County a like difference of .35 between high and low producers (9:57).

Management Practice Diffusion Ratings

Table XXVI presents a wide range in practice diffusion ratings. As stated above, the total average rating ranged from 3.91 for high producers to 3.30 for low producers.

Breeding practices. The first two beef management practices were concerned with the bull's record and performance tested bulls (see Table XXVI). There was a wide range of diffusion ratings when comparing the high and low producers in these two categories. It is meaningful to note that the low producers were given a rating of 1.00, compared to 2.53 for high producers on Practice 2, regarding the bull's records. There was not as much difference on Practice 1, regarding use of performance tested bulls, 2.47 for high producers and 1.60 for low producers.

Although the overall rating for Practice 3 (herds enrolled in Tennessee Beef Cattle Improvement Program) was low, the high producers

TABLE XXV

PERCENTS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY AVERAGE MANAGEMENT LEVEL RATINGS AND TOTAL AVERAGES

Management Level Rating Interval	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
2.26 - 2.49	5	0	7	10
2.50 - 2.99	5	0	0	20
3.00 - 3.49	20	13	20	30
3.50 - 3.99	35	40	40	20
4.00 - 5.00	35	47	33	20
TOTAL	100	100	100	100
Total Average Rating	3.73	3.91	3.84	3.30

TABLE XXVI

AVERAGE BEEF MANAGEMENT PRACTICE DIFFUSION RATINGS AND TOTAL AVERAGE RATINGS FOR ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS*

Beef Management Practice	All Interviewees Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
1. Used one or more performance tested bulls	2.33	2.47	2.67	1.60
2. Bull's records met minimum requirements of the breeders' performance tested bull sale	2.33	2.53	3.00	1.00
3. Had herd enrolled in the Tennessee Beef Cattle Improvement Program	0.53	0.60	0.80	0.00
4. Used separate pasture area for bull(s) during off-breeding season (August through March)	2.63	2.87	2.40	2.60
5. Waited until replacement heifers were at least 15 months of age and had attained a minimum weight of 650 lbs. before breeding	4.85	4.93	4.93	4.60
6. Had all herd cows pregnancy checked last year	1.35	1.13	1.87	0.90
7. Checked herd cows at least twice a day during the breeding season	3.58	3.60	3.87	3.10
8. Had and used a system for identifying each breeding female in the herd	3.65	3.73	3.67	3.50
9. Checked first-calf heifers at least 2 or 3 times daily during calving season	4.18	4.20	4.27	4.00

TABLE XXVI (continued)

Beef Management Practice	All Interviewees Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
10. Checked older cows at least once a day during calving season	4.58	4.53	4.67	4.50
11. Arranged to have competent help available when calving difficulties occurred	4.73	4.93	5.00	4.00
12. Had and used a system for permanently identifying calves	3.50	3.93	3.67	2.60
13. Followed recommended procedures in castration	4.75	4.67	4.67	5.00
14. Followed recommended procedures in dehorning	4.50	4.00	4.67	5.00
15. Provided access to a recommended mineral mixture for all cattle	4.63	5.00	4.67	4.00
16. Followed a systematic rotational grazing program	4.40	4.67	4.33	4.10
17. Provided extra or supplementary grazing for the herd	3.60	4.33	3.67	2.40
18. Kept cows on good permanent pasture sod until late fall and early winter to reduce winter feed costs	5.00	5.00	5.00	5.00
19. Kept replacement heifers separate from rest of breeding herd during winter	3.50	2.93	3.40	4.50
20. Fed more or better quality feed to thin cows and cows recently calved than to others	2.85	3.53	3.00	1.60

TABLE XXVI (continued)

Beef Management Practice	All Interviewees Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
21. Fed brood cows at least 1.5 lbs. of 32-44 % protein supplement daily when feeding low quality roughages such as hulls, straw, and poor quality grass hay	2.15	2.07	2.33	2.00
22. Fed bulls a concentrate during breeding season while on pasture	2.25	3.27	1.67	1.60
23. Followed recommended fly control practices	4.28	4.67	4.00	4.10
24. Followed recommended lice control practices	4.68	4.93	4.67	4.30
25. Used recommended grub control practices	4.43	4.93	4.33	3.80
26. Used recommended materials in the control of internal parasites	4.83	4.93	5.00	4.40
27. Vaccinated all brood cows and replacement heifers for leptospirosis	3.85	4.27	4.00	3.00
28. Vaccinated all calves for blackleg and malignant edema during nursing period	4.50	4.33	5.00	4.00
29. Checked cattle for possible trouble at least 3 times per week throughout the year	4.88	4.67	5.00	5.00
30. Had, used appropriately, and maintained an adequate system of working pens, lots and restraining equipment	3.78	4.33	4.00	2.60

TABLE XXVI (continued)

Beef Management Practice	All Interviewees Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
31. Got the advice of professionals in the area of beef production and marketing	4.38	5.00	4.27	3.60
TOTAL AVERAGE RATING	3.73	3.91	3.84	3.30

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

rated .60, "aware of the practice," while the low producers only rated 0.00, "unaware of the practice."

Practices 4, 5, 6, and 7 also are breeding practices (see Table XXVI). Practice 6 was relatively low for all production groups, but even here the high producer (1.13) used the practice more frequently than the low producer (0.90). All producers waited until replacement heifers were at least 15 months of age before breeding. But again the high producer rated 4.93, compared to 4.60 for low producers.

Calving season practices and calfhood identification. A close analysis of Table XXVI indicates that Practices 8, 9, 10, 11, and 12 are related to the calving season and calfhood identification. In every case, the high producer received a higher rating than did the low producer. Especially, it should be noted that the high producers had "tried" Practice 12, an identification system with calves, while low producers were only "planning to try" it.

Feeding, pasturing, and grazing practices. Table XXVI shows that on Practice 15, providing access to a recommended mineral mixture for all cattle, the high producers received a rating of 5.00, "using," compared to 4.00, "tried," for the low producers. There was no difference between high and low producers relative to Practice 18, "kept cows on good permanent pasture sod until late fall and early winter to reduce winter feed costs" since all were using the practice. There was a great difference in the adoption diffusion rate relative to Practice 20, more or better quality feed fed to thin cows and cows recently calved than to others. The high producers received a rating of 3.53, "tried,"

and the low producers rated only 1.60, "interested," on this practice.

Table XXVI, page 48, shows less difference between high (2.07) and low (2.00) producers on Practice 21, feeding protein supplement to brood cows, than between low and medium (2.33) producers. However, there was a difference relative to Practice 22, feeding "bulls a concentrate during breeding season while on pasture." The high producers received a score of 3.27, "plan to try," compared to 1.60, "interested," for the low producer.

