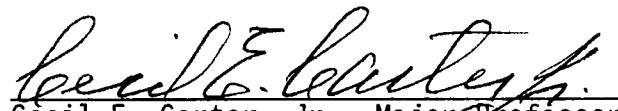
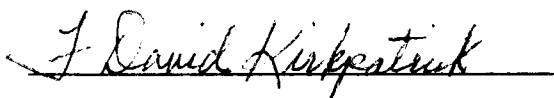


To the Graduate Council:

I am submitting herewith a thesis written by Jimmy J. Lumpkin entitled "Relationships Between Certain Tennessee Cow-Calf Producer and Farm Characteristics and Their Use of Recommended Practices." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.


Cecil E. Carter, Jr., Major Professor

We have read this thesis
and recommend its acceptance:

Accepted for the Council:


Vice Provost
and Dean of the Graduate School

RELATIONSHIPS BETWEEN CERTAIN TENNESSEE COW-CALF
PRODUCER AND FARM CHARACTERISTICS AND THEIR
USE OF RECOMMENDED PRACTICES

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Jimmy J. Lumpkin

March 1985

DEDICATION

This thesis is dedicated to my family. Throughout this study, as well as other endeavors, they have given me encouragement and support. For this I dedicate my thesis and express my love and respect to all of them for all that they have done.

ACKNOWLEDGMENTS

The author wishes to express his appreciation for the assistance and guidance given him by his graduate committee chairman, Dr. Cecil E. Carter, Jr., for without his help this study could not have been accomplished. Appreciation is also given to the other members of his graduate committee, Dr. Robert S. Dotson and Dr. F. David Kirkpatrick, for their helpful suggestions in reviewing this thesis.

Gratitude is expressed to Dr. W. W. Armistead, Vice President for Agriculture, Institute of Agriculture, The University of Tennessee, Knoxville; Dr. M. Lloyd Downen, Dean, Agricultural Extension Service; Mr. Haywood Luck, District Supervisor; Dr. Gene Turner, Associate District Supervisor; Mr. G. W. Oxford, Extension Leader, Retired, Benton County; and the Benton County Agricultural Extension Committee for encouragement and the granting of study leave.

Appreciation is expressed to Mr. William G. Parker, Associate Extension Agent, Lauderdale County, and Dr. Clyde D. Lane, Jr., Extension Beef Cattle Specialist, for their encouragement and assistance during the entire graduate study.

Appreciation is also expressed to Mr. Phil Jones for his help in typing this thesis.

ABSTRACT

The purpose of this study was to determine the relationships between selected cow-calf producer characteristics, such as producers' major source of income and age of producers, and selected farm characteristics, such as major agricultural enterprise, use of performance tested bulls, number of breeding cows in herd, and percent of cows weaning calves and the recommended practices used. A total of 1047 beef cattle producers located in 58 counties in Tennessee provided survey data in 1977. Tennessee County Extension Agents conducted personal interviews with the producers. Data from that survey were used in this study. Beef cattle producers were randomly selected by Extension Agents from county beef cattle mailing lists using the "nth" number technique. According to the guidelines of the survey, producers interviewed must have had a minimum of 15 cows of breeding age in their herd. The survey provided general information about the producer and his farm as well as information about the recommended beef cattle production practices that producers used.

The data were coded and punched on computer cards, and computations were made by The University of Tennessee Computing Center. Chi square and a one-way analysis of variance F test were used to determine the strength of relationship between the dependent and independent variables. Chi square and F values which achieved the .05 probability level were accepted as significant.

Major findings included the following:

1. Eighty-eight percent of the producers interviewed had beef as their major livestock enterprise and 55 percent had the farm as their major source of income, but only three recommended beef production practices were used by more than 75 percent of the producers.

2. Producers whose major agricultural enterprise was livestock, as compared with those whose enterprise was not livestock: (a) had a shorter breeding season; (b) were not as likely to have checked cows for pregnancy; (c) checked cows less frequently but checked heifers more frequently during the calving season; (d) castrated calves at a younger age; (e) were more likely to have vaccinated for blackleg and malignant edema; (f) more likely to use orchardgrass as their major grass species; and (g) were less likely to use crop residues than were "other" producers.

3. Producers whose major source of income was farm, as compared with those whose income was nonfarm: (a) checked cows and heifers more frequently during the calving season; (b) were less likely to have hay as their major winter forage but were more likely to have corn silage; (c) were more likely to use crop residues and protein with low quality roughage and give needy cows and heifers extra feed.

4. Producers who used performance tested bulls as compared with those who did not: (a) had more herds enrolled in T.B.C.I.P.; (b) used ear tags more often as an identification system; (c) had

adequate working facilities, (d) used a shorter breeding season; (e) checked herd more frequently during the breeding season; (f) pregnancy checked cows following the breeding season; (g) checked cows and heifers more often during the calving season; (h) castrated and dehorned at a younger age; (i) vaccinated more often for blackleg and malignant edema; (j) used growth stimulants more often; (k) were less likely to use hay as their major winter forage but were more likely to use corn and grass silage; (l) fed minerals free choice more often; (m) were more likely to use protein with low quality roughage and give needy cows and heifers extra feed; (n) used magnesium oxide more often; (o) were more likely to use a fly control program and grub and lice control; (p) vaccinated more often for leptospirosis; and (q) were likely to worm more frequently.

5. Producers who owned their farm as compared to those who did not, who were full-time farmers as compared to those who were part-time farmers, and those who gave farm as their major source of income were older.

Producers who gave livestock as their major source of income were older.

Producers who enrolled their herds in the T.B.C.I.P., pregnancy checked cows following the breeding season, used growth stimulants, used a fly control program, used a grub and lice control program, and vaccinated for leptospirosis as compared to those who did not use these practices were younger.

6. Producers who were full-time farmers and who gave farm as their major source of income had larger cow herds as compared to those who were part-time farmers and gave "other" as their major source of income.

Producers who gave livestock as their major agricultural enterprise and those who had beef on their farms for 20 years or less had significantly smaller cow herds as compared to those who gave "other" as their major agricultural enterprise and had beef on their farms for more than 20 years.

Producers who used performance tested bulls, used bulls meeting the minimum requirements of the Performance Tested Bull Sale, had their herds enrolled in the T.B.C.I.P., used an identification system, pregnancy checked cows following the breeding season, checked their cows more often during the calving season, vaccinated for blackleg and malignant edema, used growth stimulants, used crop residues, fed mineral mixture free choice, fed magnesium oxide, used grub and lice control, and vaccinated for leptospirosis had larger cow herds as compared to those who did not use these practices.

7. Producers who were full-time farmers and those who gave farm as their major source of income had a significantly higher percent of cows weaning calves as compared to those who were part-time farmers and who gave nonfarm as their major source of income.

Producers who gave livestock as their major agricultural enterprise, those who had beef on their farms for more than 20 years,

and those who gave beef as their major livestock enterprise had a significantly higher percent of cows weaning calves as compared to those who gave "other" as their major agricultural enterprise, those who had beef on their farms for less than 20 years, and those who gave "other" as their major livestock enterprise.

Producers who used performance tested bulls, used bulls meeting the minimum requirements of the Performance Tested Bull Sale, had a shorter breeding season, checked their cows more often during the breeding season, checked their cows and heifers more often during the calving season, vaccinated for blackleg and malignant edema, and used grub and lice control had a significantly higher percent of cows weaning calves as compared to those who did not use these practices.

8. Producers who gave "other" as their tenure status used a significantly higher percent of the 11 selected recommended practices as compared to those who gave farm as their tenure status.

Producers who gave livestock as their major agricultural enterprise, those who had beef on their farms for less than 20 years, those who gave beef as their major agricultural enterprise, and those who used two or more bulls used a significantly higher percent of the 11 selected recommended practices as compared to those who gave "other" as their major agricultural enterprise, those who had beef on their farms for more than 20 years, those who gave "other" as their major livestock enterprise, and those who used only one bull.

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CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

The production of beef cattle is a very important part of Tennessee agriculture. There were 2,350,000 head of beef cattle in Tennessee in 1981. Beef cattle production in 1981 ranked third behind soybeans and dairy products in total cash receipts of Tennessee farm commodities. The total cash receipts for beef cattle and calves in 1981 was \$253,090,000. However, this was \$75,016,000 less than in 1980 (8).^{*} This decrease does not indicate the lack of importance of beef cattle as a major enterprise but is an indication of low cattle prices and increasing production costs.

Cattle numbers in Tennessee as well as the rest of the nation tend to follow a cycle which appears to have started again in 1980. The previous cycle began in 1970 and ended in 1980. The cycle generally takes about 6 to 7 years to peak (8).

The majority of Tennessee beef cattle producers are primarily involved in a cow-calf operation. Calves are sold shortly after weaning or are backgrounded and then shipped to large feed lots in the West and Midwest where they are fed to slaughter weights.

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

The goal of every beef cattle producer is to increase farm income from their cattle enterprise. One of the main purposes of the University of Tennessee Agricultural Extension Service is to provide farmers with useful and practical information and to encourage the use of this information. Thus, the goal of the Extension Service is to help farmers increase their farm incomes by using recommended practices which, through research, are known to work. This study was concerned with the extent to which certain producer and farm characteristics affected other producer and farm characteristics and the use of recommended production practices.

II. NEED FOR THE STUDY

Because the production of beef cattle is one of the major agricultural enterprises in Tennessee, it is important for Extension agents to know which areas of the enterprise to emphasize.

It was felt that a study was needed to determine the characteristics of Tennessee beef cattle producers, their farms, and the recommended practices that they were using and determine any interrelationships.

Based on these findings, Extension agents and specialists will be able to do a better job of planning educational programs for beef cattle producers.

III. PURPOSE OF THE STUDY

The main purpose of this study, then, was to determine the characteristics of beef cattle producers, their farm characteristics,

recommended practices used and the various interrelationships. The specific objectives were:

1. To characterize beef producers, their farm characteristics, and recommended practices used.
2. To determine the relationship between major agricultural enterprise and recommended practices used.
3. To determine the relationship between major source of income of producers and recommended practices used.
4. To determine the relationship between use of performance tested bulls by producers and other recommended practices used.
5. To determine the relationship between age of producers and other selected producer characteristics, farm characteristics, and recommended practices used.
6. To determine the relationship between number of breeding cows in the herd and selected producer and farm characteristics and recommended practices used.
7. To determine the relationship between percent of cows weaning calves and selected producer and farm characteristics and recommended practices used.
8. To determine the relationship between the percent of 11 selected recommended practices and selected producer and farm characteristics.

IV. RELATED STUDIES

There was limited information available comparing cow-calf producer and farm characteristics with recommended practices used

and the relationship between selected recommended practices and other recommended practices. Available studies and findings are, however, reported under the following headings: (1) Producer and Farm Characteristics of Beef Cattle Enterprises and (2) Producer Use of Recommended Beef Cattle Production Practices.

Producer and Farm Characteristics of Beef Cattle Enterprises

Luck (3) in a 1968 study of Macon County, Tennessee beef cattle producers found the average producer was 51 years of age and that 65 percent of the producers interviewed were full-time farmers. Nineteen percent gave beef as their major source of income and 89 percent were owner and operator of the farms where they raised beef cattle. The total average farm acreage was 187 acres and the average number of beef cows was 20.

Matthews (4) in a 1968 study of Lawrence County, Tennessee beef cattle producers found that the average producer was 55 years of age and 90 percent were found to be farm owners. Twenty-seven percent of the producers were full-time farmers, and the average size farm was 179 acres; an average number of 18 cows were owned.

Taylor (7) in a 1972 study of beef cattle producers in Knox County, Tennessee found that 54 percent of the producers were over 55 years of age and that 52 percent of the producers were part-time farmers. Only 11 percent gave beef as their major source of income. The average sized farm was 214 acres with 40 cows of breeding age; they had raised 35 calves to weaning.

Brewer (1) in a 1972 study of Marshall County, Tennessee beef cattle producers found that the average producer age was 55 years and that 48 percent gave beef as their major source of income. Fifty-eight percent were full-time farmers, they had an average of 35 cows, and raised an average of 31 calves to weaning.

Lovely (2) in a 1975 study of beef cattle producers in Campbell County, Tennessee found that the average age of the producer was 51 years, and 42 percent of the producers studied were part-time farmers. They had been farming for an average of 29 years, and the average sized farm was over 93 acres with 44 acres of pasture and 20 cows which raised 18 calves to weaning.

Mohamad (5) in a 1979 Tennessee statewide study found that the average beef cattle producer was 50 years of age and had raised beef cattle for 21 years. The average sized farm was 129 acres with 48 cows of breeding age raising 44 calves to weaning.

Rutter (6) in a 1982 Tennessee statewide study of beef cattle producers found that the average beef cattle producer averaged 51 years in age; over one-half of interviewees were full-time farmers. Fifty-four percent gave farm as their major source of income and over 93 percent were owners of their beef cattle enterprise. The average number of acres of pasture was 130 with 48 head of beef cows raising 44 calves to weaning age.

Producer Use of Recommended Beef Cattle Production Practices

In Luck's (3:46) study, he found that 21 percent of all beef cattle producers did not use recommended production practices because

of carelessness to carry out. Other reasons given for not using recommended practices are as follows: 16 percent, lack of technical knowledge; 12 percent, limited capital and/or land; 12 percent, lack of time and/or labor; 10 percent, lack of interest; 7 percent did not think recommended practices were necessary; 4 percent, gave lack of adequate facilities; 4 percent, small profit margin; and 10 percent did not give a reason.

In Brewer's (2:51) study, beef cattle producers were rated using a scale from 0 to 5: 0 being unaware of a recommended practice and 5 meaning producer use of the practice. The average rating for all beef cattle producers interviewed was 3.73.

Taylor (7:55) used a similar system or rating in his study and the average rating for all beef cattle producers using recommended practices was 3.69. Matthews (4:58) also used a system or rating as described in Brewer's and Taylor's study and found the average rating for all beef cattle producers using recommended practices was 2.75.

Beef cattle producers in Lovely's (2:63) study were found to be using recommended practices to a degree of somewhere between 25 to 50 percent of their effective use.

Rutter (6:80-82) showed that producers used recommended beef production practices from a low of 6 percent on the least used practice to a high of 98 percent on the most used practice. The average use of all practices in his study was 60 percent.

Relationships

Mohamad (5:78-81) grouped beef cattle producers in large, medium, and small categories according to the number of cows in herd and found that large producers used more recommended practices than did small producers. However, 11 practices were identified that were being used less than 60 percent of the time by large producers. Fourteen practices were identified that were being used less than 60 percent of the time by small producers.

Wilson and Gallup in their study of personal characteristics and farm operation as related to the use of recommended practices found that such things as age, education, size of farm, tenure status, socioeconomic background, etc., can have an effect on whether or not farmers use certain recommended practices (9:22-25).

V. LIMITATIONS OF THE STUDY

This study was limited to data collected from 1,047 beef cattle producers from 58 counties in Tennessee. Producers with 15 cows or more were randomly selected and interviewed by County Extension Agents.

VI. METHOD OF INVESTIGATION

Source of Data

The data for this study were collected in 1977 from 1,047 Tennessee beef cattle producers who were randomly selected from 58 counties.

An interview survey schedule was developed by The University of Tennessee Agricultural Extension Animal Science Specialists and mailed to Extension Agents. The "nth" number technique of sampling was used to select respondents to be surveyed. The Extension Agents then set up personal interviews with the beef cattle producers and information was recorded on the survey and, upon completion, returned to the Agricultural Extension Education section to be analyzed.

Method of Analysis

The data were coded and punched on computer cards. Computations were made by The University of Tennessee Computing Center. The Chi square test and analysis of variance F test were used to determine probability levels and the strength of the relationship between dependent and independent variables. F values which achieved the .05 probability level were accepted as indicating a significant relationship.

VII. DEFINITION OF TERMS

Beef Cattle Producer—In this study this term refers to a beef producer whose main purpose is to produce calves to sell as feeders or yearlings from his brood cow herd. Also referred to as cow-calf producer.

Performance Tested Bull—Any bull whose performance and growth rate has been measured and recorded from birth to a year of age. These bulls are generally used to help upgrade a commercial

or registered beef cattle herd because a producer is able to select desirable traits from the test results.

Recommended Production Practice—A research verified and commonly accepted procedure or task which, if performed correctly and on a regular and timely basis, will increase or help insure a desired outcome or return. It also is referred to as "variable" in this study.

CHAPTER II

STUDY FINDINGS

The partial findings of this study were organized into eight tables within this chapter, with each table constituting a section. Selected variables were discussed under subheadings within a section.

Section I presents findings regarding the characteristics of beef producers, their farm operations, and recommended practices used.

Section II presents findings regarding the relationship between major agricultural enterprise and recommended practices used by Tennessee cow-calf producers.

Section III presents findings regarding the relationship between major source of income of producers and recommended practices used by Tennessee cow-calf producers.

Section IV presents findings regarding use of performance tested bulls by producers and recommended practices used by Tennessee cow-calf producers.

Section V presents findings regarding age of producer and selected producer and farm characteristics and recommended practices used by Tennessee cow-calf producers.

Section VI presents findings regarding number of breeding cows in herd and selected producer and farm characteristics and recommended practices used by Tennessee cow-calf producers.

Section VII presents findings regarding percent of cows weaning calves and selected producer and farm characteristics and recommended practices used by Tennessee cow-calf producers.

Section VIII presents findings regarding the percent of 11 selected recommended practices used and selected producer and farm characteristics used by Tennessee cow-calf producers.

I. CHARACTERISTICS OF BEEF PRODUCERS, THEIR FARM OPERATIONS, AND RECOMMENDED PRACTICES USED

Table 1 presents the numbers and percents of Tennessee beef cattle producers by variables which tend to characterize the producer, farm, and recommended production practices being used. The variables are grouped under three major subheadings and six minor subheadings. The major subheadings are: (1) producer characteristics, (2) farm characteristics, and (3) recommended practices. The minor subheadings are listed under recommended practices. They are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices. There also is a subsection included to summarize this section.

Producer Characteristics

The variables included in this subsection are: (1) tenure status, (2) full-time/part-time farmer, (3) major source of income, and (4) age of respondent.

Tenure status. Data presented in Table 1 indicates that 93 percent of the producers surveyed owned the farm where they

Table I. Characteristics of Tennessee Beef Producers, Their Farm Operations, and Recommended Practices Used, 1977.

Name of Variable	Number of Producers	Percent of Producers Responding*
<u>Producer Characteristics</u>		
Tenure Status		
Owner	885	93
Other	66	7
Total Responding**	951	
Full Time Farmer		
Yes	525	54
No	440	46
Total Responding	965	
Major Source Income		
Farm	520	55
Non-farm	431	45
Total Responding	951	
Age of Respondent		
50 Years—Under	451	48
51 Years—Over	491	52
Total Responding	942	
<u>Farm Characteristics</u>		
Major Agricultural Enterprise		
Livestock	705	72
Row Crop	210	21
Dairy	14	1
Fruits and Vegetables	6	1
Other	16	2
No Major Enterprise	30	3
Total Responding	981	
Major Livestock Enterprise		
Beef	863	88
Swine	80	8
Sheep	7	1
Horses	4	1
Other	17	2
Total Responding	971	

Table I (continued).

Name of Variable	Number of Producers	Percent of Producers Responding*
Years Beef on Farm		
20—Less	424	41
21—More	599	59
Total Responding	1,023	
No. Breeding Cows in Herd		
35—Less	464	50
36—More	467	50
Total Responding	931	
No. Bulls Used		
1	446	48
2—More	485	52
Total Responding	931	
No. of Calves Raised		
32—Less	472	50
33—More	472	50
Total Responding	944	
Acres Pasture Used		
95—Less	459	50
96—More	459	50
Total Responding	918	
<u>Recommended Practices</u>		
<u>General</u>		
Performance Bulls Used		
Yes	273	29
No	668	71
Total Responding	941	
Bulls Being Used Meet Minimum Requirements of Performance Tested Bulls		
Yes	415	48
No	456	52
Total Responding	871	
Herd Enrolled in TBCIP		
Yes	55	6
No	881	94
Total Responding	936	

Table I (continued).