Parasite control practices. Practices 23 through 26 are related to parasite control, both internal and external. Table XXVI reveals that in every practice relative to parasites, the high and medium producers received higher ratings than the low group. There was a greater difference on Practice 25, grub control, than on any other parasite control practice, 4.93, "using" for the high and 3.80, "tried" for the low.

Vaccinating practices. Practices 27 and 28 of Table XXVI indicate that the high producer was doing a better job with "vaccinating" (4.27 and 4.33) than the low producer (3.00 and 4.00), especially for the latter leptospirosis.

Miscellaneous practices. Practices 30 and 31 are two unrelated, but important, management practices. Practice 30 is of special interest in that the high producer (4.33) was better equipped, used an adequate system of working pens, lots, and restraining equipment, than the low producer (2.60).

Table XXVI shows that, on Practice 31, low producers (3.60) had "tried" getting the advice of professionals, while the high producers

(5.00) were all "using" the practice.

A close study, then, of Table XXVI, page 48, reveals a considerable difference between high and low producers in the major management practices. The total average rating was 3.91 for the high producer, 3.84 for the medium producer, and 3.30 for the low producer. This suggests that high and medium producers had "tried" most practices, while the low were "planning to try" them.

II. BREEDING MANAGEMENT PRACTICES

Tables XXVII through XXIX present information relative to breeding practices used by Marshall County farmers.

Females of Breeding Age in Herd

Interviews with cattlemen with less than 15 cows were discarded. Table XXVII indicates the numbers of beef females of breeding age, the range being from 15 to 85. The most frequently mentioned grouping was from 15 to 30 females of breeding age for all production categories. There was little difference to be noted between high and low producers, though the former had slightly larger herds (37.8 breeding females) than the latter (34.8 females).

Cows Bred to Calve

In Table XXVIII, it is seen that the average number of females bred to calve by the high producers was 37.5 compared to 34.8 for the low producer. Thus, differences were small.

TABLE XXVII

NUMBERS OF FEMALES OF BREEDING AGE IN BEEF HERDS IN 1970 OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Females of Breeding Age	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
15 - 30	50	53	47	50
31 - 45	27	20	33	30
46 - 60	13	13	13	10
61 - 75	5	7	0	10
76 - 85	5	7	7	0
TOTAL	100	100	100	100
Average number of females of breeding age (cows)	36.9	37.8	37.3	34.8

TABLE XXVIII

NUMBERS OF FEMALES BRED TO CALVE IN 1970 OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Females Bred to Calve	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
15 - 30	50	53	47	50
31 - 45	27	20	33	30
46 - 60	13	13	13	10
61 - 75	5	7	0	10
76 - 85	5	7	7	0
TOTAL	100	100	100	100
Average number of females bred to calve (cows)	36.7	37.5	37.1	34.8

TABLE XXIX

NUMBER OF BULLS USED ON FEMALES DURING THE BREEDING SEASON BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Bulls Used During Breeding	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
One	57	54	66	50
Two	30	33	20	40
Three	10	13	7	10
Five	3	0	7	0
TOTAL	100	100	100	100
Average Number Bulls Used Per Producer (bulls)	1.6	1.6	1.6	1.6
Average Number of Females Bred Per Bull Used (cows)	22.9	23.4	23.2	21.7

Number of Bulls Used

Table XXIX indicates that there was no difference in the number of bulls used per producer. However, high producers (23.4) had a slightly larger number of females bred per bull than low (21.7).

III. CALF MANAGEMENT PRACTICES

Number of Calves Weaned

Table XXX presents numbers, averages, and percents of calves raised to weaning age by all Marshall County cattlemen interviewed. Data in the table show that all producers interviewed reportedly had a 93 percent weaning record, high producers having 90 percent and low producers having 88 percent weaning records.

It is interesting to compare high and low producers on the percent of calves weaned per female bred, the former averaging 86 percent and the latter 83 percent. Medium producers reported 95 percent.

Number of Calves Marketed

Study of Table XXXI indicates 70 percent of the low producers sold 16 to 30 calves; while high producers were distributed almost evenly over all four number intervals. Forty percent of the high producers sold 31 or more calves. Only 10 percent of the low producers sold 31 or more calves.

Places Calves Were Sold

Table XXXII reveals a surprising picture relative to market places. Fifty-three percent of the high producers and 66 percent of the medium producers sold calves at the stockyard, while 60 percent of the

TABLE XXX

NUMBERS, AVERAGES, AND PERCENTS OF CALVES RAISED TO WEANING AGE BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Calves Raised to Weaning Age	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
10 - 30	57	60	53	60
31 - 45	28	20	33	30
46 - 60	10	20	7	0
61 - 78	5	0	7	10
TOTAL	100	100	100	100
Average Number of Calves Raised to Weaning Age (calves)	32.4	32.1	35.1	28.9
Percent Weaned from Birth	93	90	99	88
Percent Weaned per Female Bred	88	86	95	83

TABLE XXXI

TOTAL NUMBER OF CALVES MARKETED DURING 1970 BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Number of Calves Marketed Last Year	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
0 - 15	13	27	7	0
16 - 30	50	33	53	70
31 - 45	25	20	27	10
46 - 75	13	20	13	00
TOTAL	100	100	100	100
Average Number Calves Marketed (calves)	29.9	32.1	30.1	20.6

TABLE XXXII

DIFFERENT PLACES WHERE CALVES WERE SOLD BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Place of Sale	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	20	13	13	40
Stockyards	45	64	66	0
Organized feeder sales	12	7	7	30
Stockyards and organized feeder sales	10	0	7	30
Farm	7	13	7	0
Calves not sold	3	7	0	0
Direct to packer	3	7	0	0
TOTAL	100	100	100	100

low producers sold at least some calves in organized feeder sales. Only 7 percent of the high and 14 percent of the medium producers sold any calves in the organized feeder calf sales. This might suggest an area where an educational program would be profitable. The largest percent of the total producers (45), then, was selling at stockyards. Forty percent of the low producers and 13 percent of the high did not answer this question.

Average Weight of Calves Sold

Perhaps the most major difference between the high and low producers is revealed in the average weight of beef sold. According to Table XXXIII, the high producers sold an average of 517.3 pounds of beef, compared to 397.9 pounds for the low producers. It is interesting to note that 30 percent of the low producers sold calves at less than 400 pounds. Seventy percent sold calves at less than 450 pounds. Of course, since this factor was the major criterion item, it would be expected to show such differences.