Name of Variable	Number of Producers	Percent of Producers Responding*
Identification System Used		
Ear Tag	373	77
Neck Chain	111	23
Total Responding	484	
Adequate Working Facilities		
Yes	614	65
No	329	35
Total Responding	943	
<u>Breeding</u>		
Length of Breeding Season		
4 Months—Less	453	53
5 Months—More	402	47
Total Responding	855	
Number Times Cows Checked During Breeding Season		
1 Time—Less	720	69
2 Times—More	327	31
Total Responding	1,047	
Cows Pregnancy Checked Following Breeding Season		
Yes	99	11
No	825	89
Total Responding	924	
Age Replacement Heifers Bred		
16 Months—Less	456	52
17 Months—More	415	48
Total Responding	871	
Weight Replacement Heifers Bred		
700 Pounds—Less	605	58
701 Pounds—More	442	42
Total Responding	1,047	

Table I (continued).

Name of Variable	Number of Producers	Percent of Producers Responding*
<u>Calving</u>		
Times Cows Checked During Calving Season		
1 Time—Less	499	54
2 Times—More	429	46
Total Responding	928	
Times Heifers Checked During Calving Season		
1 Time—Less	392	44
2 Times—More	498	56
Total Responding	890	
<u>Calf Practices</u>		
Age Calves Castrated and Dehorned		
2 Months—Less	408	46
3 Months—More	484	54
Total Responding	892	
Vaccinated For Blackleg and Malignant Edema		
Yes	778	83
No	163	17
Total Responding	941	
Use of Growth Stimulants		
Yes	132	13
No	810	77
Total Responding	942	
<u>Feeding Practices</u>		
Major Grass Species in Pastures		
Fescue	811	85
Orchardgrass	89	9
Bluegrass	36	4
Bermuda Grass	8	1
Other	10	1
Total Responding	944	

Table I (continued).

Name of Variable	Number of Producers	Percent of Producers Responding*
Major Winter Forage Fed		
Corn Silage	125	13
Grass Silage	9	1
Hay	789	83
Other	30	3
Total Responding	953	
Stockpiled Fescue		
Yes	625	67
No	314	33
Total Responding	939	
Crop Residues Used		
None	439	53
Corn	276	33
Soybean	57	7
Corn and Soybean	49	6
Milo	1	0
Straw	6	1
Total Responding	828	
Mineral Fed Free Choice		
Yes	800	85
No	141	15
Total Responding	941	
Fed Protein With Low Quality Roughage		
Yes	381	44
No	478	56
Total Responding	859	
Gave Needy Cows and Heifers Better Quality Feed		
Yes	382	41
No	552	59
Total Responding	934	
<u>Health Practices</u>		
Fed Magnesium Oxide		
Yes	626	67
No	309	33
Total Responding	935	

Table I (continued).

Name of Variable	Number of Producers	Percent of Producers Responding*
Fly Control Program Used		
None	56	6
Backrub	487	51
Dustbags	79	8
Oral Larvicide	18	2
Combination	309	33
Total Responding	949	
Used Grub and Lice Control		
Yes	588	62
No	359	38
Total Responding	947	
Vaccinated for Lepto		
Yes	261	28
No	678	72
Total Responding	939	
No. Times Cows Wormed		
1 Time	496	85
2 Times	90	15
Total Responding	586	

*Percents of producers rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

raised beef cattle. Seven percent responded to their tenure status as Other. This group possibly represents farm managers or producers who rented land there they raised beef cattle.

Full-time/part-time farmer. Fifty-four percent of the respondents were full-time farmers while 46 percent were part-time farmers.

Major source of income. Almost an equal proportion (55 percent), when compared to full-time farmers above, relied on farming as their major source of income.

Age of respondent. Forty-eight percent of the producers were 50 years old or younger, whereas 52 percent were in the 51 year old or older group.

Farm Characteristics

The variables included in this subsection are: (1) major agricultural enterprise, (2) major livestock enterprise, (3) years beef on farm, (4) number of breeding cows in herd, (5) number of bulls used, (6) number of calves raised, and (7) acres of pasture used.

Major agricultural enterprise. Seventy-two percent of the respondents had livestock as their major farm enterprise. Whereas 21 percent had row crops, 1 percent had dairy, 1 percent had fruits and vegetables, 2 percent had other, and 3 percent had no major enterprise.

Major livestock enterprise. Eighty-eight percent had beef as their major livestock enterprise. The remainder of the producers had the following as their major livestock enterprise: swine, 8 percent; sheep, 1 percent; horses, 1 percent; other, 2 percent.

Years beef on farm. Almost two-thirds (59 percent) of the producers reported having beef on their farm 21 years or more while 41 percent reported having beef on their farm 20 years or less.

Number of breeding cows in herd. One-half (50 percent) of the respondents had 35 cows or less on their farm while the other half (50 percent) had 36 cows or more on their farm.

Number of bulls used. Forty-eight percent used one bull on their farms while 52 percent used two or more bulls on their farms.

Number of calves raised. Fifty percent of the respondents raised 32 calves or less, therefore an equal 50 percent raised 33 calves or more.

Acres of pasture used. Fifty percent responded to having 95 acres or less for their beef cattle and an equal 50 percent were utilizing 96 acres or more for their beef cattle.

Recommended Practices

General. There are six minor subsections which include 27 variables listed in this major subsection. The variables in

actuality are production practices for beef cattle recommended by The University of Tennessee Agricultural Extension Service.

Performance tested bulls. Only about one-third (29 percent) of the producers used performance tested bulls, while 71 percent did not use tested bulls.

Bulls used met minimum performance testing requirements. Almost one-half (48 percent) of the producers were using bulls which met the minimum requirements of performance tested bulls, while 52 percent did not use bulls meeting the requirements.

Herd enrolled in Tennessee Beef Cattle Improvement Program. Only 6 percent of the producers interviewed had their herds enrolled in the beef cattle improvement program, while 94 percent did not have their herds enrolled in the program.

Identification system used. Over three-fourths (77 percent) of the producers used ear tags to identify their cattle. Twenty-three percent still used neck chains to identify their cattle.

Adequate working facilities. About two-thirds (65 percent) had adequate working facilities to work their cattle, while 35 percent did not have adequate facilities.

Breeding

Length of breeding season. There were 53 percent of the producers who used a limited breeding season of 4 months or less,

while 47 percent kept their cows exposed to the herd bulls for 5 months or more.

Number of times cows checked during breeding season. Only about one-third (31 percent) of the producers checked their cows two or more times during the breeding season, whereas 69 percent checked their cows one time or less.

Cows pregnancy checked following breeding season. There were only 11 percent of the producers who pregnancy checked or had their cows pregnancy checked following the breeding season, while 89 percent had no way of knowing if all of their cows were pregnant.

Age replacement heifers bred. Over one-half (52 percent) of the producers had replacement heifers bred by 16 months of age to insure having a calf as a 2 year old, while 48 percent waited 17 months or more to breed replacement heifers.

Weight replacement heifers bred. Over one-half (58 percent) of the producers had their replacement heifers bred by the time the heifers weighed 700 pounds, while 42 percent waited until heifers weighed over 700 pounds.

Calving

Number of times cows checked during calving season. Only 46 percent of the producers checked their cows during calving season two or more times a day, while 54 percent checked their cows at most one time a day.

Number of times heifers checked during calving season. Over half (56 percent) of the producers checked their heifers during calving two or more times a day, while 44 percent checked their heifers only one time or less a day.

Calf Practices

Age calves castrated and dehorned. Less than one-half (46 percent) of the producers castrated and dehorned their calves at 2 months of age or less, while 54 percent waited until calves were at least 3 months of age or older.

Vaccinated for blackleg and malignant edema. Eighty-three percent of the producers vaccinated for these calfhood diseases, while only 17 percent did not vaccinate.

Use of growth stimulants. Only 13 percent of the producers made use of growth stimulants for heavier calves at weaning, whereas 77 percent did not use growth stimulants.

Feeding Practices

Major grass species in pasture. Over three-fourths (85 percent) of the producers had fescue as the major grass species in their pastures. Percents of other grass species were: orchardgrass, 9 percent; bluegrass, 4 percent; Bermuda grass, 1 percent; other, 1 percent.

Major winter forage fed. Eighty-three percent of the producers used some type of hay as their major winter forage for their cattle, while 13 percent used corn silage, 1 percent used grass silage, and 3 percent used some other winter forage.

Stockpiled fescue. About two-thirds (67 percent) of the producers stockpiled fescue for late fall and early winter feeding, while 33 percent did not stockpile fescue.

Crop residues used. Over one-half (53 percent) of the producers did not utilize row crop residues for cattle feed, while 33 percent did utilize corn residues, 7 percent utilized soybean residues, 6 percent utilized corn and soybean residues, and 1 percent utilized straw.

Mineral fed free choice. Eighty-five percent of the producers fed minerals free choice, while 15 percent did not feed minerals free choice to their cattle.

Fed protein with low quality roughage. Forty-four percent of the producers fed protein with low quality roughage, whereas 56 percent did not use the additional protein.

Gave needy cows and heifers better quality feed. Forty-one percent of the producers gave replacement heifers and cows that had recently calved more and better quality feed than other cattle, while 59 percent did not give extra feed.

Health Practices

Fed magnesium oxide. Over two-thirds (67 percent) of the producers fed magnesium oxide for prevention of grass tetany, while 33 percent did not provide the magnesium oxide.

Fly control program used. Only 6 percent of the producers did not have a fly control program, while over one-half (51 percent) used backrubs, 8 percent used dustbags, 2 percent used oral larvicides, and one-third (33 percent) used a combination of fly controls.

Used grub and lice control. Almost two-thirds (62 percent) of the producers used some method of grub and lice control, while 38 percent used no control for grubs and lice.

Vaccinated for leptospirosis. Only about one-fourth (28 percent) of the producers vaccinated their cattle for the disease leptospirosis, while 72 percent used no control for this disease.