Prices Received Per Pound of Calf Sold

Thirty-five cents per pound was the average price received by the 58 percent of all producers interviewed in Marshall County who reported. On the average, the high producers (only 33 percent reporting) received one cent per pound more than the low producers (80 percent reporting). None of the low producers reportedly received more than 36 cents; while 13 percent of the high producers reportedly received from 37 through 38 cents per pound (see Table XXXIV).

TABLE XXXIII

AVERAGE WEIGHT PER CALF SOLD OR KEPT BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS, BY PERCENTS

Average Weight Sold or Kept*	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
350 - 399 pounds	8	0	0	30
400 - 449	18	0	0	70
450 - 475	37	0	100	0
476 - 500	27	73	0	0
501 - 600	10	27	0	0
TOTAL	100	100	100	100
Actual Average (lbs.)	464.6	517.3	456.4	397.9

*Some producers kept calves, but reported estimated weaning weights.

TABLE XXXIV

PRICES PER POUND RECEIVED FOR CALVES SOLD BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Price Per Pound Received	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Not answered	42	67	33	20
31 - 33 cents	13	13	7	20
34 - 36 cents	37	7	53	60
37 - 38 cents	8	13	7	0
TOTAL	100	100	100	100
Actual Average for Those Selling Calves (cents)	35.0	35.4	35.4	34.3

Average Gross Returns Per Herd

Estimated average gross returns per herd may be computed by referring to data in Tables XXX, XXXIII, and XXXIV, pages 58, 62, and 63, respectively. Table XXXIII gives average weights per calf sold by producers. In comparing high and low producers it will be seen that the former averaged 517 pounds, while the latter averaged only 397 pounds. If these figures are multiplied by the average numbers of calves marketed (Table XXX), it will be seen that high producers on the average sold 16,605 pounds versus only 11,499 pounds for the low. Now, if average prices received (Table XXXIV) are multiplied times the above cited products it may be seen that the former grossed $5,878 while the latter grossed only $3,955. In other words, by using more recommended practices the high producers gross $1,922 more per herd than the low.

IV. FEEDING MANAGEMENT PRACTICES

Kinds of Concentrates Purchased and Fed

Ninety percent of all producers did not feed concentrates. Fourteen percent of the high producers were feeding a concentrate and only 7 percent of these fed cottonseed meal. Ten percent of the low producers fed cottonseed meal as the concentrate (see Table XXXV).

Tons of Legume Hay Grown

Data in Table XXXVI show that 70 percent of all producers interviewed grew no legume hay, 66 percent of the high, and 80 percent of the low. Thus, one-third of the former and one-fifth of the latter grew 10 or more tons of legume hay.

TABLE XXXV

KINDS OF CONCENTRATES PURCHASED AND FED PREVIOUS YEAR BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Kind of Concentrates Purchased and Fed Previous Year	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	90	86	93	90
C. S. M.	8	7	7	10
Other	2	7	0	0
TOTAL	100	100	100	100

TABLE XXXVI

ACTUAL TONS OF LEGUME HAY GROWN FOR BEEF HERDS BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Actual Tons of Legume Hay Grown	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	70	66	66	80
10 - 20 tons	10	20	7	0
21 - 45	12	7	20	10
46 - 60	5	0	7	10
61 - 100	3	7	0	0
TOTAL	100	100	100	100

Tons of Grass Hay Grown

When Table XXXVI and Table XXXVII are compared, it will be found that more grass hay was produced than legume hay. Sixty percent of the high and 80 percent of the low producers grew 5 or more tons of grass hay. Fifty percent of the low producers produced 51 or more tons of grass hay in 1970, compared to 33 percent of the high group that produced as much.

V. PASTURE MANAGEMENT PRACTICES

Fescue-White or Ladino Clover for Pasture Acreage

Table XXXVIII discloses that 90 percent of the low and 60 percent of the high producers had one or more acres of mixed pasture. Seven percent of the high and none of the low producers had more than 100 acres of mixed pasture.

Fescue-Lespedeza for Pasture

Thirty-seven percent of the Marshall County cattlemen had at least some fescue-lespedeza pasture. One-third of the high and one-half of the low producers had at least 26 acres of fescue-lespedeza pasture. Comparisons may be made in Table XXXIX.

Lespedeza for Pasture

As seen in Table XL, 28 percent of those interviewed grew some Lespedeza. An interesting contrast is presented between high and low producers. It will be noted that 30 percent of the low and none of the high producers had 1 to 25 acres. Twenty-seven percent of the high and none of the low producers had 26 to 50 acres of lespedeza for pasture.

TABLE XXXVII

ACTUAL TONS OF GRASS HAY GROWN FOR BEEF HERDS BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Actual Tons of Grass Hay Grown	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	35	40	40	20
5 - 25 tons	20	7	27	30
26 - 50	13	20	13	0
51 - 100	25	20	20	40
101 - 300	7	13	0	10
TOTAL	100	100	100	100

TABLE XXXVIII

TOTAL ACRES FESCUE-WHITE OR LADINO CLOVER FOR PASTURE PRODUCTION FOR BEEF HERDS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Acres Fescue-White or Ladino Clover Used for Pasture	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	30	40	33	10
1 - 25	15	7	13	30
26 - 50	18	13	13	30
51 - 100	22	33	7	30
101 - 200	15	7	33	0
TOTAL	100	100	100	100

TABLE XXXIX

TOTAL ACREAGE FESCUE-LESPEDEZA FOR PASTURE PRODUCTION FOR BEEF HERDS BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Acres of Fescue-Lespedeza Used for Pasture	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	63	67	66	50
1 - 25	0	0	0	0
26 - 50	25	13	27	40
51 - 100	10	13	7	10
101 - 150	2	7	0	0
TOTAL	100	100	100	100

TABLE XL

TOTAL ACREAGE OF LESPEDEZA FOR PASTURE PRODUCTION FOR BEEF HERDS BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Acres of Lespedeza Used for Pasture	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	72	73	73	70
1 - 25 Acres	18	0	27	30
26 - 50	10	27	0	0
TOTAL	100	100	100	100

VI. USE AND MANAGEMENT OF EQUIPMENT AND FACILITIES

Restraining Equipment

A large percentage of both high and low producers had chutes, corrals, and headgates (see Table XLI). Only low producers had silos. None of the low producers had scales and only 7 percent of the high and medium producers had them. Seventy-three percent of high producers had backrubbers as opposed to 60 percent for the low producers.

Sources of Water

There was no consequential difference between high and low producers relative to availability of water (see Table XLII).