Number of times cows wormed. Eighty-five percent of the producers wormed their cattle at least one time annually, whereas 15 percent wormed two times.

Section I Summary

In summary of data in Table I (p. 12), major findings include the following:

1. Ninety-three percent of the producers interviewed owned the farm where they raised beef cattle, 54 percent were full-time

farmers, 55 percent had the farm as their major source of income, and 48 percent of the producers were 50 years old or younger.

2. When comparing farm characteristics, 72 percent had livestock as their major agricultural enterprise, and 88 percent of the producers had beef as their major livestock enterprise. Over one-half (59 percent) had beef cattle on their farm for at least 21 years, and the average number of breeding age cows was 35; over one-half (52 percent) used two or more bulls. Thirty-two was the average number of calves raised, and 95 acres was the average number of acres used by beef cattle on the producers' farms.

3. With respect to recommended practices used, 29 percent used performance tested bulls, about one-half (48 percent) used bulls meeting the minimum requirements of performance tested bulls, and 6 percent of the producers had their herds enrolled in the Tennessee Beef Cattle Improvement Program. Three practices were used by 75 percent or more of the producers.

II. RELATIONSHIPS BETWEEN MAJOR AGRICULTURAL ENTERPRISES AND RECOMMENDED PRACTICES USED BY TENNESSEE COW-CALF PRODUCERS

Table II presents data indicating relationships between the major agricultural enterprises and recommended practices used by producers. The purpose of the analysis was to determine what influence, if any, that major farm enterprise had on the use of recommended practices. The variables are grouped under one major

Table II. Relationships between Major Agricultural Enterprises and Recommended Practices Used by Tennessee Cow-Calf Producers, 1977.

Name of Variable	Major Agricultural Enterprise				x ²	df	p
	Livestock		Other				
	No.	%*	No.	%*			
<u>Recommended Practices**</u>							
<u>General</u>							
Used Performance Tested							
Bulls							
Yes	213	31	60	24			
No	482	69	185	76			
Total Responding	695		245		3.0	1	.080
Bulls Met Minimum Requirements of P.T.B. Sale							
Yes	319	49	96	44			
No	335	51	121	56			
Total Responding	654		217		1.0	1	.280
Herd Enrolled in TBCIP							
Yes	46	7	10	4			
No	648	93	233	96			
Total Responding	694		243		1.4	1	.230
Identification System Used							
Ear Tag	280	79	93	73			
Neck Chain	76	21	35	27			
Total Responding	356		128		1.6	1	.210
Adequate Working Facilities							
Yes	455	66	159	64			
No	240	34	89	36			
Total Responding	695		248		0.1	1	.750
<u>Breeding</u>							
Length of Breeding Season							
4 Months—Less	359	51	94	30			
5 Months—More	346	49	218	70			
Total Responding	705		312		37.0	1	.001

Table II (continued).

Name of Variable	Major Agricultural Enterprise						x ²	df	p
	Livestock		Other						
	No.	%*	No.	%*					
Number Times Cows Checked During Breeding Season									
None	79	11	22	7					
1 Time—More	626	89	290	93					
Total Responding	705		312		3.7	1	.053		
Cows Pregnancy Checked Following Breeding Season									
Yes	64	9	35	15					
No	624	91	201	85					
Total Responding	688		236		5.1	1	.024		
Age Replacement Heifers Bred									
16 Months—Less	329	47	127	41					
17 Months—More	376	53	185	59					
Total Responding	705		312		2.9	1	.090		
Weight Replacement Heifers Bred									
700 Pounds—Less	432	61	173	55					
701 Pounds—More	273	39	139	45					
Total Responding	705		312		2.8	1	.094		
<u>Calving</u>									
Times Cows Checked During Calving Season									
1 Time—Less	381	54	118	38					
2 Times—More	324	46	194	62					
Total Responding	705		312		22.1	1	.001		
Times Heifers Checked During Calving Season									
1 Time--Less	303	43	89	29					
2 Times--More	407	57	223	71					
Total Responding	710		312		18.5	1	.001		

Table II (continued).

Name of Variable	Major Agricultural Enterprise				x ²	df	p
	Livestock		Other				
	No.	%*	No.	%*			
<u>Calf Practices</u>							
Age Calves Castrated and Dehorned							
2 Months—Less	320	45	87	28			
3 Months—More	385	55	225	72			
Total Responding	705		312		26.9	1	.001
Vaccinated for Blackleg and Malignant Edema							
Yes	590	85	186	76			
No	105	15	58	24			
Total Responding	695		244		8.9	1	.003
Use of Growth Stimulants							
Yes	102	15	30	12			
No	595	85	215	88			
Total Responding	697		245		.7	1	.410
<u>Feeding Practices</u>							
Major Grass Species in Pastures							
Fescue	595	85	216	84			
Orchardgrass	77	11	12	5			
Bluegrass	16	2	20	8			
Bermuda Grass	4	1	4	1			
Other	4	1	5	2			
Total Responding	696		257		29.1	4	.001
Major Winter Forage Fed							
Corn Silage	80	11	45	17			
Grass Silage	6	1	3	1			
Hay	591	85	198	78			
Other	21	3	9	4			
Total Responding	698		255		6.9	3	.075
Stockpiled Fescue							
Yes	471	68	154	63			
No	223	32	91	37			
Total Responding	694		245		1.8	1	.180

Table II (continued).

Name of Variable	Major Agricultural Enterprise				x ²	df	p
	Livestock		Other				
	No.	%*	No.	%*			
Crop Residues Used							
Yes	352	50	226	72			
No	353	50	86	28			
Total Responding	705		312		43.7	1	.001
Minerals Fed Free Choice							
Yes	603	86	197	81			
No	95	14	46	19			
Total Responding	698		243		3.6	1	.057
Used Protein with Low Quality Roughage							
Yes	336	54	141	60			
No	287	46	94	40			
Total Responding	623		235		2.3	1	.130
Gave Needy Cows Extra Feed							
Yes	273	40	109	46			
No	416	60	136	56			
Total Responding	689		245		1.6	1	.200
<u>Health Practices</u>							
Fed Magnesium Oxide							
Yes	473	68	153	63			
No	220	32	89	37			
Total Responding	693		242		1.8	1	.176
Fly Control Program Used							
Yes	663	6	14	4			
No	42	94	298	96			
Total Responding	705		312		.6	1	.424
Used Grub and Lice Control							
Yes	442	63	146	58			
No	255	37	104	42			
Total Responding	697		250		1.8	1	.184
Vaccinated for Lepto							
Yes	193	28	68	28			
No	501	72	177	72			
Total Responding	694		245		0.0	1	1.00

Table II (continued).

Name of Variable	Major Agricultural Enterprise						
	Livestock		Other		x ²	df	p
	No.	%*	No.	%*			
No. Times Cows Wormed							
1 Time	362	85	134	85			
2 Times	66	15	24	15			
Total Responding	428		158		0.0	1	1.00

*Percents rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

subheading and six minor subheadings. The major subheading is: recommended practices. The minor subheadings are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices.

Recommended Practices/General

Six minor subsections are included in this major subsection. There are 27 variables listed which in actuality are recommended production practices.

Used performance tested bulls. Thirty-one percent of the producers who gave livestock as their major enterprise were using performance tested bulls, compared with 24 percent who gave Other as their major enterprise. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise had no significant influence of the use of performance tested bulls.

Bulls met minimum requirements of performance tested bull sale. Almost one-half (49 percent) of the producers who gave livestock as their major enterprise were using bulls that met the minimum requirements of performance tested bull sales, and 44 percent of the producers who gave Other as their major enterprise were using the same quality bulls. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not have a significant influence on the use of bulls that met minimum requirements of performance test bull sales.

Herd enrolled in Tennessee Beef Cattle Improvement Program.

Only 7 percent of the producers who gave livestock as their major enterprise had their beef cattle herds enrolled in the Tennessee Beef Cattle Improvement Program, while only 4 percent of the producers who gave Other as their major enterprise had their herds enrolled in this program. When tested by the χ^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise had no significant influence on herds being enrolled in the Tennessee Beef Cattle Improvement Program.

Identification system used. Over three-fourths (79 percent) of the producers who gave livestock as their major enterprise used ear tags for cattle identification, whereas 21 percent of the same group used neck chains. Seventy-three percent of the producers who gave Other as their major enterprise used ear tags for cattle identification and 27 percent of the same group used neck chains. When tested by the χ^2 test, the type of identification system used was not significantly related to the producer's major agricultural enterprise. Therefore, the major agricultural enterprise had no significant influence on the type identification used.

Adequate working facilities. Two-thirds (66 percent) of the producers who gave livestock as their major enterprise had adequate working facilities, while 64 percent of the producers who gave Other as their major enterprise had adequate working facilities. When tested by the χ^2 test, these differences were not significant at the

.05 level. Therefore, the major agricultural enterprise had no significant influence on having adequate working facilities.

Breeding

Length of breeding season. Over one-half (51 percent) of the producers who gave livestock as their major enterprise had a breeding season of 4 months or less, whereas only 30 percent of the producers who gave Other as their major enterprise used a 4 month or less breeding season. When tested by the x^2 test, the length of breeding season was significantly related to the producer's major agricultural enterprise. Producers whose major farm enterprise was not livestock tended to have a longer breeding season than those whose major farm enterprise was livestock.

Number of times cows checked during breeding season. Eighty-nine percent of the producers who gave livestock as their major enterprise checked their cows one or more times during the breeding season, while 93 percent of the producers who gave Other as their major enterprise checked their cows one or more times. When tested by the x^2 test, the significance level is .053, which is slightly over the .05 level. Therefore, the major agricultural enterprise had no significant effect on the number of times producers checked their cows during the breeding season.

Cows pregnancy checked following breeding season. Nine percent of the producers who gave livestock as their major enterprise

pregnancy checked their cows following the breeding season, while 15 percent of the producers who gave Other as their major enterprise pregnancy checked their cows. When tested by the χ^2 test, these differences were significant at the .05 level. Therefore, producers who had an agricultural enterprise other than livestock were more likely to pregnancy check their cows than were producers who had livestock as their major enterprise.