TABLE XLI

TYPES OF SILOS, RESTRAINING, AND OTHER EQUIPMENT IN WORKABLE CONDITION USED BY ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS*

Types of Silos, Restraining, and Other Equipment	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
None	13	13	7	20
Upright silo	5	0	0	20
Trench silo	3	0	0	10
Chutes and corrals	43	47	47	30
Headgates	70	67	73	70
Squeeze chute	15	13	20	10
Scales	5	7	7	0
Back rubber	70	73	73	60

*Percents will not add to 100 because cattlemen reported more than one item in workable condition.

TABLE XLII

PERCENTS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS, ACCORDING TO SOURCES OF WATER FOR HERDS

Source of Water for Herds	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Stream	7	7	7	10
Pond and stream	13	13	13	10
Water in barn and stream	3	0	7	0
Water outside barn	7	7	7	10
Water outside barn and pond	20	26	20	10
Water outside barn and stream	50	47	26	60
TOTAL	100	100	100	100

CHAPTER III

SUMMARY

In reference to the management practices of Marshall County beef producers, the following findings may be listed:

1. The high producers had a higher total average rating (3.91), "tried," when compared with 3.30, "plan to try," for the low producers. All of the high producers were above 3.00 on the rating scale, while only 70 percent of the low producers rated above 3.00.

2. High producers rated higher in all 31 practices excepting 2.

3. High and medium producers received much higher diffusion ratings than low producers on three breeding practices. The low producers were not even "aware" of the Tennessee Beef Cattle Improvement Program (T.B.C.I.P.).

4. A pronounced difference was seen between high and low producers in terms of having cows checked for pregnancy, waiting until replacement heifers were at least 15 months of age, and checking herd cows at least twice a day during the breeding season.

5. The high and medium producers arranged to have competent help available when calving difficults occurred. The low producers, on the average, had only "tried" this practice.

6. The low producers tended to rate above the high on the recommended procedures of castrating and dehorning cattle.

7. The high producers tended to be more efficient than the low on three of four feed and pasture practices. Providing access to a

recommended mineral mixture for all cattle, for example, was considered very important by the high producers.

8. Regarding the practices concerned with providing "quality feed for thin cows," "feeding brood cows at least 1.5 pounds of 32-44 percent protein supplement daily," and the "feeding of bulls during breeding season," the high producers received higher ratings.

9. Practices dealing with external and internal parasite control found the high producers doing a better job than the low.

10. In vaccinating for black leg, malignant edema, and leptospirosis, the high producers rated higher than low producers.

11. In terms of having and using appropriately an adequate system of working pens, lots, and restraining equipment, there was a very pronounced difference between the high, "tried," and low, "plan to try," producers in favor of the former.

12. Perhaps the practice of getting the advice of professionals in the area of beef production and marketing was more significant to high producers than the low since the former were "using," this practice, while the low producers were little beyond "planning to try," it.

13. Little difference was noted between high (37.5 cows) and low (34.8 cows) producers in terms of the average numbers of females bred to calve.

14. On a percentage basis, the high producers raised to weaning age an average of 32.1 calves, while the low producers raised only 28.9 calves.

15. Regarding the average number of calves marketed, 32.2 were reported for high producers and 20.6 for the low producers.

16. While the low producers sold calves between 400-450 pounds, high producers sold their between 476 and 500 pounds

17. There was only one cent per pound difference in the prices received between high (35 cents) and low (34 cents) producers in favor of the former.

18. More high (34 percent) than low (20 percent) producers produced legume hay, while the reverse was true regarding grass hay (60 and 80 percent, respectively). More low producers had mixed pastures.

19. No major difference was noted in types of restraining equipment used by high and low producers. Thirty percent of the low and none of the high producers had silos. All had sufficient water.

I. IMPLICATIONS

1. An educational effort should be initiated relative to performance testing.

2. More information and guidance should be given in the area of marketing.

3. An educational program should include the 31 management practices for all production groups with special attention to weaker practice areas.

4. More attention is needed relative to calving season, weights of calves when selling, pasture renovation, and other selected areas of management.

PROBLEM C: FACTORS INFLUENCING BEEF MANAGEMENT PRACTICE ADOPTION BY MARSHALL COUNTY BEEF PRODUCERS

CHAPTER I

INTRODUCTION

The general trend of all farms in Tennessee is to become larger, but fewer. A recent census shows that the average size of farm in Tennessee was 194 acres, compared to 394 acres for the nation. There were 1,029,000 brood cows in Tennessee in 1964. Eight hundred and forty-four thousand of these will produce calves annually. Beef cattle are increasing in numbers and percentages. This is due to the fact that fewer farmers are row cropping and more dairymen are changing to beef production.

I. THE PURPOSE OF THE STUDY

An effort has been made to determine some of the factors influencing Marshall County cattlemen to adopt certain recommended beef production practices.

II. REVIEW OF LITERATURE

According to Leuthold, five stages are involved in the adoption process: (1) awareness--the first contact or introduction to an idea; (2) interest--frame of mind that causes one to seek more information; (3) evaluation--an advanced stage of interest in which one relates the idea to his own situation; (4) trial--has decided to try the idea on a limited basis; and (5) adoption--final and complete use of idea (7:3).

Research has shown that adoption leaders (1) live on larger farms; (2) have more formal education; (3) participate to a greater degree; (4) read more widely; and (5) make greater use of impersonal and more technical information (12:416).

III. METHODS

A random sample of 40 cattlemen was taken from a list of 300 farmers on the cow-calf system in Marshall County. The farmers were contacted and personally interviewed according to a predetermined set of questions relative to beef production practices (Appendix).

Producers were divided into high, medium, and low production categories according to pounds of beef marketed per cow bred.

Results are given mainly in terms of percentages and averages.

CHAPTER II

FINDINGS

I. INTEREST IN IMPROVING HERD MANAGEMENT

Table XLIII shows that, as seen by the interviewer, cattlemen in Marshall County were interested in improving the management level of their herds. Fifty-three percent of the high producers were "very interested" and 47 percent were "somewhat interested" in improvement. Only 7 percent, all medium producers, were "indifferent" to improving management levels. The interviewer noted that some of the farmers felt they were already producing at maximum efficiency.

II. NEED FOR ADDITIONAL ATTENTION TO BEEF HERD MANAGEMENT

In the interviewer's opinion according to Table XLIV, 67 percent of the high beef producers should have paid more attention to management. Twenty-seven percent of the high producers appeared to be doing an adequate job of management. Forty percent of the low group needed to spend more time and attention on management and 30 percent seemed adequate. The interviewer was uncertain regarding the situation of 30 percent of the low and 7 percent of the high producers.