Age replacement heifers bred. About one-half (47 percent) of the producers who gave livestock as their major enterprise had their heifers bred at 16 months of age or less, whereas 41 percent of the producers who gave Other as their major enterprise had their heifers bred at this age. These differences were not significant at the .05 level. Therefore, the major agricultural enterprise had no significant influence on the age that producers bred their heifers.

Weight replacement heifers bred. Almost two-thirds (61 percent) of the producers who gave livestock as their major enterprise bred their replacement heifers at 700 pounds or less, while over one-half (55 percent) of the producers who gave Other as their major enterprise bred their heifers at the same weight. When tested by the χ^2 test, the differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not significantly influence the weight that producers bred their heifers.

Calving

Number of times cows checked during calving season. Forty-six percent of the producers who gave livestock as their major agricultural enterprise checked their cows during the calving season more than one time, whereas over one-half (62 percent) of the producers who gave other as their major enterprise checked their cows more than one time. These differences were significant. Therefore, producers whose major agricultural enterprise was other than livestock checked cows during calving more frequently than did the livestock producers.

Number of times heifers checked during the calving season.

A group of 57 percent of the producers who gave livestock as their major enterprise checked their heifers more than one time during the calving season; however, 71 percent of the producers who gave Other as their major enterprise checked their heifers more than one time. These differences were significant. Producers whose major agricultural enterprise was livestock checked heifers less frequently at calving time than did other producers.

Calf Practices

Age calves castrated and dehorned. Forty-five percent of the producers who gave livestock as their major enterprise castrated and dehorned their calves at 2 months of age or less, while only slightly more than one-fourth (28 percent) of the producers who gave Other as their major enterprise castrated and dehorned at the

same age. When tested by the x^2 test, the differences were significant at the .05 level. Therefore, the major agricultural enterprise was significantly related to the age producers castrated and dehorned their calves. Producers whose major enterprise was livestock castrated and dehorned calves at a younger age than did those whose major farm enterprise was not livestock.

Vaccinated for blackleg and malignant edema. Eighty-five percent of the producers who gave livestock as their major enterprise vaccinated for blackleg and malignant edema, while 76 percent of the producers who gave Other as their major enterprise vaccinated for these calfhood diseases. When tested by the x^2 test, the major agricultural enterprise was significantly related at the .05 level to the use of this recommended practice. Producers who had livestock as their major farm enterprise were more likely to have vaccinated for blackleg and malignant edema than were those who did not have livestock as their major farm enterprise.

Use of growth stimulants. Only 15 percent of the producers who gave livestock as their major enterprise made use of growth stimulants, while only 12 percent of the producers who gave Other as their major enterprise used growth stimulants. When tested by the x^2 test, the differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not have a significant influence on the use of growth stimulants.

Feeding Practices

Major grass species in pasture. Of the producers who gave livestock as their major enterprise, 85 percent had fescue, 11 percent had orchardgrass, and 2 percent had bluegrass. Of the producers who gave Other as their major enterprise, 84 percent had fescue, 12 percent orchardgrass, and 20 percent bluegrass. When tested by the x^2 test, these differences were significant. Therefore, the producers' major grass species was significantly related to their major farm enterprise. Producers who had livestock as their major enterprise were less likely than those whose major enterprise was not livestock to have bluegrass as a major grass species, but were more likely to have orchardgrass.

Major winter forage fed. Hay was given as the major winter forage fed by a high percentage of the producers who did and who did not give livestock as their major agricultural enterprise. A higher percentage of those whose major enterprise was not livestock (45 percent) than of the livestock producers (11 percent) gave corn silage as their major winter forage. However, when tested by the x^2 test, the differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not significantly influence the use of any particular winter forage.

Stockpiled fescue. There were 68 percent of the producers who gave livestock as their major agricultural enterprise who stockpiled fescue, while 63 percent of the producers who gave Other

as their major enterprise stockpiled fescue. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not influence the stockpiling of fescue.

Crop residues used. One-half (50 percent) of the producers who gave livestock as their major enterprise used crop residues as a cattle feed, whereas 72 percent of the producers who gave Other as their major enterprise used crop residues. When tested by the x^2 test, these differences were significant at the .05 level. Therefore, the major agricultural enterprise did significantly influence the use of crop residues.

Minerals fed free choice. Eighty-six percent of the producers who gave livestock as their major enterprise fed minerals free choice while 81 percent of the producers who gave Other as their major enterprise fed minerals free choice. When tested by the x^2 test, the significance level was .057, therefore the major agricultural enterprise did not significantly influence the feeding of minerals free choice.

Used protein with low quality roughage. Only slightly over one-half (54 percent) of the producers who gave livestock as their major enterprise used protein with low quality roughage, whereas 60 percent of the producers who gave Other as their major enterprise used protein with low quality roughage. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore,

the major agricultural enterprise did not significantly influence the use of protein with low quality roughage.

Gave needy cows extra feed. Only 40 percent of the producers who gave livestock as their major enterprise gave replacement heifers, thin cows, and cows that had recently calved extra and better quality feed, whereas 46 percent of the producers who gave Other as their major enterprise provided extra feed. However, when tested by the χ^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not have a significant influence on giving replacement heifers and needy cows extra and better quality feed.

Health Practices

Fed magnesium oxide. Sixty-eight percent of the producers who gave livestock as their major enterprise fed magnesium oxide for the prevention of grass tetany, while 63 percent of the producers who gave Other as their major enterprise fed magnesium oxide. When tested by the χ^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not significantly influence the use of magnesium oxide.

Fly control program used. Ninety-four percent of the producers who gave livestock as their major enterprise used a fly control program, whereas 96 percent of the producers who gave Other as their major enterprise used some type of fly control program.

However, when tested by the x^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not significantly influence the use of a fly control program.

Used grub and lice control. Almost two-thirds (63 percent) of the producers who gave livestock as their major enterprise used a grub and lice control, while 58 percent of the producers who gave Other as their major enterprise used a control for grubs and lice. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, the major agricultural enterprise did not significantly influence the use of a grub and lice control.

Vaccinated for leptospirosis. Only 28 percent of the producers who gave livestock as their major enterprise vaccinated for leptospirosis, while the same percentage (28 percent) of the producers who gave Other as their major enterprise vaccinated for this disease. When tested by the x^2 test, no significant differences existed. Therefore, the major agricultural enterprise did not significantly influence vaccinating for leptospirosis.

Number of times cows wormed. Eighty-five percent of the producers who gave livestock as their major enterprise wormed their cattle at least one time, whereas the same percentage (85 percent) of the producers who gave Other as their major enterprise wormed their cattle at least one time. When tested by the x^2 test, no

significant differences existed. Therefore, the major agricultural enterprise had no significant influence on the number of times producers wormed their cattle.

Section II Summary

In summarizing the data in Table II (p. 26), major findings include the following:

1. Major agricultural enterprise had no significant influence, when tested by the χ^2 test, on producers using performance tested bulls, using bulls that met the minimum requirements of performance tested bull sales, or enrolling their herds in the Tennessee Beef Cattle Improvement Program. Only eight of the variables studied were significantly related to major agricultural enterprise. These variables or recommended practices were: (1) length of breeding season, (2) cows pregnancy checked following the breeding season, (3) number of times cows checked during the calving season, (4) number of times heifers were checked during the calving season, (5) age calves castrated and dehorned, (6) vaccinated for blackleg and malignant edema, (7) major grass species in pasture, and (8) crop residues used. Compared to producers who did not have livestock as their major farm enterprise, those who did had shorter breeding seasons, checked cows and heifers less frequently during calving season, castrated and dehorned calves at a younger age, were more likely to have vaccinated for blackleg and malignant edema, and were less likely to use bluegrass in their pastures and use crop residues.

III. RELATIONSHIPS BETWEEN MAJOR SOURCE OF INCOME OF PRODUCERS AND RECOMMENDED PRACTICES USED BY TENNESSEE COW-CALF PRODUCERS

Table III presents data indicating the relationships between major source of income of producers and recommended practices by producers. The purpose of this analysis was to determine what influence farm or nonfarm income had on the use of recommended practices.

The variables are grouped under one major subheading and six minor subheadings. The major subheading is entitled recommended practices. The minor subheadings are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices.

Recommended Practices

There are six minor subsections included in this major subsection. There are 27 variables listed which in actuality are recommended practices.

General

Used performance tested bulls. Only 27 percent of the producers who gave farm as their major source of income used performance tested bulls, whereas 31 percent of the producers who gave nonfarm as their major source of income used performance tested bulls. When tested by the χ^2 test, these differences were not significant at the .05

Table III. Relationships between Major Source of Income of Producers and Recommended Practices Used by Tennessee Cow-Calf Producers, 1977.

Name of Variable	Major Source of Income				x ²	df	p
	Farm		Nonfarm				
	No.	%*	No.	%*			
<u>Recommended Practices**</u>							
<u>General</u>							
Used Performance Tested Bulls							
Yes	141	27	131	31			
No	375	73	391	69			
Total Responding	516		522		1.4	1	.24
Bulls Met Minimum Requirements of P.T.B. Sale							
Yes	226	48	189	48			
No	248	52	208	52			
Total Responding	474		397		0.0	1	1.00
Herd Enrolled in TBCIP							
Yes	27	5	27	6			
No	487	95	394	94			
Total Responding	514		421		.4	1	.54
Used Identification System							
Ear Tag	180	75	191	82			
Neck Chain	61	25	41	18			
Total Responding	241		232		3.6	1	.06
Adequate Working Facilities							
Yes	345	67	267	63			
No	171	33	156	37			
Total Responding	516		423		1.3	1	.26
<u>Breeding</u>							
Length of Breeding Season							
4 Months—Less	256	49	197	46			
5 Months—More	264	51	234	54			
Total Responding	520		431		1.0	1	.31

Table III (continued).

Name of Variable	Major Source of Income				x ²	df	p
	Farm		Nonfarm				
	No.	%*	No.	%*			
Number Times Cows Checked During Breeding Season							
None	45	9	54	13			
1 Time—More	475	91	377	87			
Total Responding	520		431		3.4	1	.065
Cows Pregnancy Checked							
Yes	52	10	47	11			
No	456	90	368	89			
Total Responding	508		415		.2	1	.670
Age Replacement Heifers Bred							
16 Months—Less	246	47	206	48			
17 Months—More	274	53	225	52			
Total Responding	520		431		0.0	1	.930
Weight Replacement Heifers Bred							
700 Pounds—Less	328	63	273	63			
701 Pounds—More	192	37	158	37			
Total Responding	520		431		0.0	1	.990
<u>Calving</u>							
No. Times Cows Checked During Calving Season							
1 Time—Less	246	47	248	58			
2 Times—More	274	53	183	42			
Total Responding	520		431		9.5	1	.002
No. Times Heifers Checked During Calving Season							
1 Time—Less	192	37	199	46			
2 Times—More	328	63	232	54			
Total Responding	520		431		7.9	1	.005

Table III (continued).

Name of Variable	Major Source of Income				x ²	df	p
	Farm		Nonfarm				
	No.	%*	No.	%*			
<u>Calf Practices</u>							
Age Calves Castrated and Dehorned							
2 Months—Less	225	43	178	41			
3 Months—More	295	57	253	59			
Total Responding	520		431		.3	1	.560
Vaccinated for Blackleg and Malignant Edema							
Yes	432	84	341	81			
No	83	16	79	19			
Total Responding	515		420		1.0	1	.320
Use of Growth Stimulants							
Yes	73	14	56	13			
No	441	86	368	87			
Total Responding	514		424		.1	1	.730
<u>Feeding Practices</u>							
Major Grass Species in Pastures							
Fescue	444	86	367	86			
Orchardgrass	44	9	45	11			
Bluegrass	16	3	6	1			
Bermuda Grass	4	1	4	1			
Other	6	1	4	1			
Total Responding	514		426		4.1	4	.400
Major Winter Forage							
Corn Silage	82	16	42	10			
Grass Silage	2	1	6	1			
Hay	418	81	359	85			
Other	13	2	17	4			
Total Responding	515		424		11.2	3	.010
Stockpiled Fescue							
Yes	349	68	275	65			
No	167	32	147	35			
Total Responding	516		422		.5	1	.470

Table III (continued).

Name of Variable	Major Source of Income				x ²	df	p
	Farm		Nonfarm				
	No.	%*	No.	%*			
Crop Residues Used							
Yes	312	60	202	47			
No	208	40	229	53			
Total Responding	520		431		15.8	1	.001
Minerals Fed Free Choice							
Yes	435	85	364	86			
No	80	15	61	14			
Total Responding	515		425		.2	1	.680
Used Protein with Low Quality Roughage							
Yes	285	60	191	50			
No	193	40	188	50			
Total Responding	478		379		6.9	1	.008
Gave Needy Cows Extra Feed							
Yes	232	45	148	36			
No	281	55	269	64			
Total Responding	513		417		8.6	1	.003
<u>Health Practices</u>							
Fed Magnesium Oxide							
Yes	331	65	295	70			
No	181	35	128	30			
Total Responding	412		423		2.5	1	.110
Fly Control Program Used							
Yes	486	94	410	95			
No	34	6	21	5			
Total Responding	520		431		.9	1	.340
Used Grub and Lice Control							
Yes	319	62	266	63			
No	199	38	158	37			
Total Responding	518		424		.1	1	.770
Vaccinated for Lepto							
Yes	150	29	110	26			
No	365	71	311	74			
Total Responding	515		421		.9	1	.340

Table III (continued).

Name of Variable	Major Source of Income				x ²	df	p
	Farm		Nonfarm				
	No.	%*	No.	%*			
No. Times Cows Wormed							
1 Time	277	87	219	82			
2 Times	43	13	47	18			
Total Responding	320		266		1.7	1	.190

*Percents rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

level. Therefore, the major source of income had no significant influence on the use of performance tested bulls.

Bulls met minimum requirements of performance tested bull sale. An equal proportion (48 percent) of producers who gave their major source of income as either farm or nonfarm used bulls that met the minimum requirements of performance tested bull sales. When tested by the χ^2 test, the significance level was 1.00. Therefore, major source of income had no significant influence of the use of bulls meeting minimum requirements of performance tested bull sales.

Herd enrolled in Tennessee Beef Cattle Improvement Program. Only 5 percent of the producers who gave farm as their major source of income had their herd enrolled in the Tennessee Beef Cattle Improvement Program, whereas 6 percent of the producers who gave nonfarm as their major source of income had their herd enrolled in the program. When tested by the χ^2 test, these differences were not significant at the .05 level. Therefore, the major source of income had no significant effect on enrolling their herd in the Tennessee Beef Cattle Improvement Program.

Herd identification system. Three-fourths (75 percent) of the producers who gave farm as their major source of income used ear tags as an identification system, while 82 percent of the producers who gave nonfarm as their major source of income used ear tags. When tested by the χ^2 test, the significance level was .06. However, this is not significant at the .05 level and therefore

the major source of income had no significant influence on the type identification system used.

Adequate working facilities. There were 67 percent of the producers who gave farm as their major source of income that had adequate working facilities, while 63 percent of the producers who gave nonfarm as their major source of income had adequate working facilities. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on having adequate working facilities.

Breeding

Length of breeding season. Almost one-half (49 percent) of the producers who gave farm as their major source of income had a limited breeding season of 4 months or less, while an almost equal amount (46 percent) of the producers who gave nonfarm as their major source of income had a limited breeding season of 4 months or less. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on the length of breeding season.

Number of times cows checked during the breeding season. Ninety-one percent of the producers who gave farm as their major source of income checked their cows at least one time during the breeding season, while 87 percent of the producers who gave nonfarm as their major source of income checked their cows at least one

time. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on the number of times cows were checked during the breeding season.

Cows pregnancy checked. Only 10 percent of the producers who gave farm as their major source of income pregnancy checked their cows after the breeding season. However, 11 percent of the producers who gave nonfarm as their major source of income pregnancy checked their cows following the breeding season. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on producers pregnancy checking their cows following the breeding season.

Age replacement heifers bred. There were 47 percent of the producers who gave farm as their major source of income who had their heifers bred at 16 months of age or less, while an almost equal amount (48 percent) of the producers who gave nonfarm as their major source of income had their heifers bred at 16 months of age or less. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on the age producers had their heifers bred.

Weight replacement heifers bred. Sixty-three percent of the producers who gave farm as their major source of income had their

heifers bred at 700 pounds or less, while an equal amount (63 percent) of the producers who gave nonfarm as their major source of income had their heifers bred at 700 pounds or less. When tested by the χ^2 test, the significance level was .99. Therefore, major source of income had no significant influence on the weight producers had their replacement heifers bred.

Calving

Number of times cows checked during calving season. More than one-half (53 percent) of the producers who gave farm as their major source of income checked their cows more than one time during the calving season, while 43 percent of the producers who gave nonfarm as their major source of income checked their cows more than one time during the calving season. When tested by the χ^2 test, these differences were significant at the .05 level. Therefore, major source of income had a significant influence on the number of times cows were checked during the calving season.

Number of times heifers checked during calving season. Almost two-thirds (63 percent) of the producers who gave farm as their major source of income checked their heifers more than one time during the calving season, whereas 54 percent of the producers who gave nonfarm as their major source of income checked their heifers more than one time during the calving season. When tested by the χ^2 test, these differences were significant at the .05 level. Therefore, major source of income had a significant influence on

the number of times heifers were checked during the calving season.

Calf Practices

Age calves castrated and dehorned. Forth-three percent of the producers who gave farm as their major source of income castrated and dehorned their calves at 2 months of age or less, while 41 percent of the producers who gave nonfarm as their major source of income castrated and dehorned their calves at 2 months of age or less. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income did not significantly influence the age calves were castrated and dehorned.

Vaccinated for blackleg and malignant edema. Over three-fourths (84 percent) of the producers who gave farm as their major source of income vaccinated for blackleg and malignant edema, whereas an almost equal amount (81 percent) of the producers who gave nonfarm as their major source of income vaccinated their calves for blackleg and malignant edema. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income did not significantly influence vaccinating calves for blackleg and malignant edema.

Use of growth stimulants. Only 14 percent of the producers who gave farm as their major source of income used growth stimulants, while an almost equal amount (13 percent) of the producers who gave

nonfarm as their major source of income used growth stimulants. When tested by the x^2 test, these differences were not significantly related. Therefore, major source of income did not significantly influence the use of growth stimulants.

Feeding Practices

Major grass species in pasture. Eighty-six percent of the producers who gave farm as their major source of income had fescue as the major grass species in their pastures, and an equal amount (86 percent) of the producers who gave nonfarm as their major source of income had fescue as their major grass species. When tested by the x^2 test, the significance level was .40. Therefore, major source of income had no significant influence on the major grass species in pastures.

Major winter forage fed. There were over three-fourths (81 percent) of the producers who gave farm as their major source of income who used hay as their major winter forage, while 85 percent of the producers who gave nonfarm as their major source of income used hay as their major winter forage. When tested by the x^2 test, these differences were significant at the .05 level. Therefore, major source of income had a significant influence on the major winter forage fed.

Stockpiled fescue. Over two-thirds (68 percent) of the producers who gave farm as their major source of income stockpiled fescue, while 65 percent of the producers who gave nonfarm as their

major source of income stockpiled fescue. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on stockpiling fescue.

Crop residues used. There were 60 percent of the producers who gave farm as their major source of income who utilized row crop residue, whereas 47 percent of the producers who gave nonfarm as their major source of income who utilized row crop residues. When tested by the x^2 test, the significance level was .001. Therefore, a significantly larger proportion of the producers whose major source of income was farm were using crop residues.

Minerals fed free choice. Over three-fourths (85 percent) of the producers who gave farm as their major source of income fed minerals free choice to their cattle, whereas an almost equal number (86 percent) of the producers who gave nonfarm as their major source of income fed minerals free choice. When tested by the x^2 test, these differences were not significantly related at the .05 level. Therefore, major source of income had no significant influence on feeding minerals free choice.

Used protein with low quality roughage. Almost two-thirds (60 percent) of the producers who gave farm as their major source of income gave extra protein with low quality roughage, while only one-half (50 percent) of the producers who gave nonfarm as their major source of income gave extra protein with low quality roughage.