III. DEGREE TO WHICH INTERVIEWER KNEW CATTLEMEN

Of the total producers in Marshall County, 57 percent were either "fairly well" or "very well" known. Forty-three percent were not "very

TABLE XLIII

INTERVIEWER'S JUDGEMENT OF THE INTEREST OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS IN IMPROVING THE MANAGEMENT OF BEEF HERDS, BY PERCENTS

Degree of Interest	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Very interested	43	64	27	50
Somewhat interested	50	47	53	50
Indifferent	7	0	20	0
Not interested	0	0	0	0
TOTAL	100	100	100	100

TABLE XLIV

INTERVIEWER'S OPINION OF WHETHER OR NOT ALL MARSHALL COUNTY BEEF PRODUCERS INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS SHOULD PAY MORE ATTENTION TO THE MANAGEMENT OF BEEF HERDS, BY PERCENTS

Respondent Should Pay More Attention to Management	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Yes	48	67	33	40
No	30	27	33	30
Uncertain	22	6	34	30
TOTAL	100	100	100	100

well" known. Forty percent of the high producers and 20 percent of the low were either "not very well" known by the interviewer and/or not known "at all" (see Table XLV).

IV. SOURCES OF MANAGEMENT ADVICE

The most frequently mentioned source of information of all producers was farm magazines. University bulletins or publications ranked second as the most important source of information (45 percent). It will be observed in Table XLVI that all producers, regardless of production level, were consistent in their sources of information. Forty percent of the low producers listed television as the third major source, compared to 27 percent for the high producers. Daily newspaper was fourth on the list as source of information for all producers.

V. INDIVIDUAL SOURCE OF INFORMATION

One question on the interview list dealt with individual sources of information. According to Table XLVII, a surprisingly large percent of the total producers listed County Agents (70 percent) as the main source. Eighty-seven percent of the high producers listed County Agents as a major source, compared to 60 percent for the low producers. Also, a comparatively large percent of all producers (43) and high producers (60 percent) consulted cattle buyers, though one-third or less of the medium (33 percent) and low (30 percent) producers did so. Sixty percent of the high producers used local veterinarians for advice compared with only 10 percent of the low. One-third of the former advised with "Assistant or Special Agents" compared again with only one-tenth of the

TABLE XLV

DEGREES TO WHICH INTERVIEWER KNEW ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS BY PERCENTS

Degree to Which Interviewer Knew Respondent	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Very well	7	13	7	0
Fairly well	50	47	33	80
Not very well	40	33	60	20
Not at all	3	7	0	0
TOTAL	100	100	100	100

TABLE XLVI

PERCENTS* OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS, WHO RECEIVED USEFUL INFORMATION FROM OTHER SOURCES ON BEEF CATTLE MANAGEMENT

Sources of Useful Information	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Farm magazines	70	73	67	70
University bulletins or publications	45	40	47	50
Television	25	27	13	40
Daily newspapers	15	13	13	20
Field days and tours	13	13	13	10
Radio	13	13	7	20
Commercial bulletins	10	7	7	20
Newsletters	8	13	0	10
Weekly newspapers	5	0	13	0
Farm meetings	3	0	7	0

*Percents add up to more than 100 since most cattlemen reported more than one source.

TABLE XLVII

PERCENTS* OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS, WHO SOUGHT ADVICE FROM CERTAIN INDIVIDUALS CONCERNING BEEF CATTLE PRODUCTION

Persons from Whom Advice was Sought	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
County agent	70	87	60	60
Cattle buyer	43	60	33	30
Local veterinarian	35	60	27	10
Assistant or special agent	23	33	30	10
Banker or PCA representative	13	20	7	10
Feed dealer or salesman	10	20	7	0
Vocational agriculture teacher	10	0	7	30
Extension animal husbandman	8	0	13	10
Neighbor or friend	8	7	0	20
Artificial breeding technician	5	7	0	10
Equipment dealer	3	7	0	0

*Percents add up to more than 100 since most cattlemen reported more than one source.

latter. More low producers consulted "neighbors or friends," 20 percent versus 7 percent; and more high contacted "Bankers or PCA representatives," 20 percent versus 10 percent.

VI. ADVICE SOUGHT

As would be expected, all, 100 percent, of the high producers had talked to someone about beef production (Table XLVIII). Also, 73 percent of the medium and 80 percent of the low producers had discussed beef production with someone. Twenty-seven percent of the medium and 20 percent of the low producers, then, had not sought advice from anyone.

VII. THINGS LIKED ABOUT BEEF PRODUCTION

Table XLIV shows that cattlemen interviewed "enjoyed seeing cattle grow," 30 percent reporting. More low (60 percent) than high (27 percent) producers made this choice. More high producers (27 percent each) felt beef production required less attention than other competing enterprises and that it enabled them to use pastures more efficiently than was true for low producers (20 percent each). Thirteen percent of the high producers and none of the low ones mentioned "more return on investment" than with other competing enterprises.

VIII. THINGS DISLIKED ABOUT BEEF PRODUCTION

Study of data in Table L indicates that slow turnover of money was the major complaint of beef producers especially high producers (53 percent). Capital investment was the second largest dislike,

TABLE XLVIII

PERCENTS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS ACCORDING TO WHETHER THEY TALKED TO ANYONE ABOUT BEEF CATTLE PRODUCTION AND MARKETING

Sought Advice from Anyone on Beef Production	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Yes	85	100	73	80
No	15	0	27	20
TOTAL	100	100	100	100

TABLE XLIX

PERCENTS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS, MENTIONING THINGS THEY LIKED MOST ABOUT BEEF CATTLE PRODUCTION

Things Liked Most About Beef Cattle Production	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Nothing in particular	12	6	27	0
Enjoys seeing cattle grow	30	27	13	60
Relatively low labor requirement	25	27	27	20
Able to use pastures efficiently	20	27	13	20
More return on investment	12	13	20	0
TOTAL	100	100	100	100

TABLE L

PERCENTS OF ALL MARSHALL COUNTY CATTLEMEN INTERVIEWED, HIGH, MEDIUM, AND LOW PRODUCERS, MENTIONING THINGS THEY DISLIKED MOST ABOUT BEEF CATTLE PRODUCTION

Things Disliked Most About Beef Cattle Production	Total Producers (N=40) Percent	High Producers (N=15) Percent	Medium Producers (N=15) Percent	Low Producers (N=10) Percent
Nothing disliked about it	40	33	47	40
Turnover of money is too slow	35	53	27	20
Requires large amount of capital	20	7	27	30
Requires personal attention	5	7	0	10
TOTAL	100	100	100	100

especially among the low producers (30 percent). Twenty-seven percent of the medium producers also complained about the relatively large amount of capital required.