When tested by the x^2 test, the significance level was .008. Therefore, a significantly higher proportion of the producers whose major source of income was farm used extra protein with low quality roughage.

Gave needy cows and replacement heifers extra feed. Forty-five percent of the producers who gave farm as their major source of income gave thin cows and replacement heifers extra feed, while 36 percent of the producers who gave nonfarm as their major source of income fed thin cows and replacement heifers extra feed. When tested by the x^2 test, the significance level was .003. Therefore, a significantly higher proportion of the producers who had farming as their major source of income were providing extra feed to thin cows and replacement heifers.

Health Practices

Fed magesium oxide. There were almost two-thirds (65 percent) of the producers who gave farm as their major source of income who fed magnesium oxide for prevention of grass tetany. However, 70 percent of the producers who gave nonfarm as their major source of income fed magnesium oxide. When tested by the x^2 test, these differences were not significantly related. Therefore, major source of income had no significant influence on feeding magnesium oxide.

Fly control program used. Almost 100 percent (94 percent) of the producers who gave farm as their major source of income had

a fly control program, and an almost equal amount (95 percent) of the producers who gave nonfarm as their major source of income used a fly control program. When tested by the χ^2 test, these differences were not significantly related at the .05 level. Therefore, major source of income did not significantly influence the use of a fly control program.

Used grub and lice control. Sixty-two percent of the producers who gave farm as their major source of income used a grub and lice control, whereas 63 percent of the producers who gave nonfarm as their major source of income used a grub and lice control. When tested by the χ^2 test, these differences were not significantly related at the .05 level. Therefore, major source of income did not significantly influence the use of a grub and lice control.

Vaccinated for leptospirosis. Only 29 percent of the producers who gave farm as their major source of income vaccinated their cattle for leptospirosis, while only 26 percent of the producers who gave nonfarm as their major source of income vaccinated for leptospirosis. When tested by the χ^2 test, these differences were not significant at the .05 level. Therefore, major source of income had no significant influence on vaccinating for leptospirosis.

Number of times cows wormed. There were 87 percent of the producers who gave farm as their major source of income who wormed their cattle at least one time, whereas 82 percent of the producers who gave nonfarm as their major source of income wormed their cattle

at least one time. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, major source of income did not significantly influence the number of times producers wormed their cattle.

Section III Summary

In summarizing the data in Table III (p. 43), major findings include the following:

1. The major source of income had no significant influence, when tested by the x^2 test, on producers using performance tested bulls, using bulls that met the minimum requirements of performance tested bull sales, or enrolling their herds in the Tennessee Beef Cattle Improvement Program. Only six of the major variables were significantly related to the major source of income of producers. These variables or recommended practices were: (1) number of times cows were checked during the calving season, (2) number of times heifers were checked during the calving season, (3) major winter forage fed, (4) crop residues used, (5) used protein with low quality roughage, and (6) gave needy cows extra feed. Compared to those producers who did not give farm as their major source of income, those who gave farm as major source of income checked their cows and heifers more frequently during the breeding season, were more likely to use corn silage as their major winter forage, use crop residues and use protein with low quality roughage, and to give thin cows and cows that had recently calved extra feed.

IV. RELATIONSHIPS BETWEEN THE USE OF PERFORMANCE TESTED BULLS BY PRODUCERS AND RECOMMENDED PRACTICES USED BY TENNESSEE COW-CALF PRODUCERS

Table IV presents data indicating the relationships between the use of performance tested bulls by producers and the recommended practices that they use. The purpose of this analysis was to determine what influence the use of performance tested bulls had on the number of recommended practices used.

The variables are grouped under one major subheading and six minor subheadings. The major subheading is entitled recommended practices. The minor subheadings are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices.

Recommended Practices

There are six minor subheadings included in this major subsection. There are 25 variables listed which in actuality are recommended practices.

General

Herd enrolled in Tennessee Beef Cattle Improvement Program.

Fourteen percent of the producers who used performance tested bulls were enrolled in the Tennessee Beef Cattle Improvement Program compared to only 3 percent of the producers who were not using performance tested bulls. When tested by the x^2 test, the

Table IV. Relationships between the Use of Performance Tested Bulls and Recommended Practices Used by Tennessee Cow-Calf Producers, 1977.

Name of Variable	Performance Tested Bulls				x ²	df	p
	Used		Not Used				
	No.	%*	No.	%*			
<u>Recommended Practices**</u>							
<u>General</u>							
Herd Enrolled in TBCIP							
Yes	37	14	17	3			
No	235	86	643	97			
Total Responding	272		660		40.9	1	.001
Used Identification System							
Ear Tag	173	86	195	73			
Neck Chain	28	14	74	27			
Total Responding	201		269		11.7	1	.001
Adequate Working Facilities							
Yes	210	77	396	60			
No	62	23	265	40			
Total Responding	272		664		24.6	1	.001
<u>Breeding</u>							
Length of Breeding Season							
4 Months—Less	177	65	273	41			
5 Months—More	96	35	395	59			
Total Responding	273		668		43.7	1	.001
Number Times Cows Checked During Breeding Season							
None	15	6	84	13			
1 Time—More	258	94	584	87			
Total Responding	273		668		9.6	1	.002
Cows Pregnancy Checked Following Breeding Season							
Yes	44	16	54	8			
No	224	84	598	92			
Total Responding	268		652		12.4	1	.001

Table IV (continued).

Name of Variable	Performance Tested Bulls				x ²	df	p
	Used		Not Used				
	No.	%*	No.	%*			
Age Replacement Heifers Bred							
16 Months—Less	139	51	312	47			
17 Months—More	134	49	356	53			
Total Responding	273		668		1.2	1	.270
Weight Replacement Heifers Bred							
700 Pounds—Less	170	62	431	65			
701 Pounds—More	103	38	237	35			
Total Responding	273		668		.3	1	.560
<u>Calving</u>							
No. Times Cows Checked During Calving Season							
1 Time—Less	96	35	398	60			
2 Times—More	177	65	270	40			
Total Responding	273		668		45.4	1	.001
No. Times Heifers Checked During Calving Season							
1 Time—Less	71	26	320	48			
2 Times—More	202	74	348	52			
Total Responding	273		668		37.4	1	.001
<u>Calf Practices</u>							
Age Calves Castrated and Dehorned							
2 Months—Less	138	51	264	40			
3 Months—More	135	49	404	60			
Total Responding	273		668		9.2	1	.002
Vaccinated for Blackleg and Malignant Edema							
Yes	254	94	515	78			
No	16	6	146	22			
Total Responding	270		661		33.7	1	.001
Used Growth Stimulants							
Yes	70	26	59	9			
No	202	74	603	91			
Total Responding	272		662		44.4	1	.001

Table IV (continued).

Name of Variable	Performance Tested Bulls				x ²	df	p
	Used		Not Used				
	No.	%*	No.	%*			
<u>Feeding Practices</u>							
Major Grass Species in Pastures							
Fescue	233	86	572	86			
Orchardgrass	32	12	56	9			
Bluegrass	3	1	20	3			
Bermuda Grass	0	0	8	1			
Other	3	1	6	1			
Total Responding	271		662		8.5	4	.074
Major Winter Forage							
Corn Silage	46	17	77	12			
Grass Silage	4	2	4	1			
Hay	208	76	568	85			
Other	14	5	15	2			
Total Responding	272		664		12.9	3	.005
Stockpiled Fescue							
Yes	193	71	428	65			
No	77	29	234	35			
Total Responding	270		662		3.7	1	.053
Crop Residues Used							
Yes	141	52	367	55			
No	132	48	301	45			
Total Responding	273		668		.7	1	.400
Minerals Fed Free Choice							
Yes	252	93	543	82			
No	19	7	122	18			
Total Responding	271		665		18.5	1	.001
Used Protein with Low Quality Roughage							
Yes	150	62	326	53			
No	93	38	286	47			
Total Responding	243		612		4.7	1	.030

Table IV (continued).

Name of Variable	Performance Tested Bulls						p
	Used		Not Used		x ²	df	
	No.	%*	No.	%*			
Gave Needy Cows Extra Feed							
Yes	134	50	245	37			
No	134	50	414	63			
Total Responding	268		659		12.4	1	.001
<u>Health Practices</u>							
Fed Magnesium Oxide							
Yes	219	81	406	61			
No	52	19	255	39			
Total Responding	271		661		31.8	1	.001
Fly Control Program Used							
Yes	265	97	621	93			
No	8	3	47	7			
Total Responding	273		668		5.2	1	.022
Used Grub and Lice Control							
Yes	218	80	362	54			
No	54	20	302	46			
Total Responding	272		664		52.7	1	.001
Vaccinated for Lepto							
Yes	110	40	149	23			
No	162	60	512	77			
Total Responding	272		661		29.9	1	.001
No. Times Cows Wormed							
1 Time	163	80	330	87			
2 Times	41	20	49	13			
Total Responding	204		379		4.7	1	.030

*Percents rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

significance level was .001. Therefore, the use of performance tested bulls was significantly related to producers being enrolled in the Tennessee Beef Cattle Improvement Program.

Used identification system. Over three-fourths (86 percent) of the producers who used performance tested bulls used ear tags as an identification system for their cattle, while 73 percent of the producers who were not using performance tested bulls used ear tags as an identification system. When tested by the x^2 test, the significance level was .001. Therefore, the use of performance tested bulls was significantly related to the use of ear tags as an identification system for their cattle.

Adequate working facilities. Over three-fourths (77 percent) of the producers who used performance tested bulls had adequate working facilities, whereas only 60 percent of the producers who were not using performance tested bulls had adequate working facilities. When tested by the x^2 test, the significance level was .001. Therefore, use of performance tested bulls was significantly related to producers having adequate working facilities.

Breeding

Length of breeding season. Almost two-thirds (65 percent) of the producers who used performance tested bulls had a limited breeding season of 4 months or less, while less than one-half (41 percent) of the producers who were not using performance tested

bulls had a breeding season of 4 months or less. When tested by the χ^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls, as compared to nonusers, were using a controlled limited breeding season of 4 months or less.