Forty percent of all interviewees disliked nothing about beef production, 33 percent of high and 40 percent of low producers.

CHAPTER III

SUMMARY

Although beef production in Marshall County was secondary to dairying as a major source of income, it was becoming more important as a part-time business at the time of the study. As the number of part-time farmers increased, the number of beef herds increased and dairy herds decreased. In fact, the current census report indicated that beef cows had increased by 25 percent over a five-year period, and 75 percent over a ten-year period. The number of cows in 1954 was 6,460 and 20,213 for 1964.

As beef numbers increase and more farmers become involved, Extension must design a program that will meet the needs of this segment of the economy.

This study was made in an effort to determine some of the factors influencing Marshall County farmers to adopt practices. Personal interviews were completed with 40 farmers selected at random from a list of 300 farmers.

I. REVIEW OF FINDINGS

With reference to the characteristics of the beef producers in Marshall County, listed below are some of the major findings.

(1) Farmers were concerned with improving their beef herd management levels. Only 20 percent of the medium producers were satisfied with the present operation. The interviewer felt that most (67

percent) of the high and 40 percent of the low should have spent more time and effort on herd management.

(2) The interviewer was at least "fairly well"acquainted with only 57 percent of the interviewees. More low producers (80 percent) than high (60 percent) were so known.

(3) Farm magazines and University bulletins were the main sources of related reading material consulted by beef producers. Television, daily newspapers, field days, tours, and radio also were reported as useful sources by interviewees.

(4) When seeking personal advice on matters of beef production, the cattlemen mentioned County Agents most frequently as a source of information. Cattle buyers, local veterinarians, and Assistant or Special Agents also were used frequently.

(5) In response to questions concerning their "likes" and "dislikes" about beef production, the producers most frequently mentioned enjoying seeing cattle grow as a "like" and return on money invested as a "dislike."

II. IMPLICATIONS

(1) Marshall County farmers are receptive and even eager to improve their herds. Opportunities are available for an educational program that would be challenging to the producer and the Extension Service.

(2) Extension workers in Marshall County should try to "communicate" more effectively with both high and low producers. Effort should be made to extend such contact to low producers and to work with cattle

buyers, local veterinarians, bankers, PCA representatives, feed dealers, salesmen, and vocational agriculture teachers who also have contacts with cow-calf producers in the county. Effort should also be made to more effectively use mass media found to be effective through the present study.

(3) Effort should be made to inform present and prospective cattlemen regarding the comparative advantages and disadvantages of beef production as an important enterprise in Marshall County.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Barnes, James Hughes. "Some Significant Beef Production Practices of Two Selected Beef Producer Groups in Claiborne County, Tennessee." Unpublished Master's thesis, The University of Tennessee, Knoxville, 1971.

2. Cooperative Extension Service Today. The Federal Extension Service, Extension Committee on Organization and Policy, and the U. S. Department of Agriculture. Washington: Government Printing Office, 1958.

3. "Five Year Plan." Unpublished typewritten document. Marshall County Agricultural Extension Service, 1972.

4. Jamison, Haley M. Tennessee Beef Cattle Improvement Program, What It Is, How It Works. Tennessee Agricultural Extension Service, Publication 542, The University of Tennessee, Knoxville, 1967.

5. Kelsey, Lincoln D., and Cannon C. Hearne. Cooperative Extension Work. Third Edition. Ithaca, New York: Comstock Publishing Company, 1963.

6. Keyes, Kenneth G. "Production and Management Practices of Selected Beef Cattle Producers in Campbell County, Tennessee." Unpublished Master's thesis, The University of Tennessee, Knoxville, 1966.

7. Leuthold, Frank O. "Review of Diffusion Research in Communication and Diffusion of Improved Farm Practices in Two Northern Sasakatchewan Farm Communities." Unpublished paper, University of Saskatchewan, Saskatoon, 1966.

8. Luck, George F. "Production and Management Practices of Selected Beef Cattle Producers in Macon County, Tennessee." Unpublished Master's thesis, The University of Tennessee, Knoxville, 1967.

9. Matthews, James Thomas. "Problems in Lieu of Thesis Lawrence County, Tennessee." Unpublished Master's thesis, The University of Tennessee, Knoxville, 1968.

10. Ranney, W. P. Livestock Numbers and Practices on Farms in the Elk River Watershed Area of Tennessee, 1964. Tennessee Agricultural Experiment Station, Bulletin 406, Knoxville, 1966.

11. Rogers, Everett M. Social Change in Rural Society. New York: Appleton-Century-Crofts, Inc., 1960.

12. Stanley, W. W., R. P. Mullet, W. P. Tyrrell, and George M. Merriman. You Can Control Livestock Pests. Tennessee Agricultural Extension Service, Publication 450, The University of Tennessee, Knoxville, 1964.

13. Tennessee Agricultural Extension Service. "Save Our Little Ones." Knoxville: The University of Tennessee, 1964. (Mimeographed.)

14. Tyrrell, William P. Beef Cattle in Tennessee. Tennessee Agricultural Extension Service, Publication 330, The University of Tennessee, Knoxville, 1968.

15. Tyrrell, William P. Tennessee Beef Cattle Calendar. Tennessee Agricultural Extension Service, Publication 544, The University of Tennessee, Knoxville, 1966.

16. U. S. Bureau of the Census, Census of Agriculture, 1964. Statistics for the State and Counties, Tennessee. Washington, D. C.: U. S. Government Printing Office, 1967.

TAES → S544.3.T2 E98

TAEP → S544.3.T2 P8

APPENDIX

THE AGRICULTURAL EXTENSION SERVICE, THE UNIVERSITY OF TENNESSEE
Knoxville, Tennessee

TENNESSEE BEEF CATTLE PRODUCTION SURVEY

INTRODUCTION: I am working on a survey to assist the County Extension Staff in making plans to give more help to beef cattle producers in production and management practices. The answers you give will be confidential and will be added to those given by other beef cattlemen who are being interviewed in this county. We hope to get an overall picture of the beef production situation last year. Could I have a small portion 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 _____ e. Wage earner _____

   b. Part-time farmer _____ f. Housewife or widow _____

   c. Business (specify) _____ g. Retired _____

   d. Professional (specify) _____ h. Other (specify) _____

3. Is beef production your major source of income?

   a. Yes _____ b. No _____

4. If your answer to question #3 above is NO, what is your major source of income? _____

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

   "The thing I like <u>most</u> about beef production is _____

   _____

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

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

   "The thing I <u>dislike</u> most about beef production is _____

   _____

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

7. How many females of breeding age were in your beef herd last year

   _____ (number)?

8. How many of the females were bred to calve last year? _____ (number)

9. How many bulls did you use during the breeding season? _____ (number)

10. How many calves were raised to weaning age in your herd last year?

_____ (number)

11. How many beef cattle in each of the following classifications did you have last year?

	Total	Registered	Grade
a. Beef cows bred	_____	_____	_____
b. Beef heifers over 1 year of age	_____	_____	_____
c. Beef heifers under 1 year of age	_____	_____	_____
d. Beef bulls	_____	_____	_____

12. How many beef cattle in each of the classifications did you have in the following breeds? (Check with question #11 to see totals are the same)

Breed	Number of Cows		Number of Heifers		Number of Bulls	
	Regis.	Grade	Regis.	Grade	Regis.	Grade
a. Angus	_____	_____	_____	_____	_____	_____
b. Hereford (Horned)	_____	_____	_____	_____	_____	_____
c. Hereford (Polled)	_____	_____	_____	_____	_____	_____
d. Shorthorn	_____	_____	_____	_____	_____	_____
e. Other (please specify)						
_____	_____	_____	_____	_____	_____	_____

13. Do you now have more, the same, or fewer beef cattle than you did last year?

a. More _____ i. If so, how many more? _____ ii. If so, why? _____
b. Same _____ i. If so, why? _____
c. Fewer _____ i. If so, how many fewer? ____ ii. If so, why? _____

14. How were your heifers bred last year?

a. Artificially ____ (___no.) b. Naturally _____ (__no.)

15. What type of bull did you use on your heifers?

a. Beef_____(__no.) b. Mixed_____(__no.) c. Dairy_____(__no.)

16. How were your cows bred last year?

a. Artificially_____(__no.) b. Naturally_____(__no.)

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

(1) is aware of certain recommended practices

(2) is interested in using them

(3) plans to try them

(4) has tried them

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

(6) and his reason for never trying the practices, or for not using them

INTERVIEWER hand each card to respondent separately after saying: "I have here a set of cards. On each card is a beef 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.

17. Beef Production Practices	Read or Heard of		Inter-ested		Plans to Try		Has Tried		Is Using	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)	Yes (i)	No (j)
(1) Used one or more performance tested bulls										
(i) Reasons for never trying practice OR not using after trying ____										
(2) Bull's records met minimum requirements of the breeders' performance tested bull sale										
(i) Reasons for never trying practice OR not using after trying ____										
(3) Had herd enrolled in the Tennessee Beef Cattle Improvement Program										
(i) Reasons for never trying practice OR not using after trying ____										
(4) Used separate pasture area for bulls during off-breeding season (August through March)										
(i) Reasons for never trying practice OR not using after trying ____										

	Read or Heard of		Inter-ested		Plans to Try		Has Tried		Is Using	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)	Yes (i)	No (j)
(5) Waited until replacement heifers were at least 15 months of age and had attained a minimum weight of 650 lbs. before breeding										
i. Reasons for never trying practice OR not using after trying _____										
(6) Had all herd cows pregnancy checked last year										
i. Reasons for never trying practice OR not using after trying _____										
(7) Checked herd cows at least twice a day during the breeding season										
i. Reasons for never trying practice OR not using after trying _____										
(8) Had and used a system for identifying each breeding female in the herd										
i. Reasons for never trying practice OR not using after trying _____										
(9) Checked first-calf heifers at least 2 or 3 times daily during calving season										
i. Reasons for never trying practice OR not using after trying _____										
(10) Checked older cows at least once a day during calving season										
i. Reasons for never trying practice OR not using after trying _____										

	Read or Heard of		Inter-ested		Plans to Try		Has Tried		Is Using	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)	Yes (i)	No (j)
(11) Arranged to have competent help available when calving difficulties occurred										
i. Reasons for never trying practice OR not using after trying _____										
(12) Had and used a system for permanently identifying calves										
i. Reasons for never trying practice OR not using after trying _____										
(13) Followed recommended procedures in castration										
i. Reasons for never trying practice OR not using after trying _____										
(14) Followed recommended procedures in dehorning										
i. Reasons for never trying practice OR not using after trying _____										
(15) Provided access to a recommended mineral mixture for all cattle										
i. Reasons for never trying practice OR not using after trying _____										
(16) Followed a systematic rotational grazing program										
i. Reasons for never trying practice OR not using after trying _____										
(17) Provided extra or supplementary grazing for the herd during July, August, and September										
i. Reasons for never trying practice OR not using after trying _____										

	Read of Heard of		Inter-ested		Plans to Try		Has Tried		Is Using	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)	Yes (i)	No (j)
(18) Kept cows on good permanent pasture sod until late fall and early winter to reduce winter feed costs										

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

(19) Kept replacement heifers separate from rest of breeding herd during winter										

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

(20) Fed more or better quality feed to thin cows and cows recently calved than to others										

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

(21) Fed brood cows at least 1.5 lbs. of 32-44% protein supplement daily when feeding low quality roughages such as hulls, straw and poor quality grass hay										

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

(22) Fed bulls a concentrate during breeding season while on pasture										

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

	Read or Heard of		Inter-ested		Plans to Try		Has Tried		Is Using	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)	Yes (i)	No (j)
(23) Followed recommended fly control practices										

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

(24) ~~Followed~~ recommended lice control practices										

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

(25) Used recommended grub control practices										

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

(26) Used recommended materials in the control of internal parasites										

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

(27) Vaccinated all brood cows and replacement heifers for leptospirosis										

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

(28) Vaccinated all calves for blackleg and malignant edema during nursing period										

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

	Read or Heard of		Inter-ested		Plans to Try		Has Tried		Is Using	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)	Yes (i)	No (j)
(29) Checked cattle for possible trouble at least 3 times per week throughout the year										

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

(30) Had, used appropriately and maintained an adequate system of working pens, lots and restraining equipment										

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

(31) Got the advice of professionals in the area of beef production and marketing										

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

18. During the past year have you talked to anyone about your beef cattle operation (production and marketing)?

a. Yes _____ b. No _____

TO THE INTERVIEWER: If No, skip to Question #20. If Yes, ask Question #19 first.

19. 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. Assistant or special agent _____
c. Extension animal husbandman _____
d. Local veterinarian _____
e. Artificial breeding tech. _____
f. Vo-Ag teacher _____
g. Cattle buyer _____
h. Feed dealer or salesman _____
i. Banker or P.C.A. representative _____
j. Neighbor or friend (cattleman) _____
k. Equipment dealer _____
l. Other (specify) _____

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

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

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

0	1 2 3 4 5 6 7 8	9,10,11,12	1 2 3 4	Bachelor's	Master's	Doctor's
None	Grade School	H.S.	Col. Underg.	Degree	Degree	Degree

22. Age of Respondent?

a. Under 25 _____
b. 25 - 34 _____
c. 35 - 44 _____
d. 45 - 54 _____
e. 55 - 64 _____
f. 65 - 74 _____
g. 75 or more _____

23. What plans do you have for the future management of your beef herd? (including 31 practices listed earlier plus any others mentioned)

_____

_____

24. (If respondent says he has no plans in Question #23, ask why not.)

_____

25. Did you buy any cows last year?

a. Yes _____ b. No _____

26. If Yes to Question #25, how many? _____ Approximate price per cow? _____

27. Did you sell any cows last year?

a. Yes _____ b. No _____

28. If Yes to Question #27, how many? _____ Approximate price per cow? ____

29. Did you buy any mature bulls last year?

a. Yes _____ b. No _____

30. If Yes to Question #29, how many? ____ Approximate price per bull? ____

31. Did you sell any mature bulls last year?

a. Yes _____ b. No _____

32. If Yes to Question #31, how many? ____ Approximate price per bull? ____

33. How many heifer calves were dropped last year? ____ (number)

34. How many were kept as replacement heifers? ___(number)___(Av. Wt. per heifer)

35. How many total calves were dropped last year? ___(number)

36. How many total calves were sold last year? ___(number)___ (total wt. sold)___(average wt. per calf sold)___(average price received per lb.)

37. Where and about how many calves did you market last year?

a. At the farm ____(number)
b. Stockyards ____(number)
c. Organized feeder sales ____(number)
d. Special stock sale ____(number)
e. Other _____ ____(number)

38. What kinds and amounts of pasture did you have? Did you fertilize?

a. Orchardgrass - white or Ladino clover ____(acres)

(i) Fertilized ____ (ii) Did you fertilize ____

b. Fescue - white or Ladino clover ____(acres

(i) Fertilized ____ (ii) Did not fertilize ____

c. Orchardgrass alone ____(acres

(i) Fertilized ____ (ii) Did not fertilize ____

d. Fescue alone ____(acres)

(i) Fertilized ____ (ii) Did not fertilize ____

e. Fescue-Lespedeza ___(acres)

(i) Fertilized ____ (ii) Did not fertilize ____

f. Lespedeza ____(acres)

(i) Fertilized ____ (ii) Did not fertilize ____

g. Woodland ____(acres)

h. Other (specify) _____ ___(acres _____ ___(acres)

(i) Fertilized ____ (ii) Did not fertilize ____

i. Total (check to see others add to total) ____ acres

39. What kinds and amounts of hay did you grow or purchase for your cow herd?

a. Legume ____(tons grown)____(tons purchased)
b. Grass ____(tons grown____(tons purchased)
c. Legume-grass ___(tons grown)____(tons purchased)

40. What kinds and amounts of silage did you grow or purchase for your cow herd? Was it fed?

a. Corn ____(tons grown)____(tons purchased)____(tons fed)
b. Grass ____(tons grown)____(tons purchased)____(tons fed)
c. Other (kind____) ____(tons grown)____(tons purchased)____(tons fed)

41. What sources of water do you have for your herd?

a. Water in barn ____ b. Water outside barn ____ c. Pond ____
d. Stream ____ e. Other (specify _____) ____

42. What kinds and amounts of concentrates did you purchase and feed last year?

a. C.S.M. _____(lbs.)
b. S.B.O.M. _____ (lbs.)
c. Other (specify _____) _____(lbs.)

43. Did you creep feed calves last year?

a. Yes _____ b. No _____

44. If Yes to Question #43 above, what was your creep ration? (grains used)

_____

45. Did you use feed additives last year?

a. Yes _____ b. No _____

46. If Yes to Question #45 above, what kind and amount?

a. Kind _____ b. Amount _____

47. Which of the following items do you have in workable condition?

a. Upright silo _____
b. Trench silo _____
c. Other silo _____
d. Chutes & corrals _____
e. Head gate _____
f. Squeeze chute _____
g. Scales _____
h. Back rubber _____
i. Shelter for herd _____

48. For how much of the year do you provide shelter for your herd?

a. Year-round _____ b. Winter only _____ c. None _____

49. Cattlemen very often are known not to use recommended beef production practices. Why do you believe they do not use better practices? (Circle most important reason)

_____

50. (OPTIONAL) About 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_____

Name of Respondent _____

Address _____ County _____

Date _____ Number _____

Tenure Status _____

Name of Respondent _____

Number _____

QUESTIONS FOR THE INTERVIEWER TO ANSWER:

51. All people do not adopt recommended practices at the same rate. About where would you place the respondent with respect to adopting new recommended beef production and management practices?

    a. ___Among the first few
    b. ___Soon after the first few
    c. ___Sooner than average
    d. ___A little later than most

52. Is the respondent

    a. ___Man?
    b. ___Woman?

53. Interest of respondent in improving the management of his beef herd (in interviewer's judgement).

    a. ___Very interested
    b. ___Somewhat interested
    c. ___Indifferent
    d. ___Not interested

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

    a. ___Friendly
    b. ___Somewhat friendly
    c. ___Indifferent
    d. ___Antagonistic

55. Should the respondent pay more attention to the management of his beef herd?

    a. ___Yes
    b. ___No
    c. ___Uncertain

56. How well do you know the respondent?

    a. ___Very well
    b. ___Fairly well
    c. ___Not very well
    d. ___Not at all

VITA

BORN: Lester R. Brewer was born on May 28, 1928, to Mr. and Mrs. Frank L. Brewer, Route 4, Waynesboro, Tennessee.

ELEMENTARY AND HIGH SCHOOL EDUCATION: Attended Morrows Valley Elementary School for eight years and four years at Wayne County High School.

UNDERGRADUATE STUDY: Attended two years at The University of Tennessee, Martin Branch, Martin, Tennessee. Granted B. S. degree in Agriculture with a major in Agricultural Education from The University of Tennessee, Knoxville, in 1957.

GRADUATE STUDY: Attended The University of Tennessee short course for four years, Knoxville, Tennessee.

EXPERIENCE: The University of Tennessee Ag Club, Collegiate F. F. A.; taught vocational agriculture, Assistant County Agricultural Agent, and Extension Leader.