Number of times cows checked during breeding season. Ninety-four percent of the producers who used performance tested bulls checked their cows one time or more daily during the breeding season. However, over three-fourths (75 percent) of the producers who were not using performance tested bulls checked their cows one time daily or more during the breeding season. When tested by the χ^2 test, the significance level was .002. Therefore, a significantly higher proportion of producers using performance tested bulls were checking cows one or more times daily during the breeding season.

Cows pregnancy checked following breeding season. Sixteen percent of the producers who used performance tested bulls had their cows pregnancy checked following the breeding season, whereas only one-half as many (8 percent) of the producers who were not using performance tested bulls had their cows pregnancy checked following the breeding season. When tested by the χ^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls pregnancy checked cows following the breeding season.

Age replacement heifers bred. Over one-half (51 percent) of the producers who used performance tested bulls bred their heifers at 16 months of age or less, while 47 percent of the producers who were not using performance tested bulls had their heifers bred at 16 months of age or less. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, use of performance tested bulls did not significantly influence breeding heifers at 16 months of age or less.

Weight replacement heifers bred. Sixty-two percent of the producers who used performance tested bulls had their heifers bred at 700 pounds or less, whereas 65 percent of the producers who were not using performance tested bulls had their heifers bred at 700 pounds or less. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, use of performance tested bulls did not significantly influence breeding heifers at 700 pounds or less.

Calving

Number of times cows checked during calving season. Almost two-thirds (65 percent) of the producers who used performance tested bulls checked their cows during the calving season more than one time daily, while only 40 percent of the producers who were not using performance tested bulls checked their cows more than one time daily during the calving season. When tested by the x^2 test, the significance level was .001. Therefore, a significantly higher proportion of

producers using performance tested bulls were checking their cows more than one time daily during the calving season.

Number of times heifers checked during the calving season.

Almost three-fourths (74 percent) of the producers who used performance tested bulls checked their heifers more than one time daily during the calving season, while 52 percent of the producers who were not using performance tested bulls checked their heifers more than one time daily during the calving season. When tested by the χ^2 test, the significant level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were checking their heifers more than one time daily during the calving season.

Calf Practices

Age calves castrated and dehorned. Over one-half (51 percent) of the producers who used performance tested bulls castrated and dehorned their calves at 2 months of age or less, while 40 percent of the producers who were not using performance tested bulls castrated and dehorned their calves at 2 months of age or less. When tested by the χ^2 test, the significance level was .002. Therefore, a significantly higher proportion of producers using performance tested bulls were castrating and dehorning their calves at an early age.

Vaccinated for blackleg and malignant edema. Ninety-four percent of the producers who used performance tested bulls vaccinated

their calves for blackleg and malignant edema, whereas 78 percent of the producers who were not using performance tested bulls vaccinated their calves for blackleg and malignant edema. When tested by the χ^2 test, the significance level was .001. Therefore, a higher proportion of producers using performance tested bulls were vaccinating their calves for blackleg and malignant edema.

Used growth stimulants. Twenty-six percent of the producers who used performance tested bulls used growth stimulants, whereas only 9 percent of the producers who were not using performance tested bulls used growth stimulants. When tested by the χ^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were using growth stimulants.

Feeding Practices

Major grass species in pasture. Eighty-six percent of the producers who used performance tested bulls gave fescue as their major grass species in their pastures, and an equal amount (86 percent) of the producers who were not using performance tested bulls gave fescue as their major grass species. When tested by the χ^2 test, these differences were not significant at the .05 level. Therefore, the use of performance tested bulls did not significantly influence the major grass species used by producers.

Major winter forage. Seventy-six percent of the producers who used performance tested bulls gave hay as the major winter forage

used, whereas 85 percent of the producers who were not using performance tested bulls gave hay as the major winter forage used. However, 17 percent of the producers who used performance tested bulls used corn silage as a winter forage, while only 12 percent of the producers who were not using performance tested bulls used corn silage as a winter forage. When tested by the x^2 test, the significance level was .005. Therefore, a significantly higher proportion of producers using performance tested bulls were feeding silage.

Stockpiled fescue. Seventy-one percent of the producers who used performance tested bulls stockpiled fescue, while 65 percent of the producers who were not using performance tested bulls stockpiled fescue. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, use of performance tested bulls did not significantly influence stockpiling fescue.

Crop residues used. Fifty-two percent of the producers who used performance tested bulls utilized crop residues, whereas 55 percent of the producers who were not using performance tested bulls utilized crop residues. When tested by the x^2 test, these differences were not significant at the .05 level. Therefore, use of performance tested bulls did not significantly influence using crop residues.

Minerals fed free choice. A group of 93 percent of the producers who used performance tested bulls fed minerals free choice, while 82 percent of the producers who were not using performance

tested bulls fed minerals free choice. When tested by the x^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were feeding minerals free choice.

Used protein with low quality roughage. There were 62 percent of the producers who were using performance tested bulls who used extra protein with low quality roughage, while 53 percent of the producers who were not using performance tested bulls used extra protein with low quality roughage. When tested by the x^2 test, the significance level was .030. Therefore, a significantly higher proportion of producers using performance tested bulls were feeding extra protein with low quality roughage.

Gave needy cows and replacement heifers extra feed. One-half (50 percent) of the producers who used performance tested bulls gave needy cows and replacement heifers extra feed, while only 37 percent of the producers who were not using performance tested bulls gave needy cows and replacement heifers extra feed. When tested by the x^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were giving needy cows and replacement heifers extra feed.

Health Practices

Fed magnesium oxide. Eighty-one percent of the producers who used performance tested bulls fed magnesium oxide, while

61 percent of the producers who were not using performance tested bulls fed magnesium oxide. When tested by the x^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were feeding magnesium oxide.

Fly control program used. Ninety-seven percent of the producers who used performance tested bulls used some type of fly control program, while 93 percent of the producers who were not using performance tested bulls had a fly control program. When tested by the x^2 test, the significance level was .022. Therefore, a significantly higher proportion of producers using performance tested bulls were using some type of fly control program.

Used grub and lice control. Over three-fourths (75 percent) of the producers who used performance tested bulls used a grub and lice control program, whereas only slightly over one-half (54 percent) of the producers who did not use performance tested bulls used a grub and lice control program. When tested by the x^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were using a grub and lice control program.

Vaccinated for leptospirosis. Only 40 percent of the producers who used performance tested bulls vaccinated their cattle for leptospirosis, while only 23 percent of the producers who were not using performance tested bulls vaccinated for leptospirosis.

When tested by the x^2 test, the significance level was .001. Therefore, a significantly higher proportion of producers using performance tested bulls were vaccinating for leptospirosis.

Number of times cows wormed. There were 20 percent of the producers who used performance tested bulls who wormed their cows two times, while 13 percent of the producers who were not using performance tested bulls wormed their cows two times. When tested by the x^2 test, the significance level was .030. Therefore, a significantly higher proportion of producers using performance tested bulls were worming their cows more frequently.

Section IV Summary

In summarizing the data in Table IV (p. 59), major findings include the following:

1. The use of performance tested bulls significantly influenced 20 of the 25 variables studied at the .05 level when tested by the x^2 test. The 20 variables that were significantly related were: herd enrolled in T.B.C.I.P., used identification system, adequate working facilities, length of breeding season, number times cows checked during breeding season, cows pregnancy checked following breeding season, number times cows checked during calving season, number times heifers checked during calving season, age calves castrated and dehorned, vaccinated for blackleg and malignant edema, used growth stimulants, major winter forage fed, minerals fed free choice, used protein with low quality roughage,

gave needy cows extra feed, fed magnesium oxide, used fly control program, used grub and lice control, vaccinated for leptospirosis, and number of times cows wormed.

V. RELATIONSHIPS BETWEEN AGE OF PRODUCER AND SELECTED
PRODUCER CHARACTERISTICS, FARM CHARACTERISTICS,
AND RECOMMENDED PRACTICES USED BY
TENNESSEE COW-CALF PRODUCERS

Table V presents data indicating the relationship between the age of producers and selected producer characteristics, farm characteristics, and recommended practices used by Tennessee cow-calf producers. The purpose of this analysis was to determine what influence age had on the producer, his farm, and the recommended practices that he used.

The variables are grouped under three major subheadings and six minor subheadings. The major subheadings are: (1) producer characteristics, (2) farm characteristics, and (3) recommended practices. The minor subheadings are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices.

Producer Characteristics

There are three variables included in this major subsection.

Tenure. There were 867 (93 percent) producers who gave owner as their tenure status and their mean age was 52 years, whereas

Table V. Relationships between Age of Producer and Selected Producer Characteristics, Farm Characteristics, and Recommended Practices Used by Tennessee Cow-Calf Producers, 1977.

Name of Variable	Age of Producer				
	Number of Producers	Mean*	F Value	df	p
<u>Producer Characteristics**</u>					
Tenure					
Owner	867	52			
Other	63	41	41.0	1	.001
Total Responding	930				
Full-Time/Part-Time Farmer					
Part-Time	435	48			
Full-Time	506	53	34.9	1	.001
Total Responding	941				
Major Source of Income					
Farm	515	52			
Nonfarm	425	49	16.4	1	.001
Total Responding	940				
<u>Farm Characteristics</u>					
Major Agricultural Enterprise					
Livestock	698	52			
Other	244	48	10.3	1	.001
Total Responding	942				
Acres of Pasture					
95-Under	469	51			
96-Over	473	50	0.7	1	.397
Total Responding	942				
<u>Recommended Practices</u>					
<u>General</u>					
Used Performance Tested Bulls					
Yes	268	50			
No	664	51	1.3	1	.264
Total Responding	932				

Table V (continued).

Name of Variable	Number of Producers	Age of Producer			
		Mean*	F Value	df	p
Bulls Met Minimum Requirements of P.T. Bull Sale					
Yes	412	50			
No	454	51	1.9	1	.169
Total Responding	866				
Herd Enrolled in TBCIP					
Yes	54	45			
No	875	51	10.0	1	.001
Total Responding	929				
Identification System Used					
Ear Tag	369	49			
Neck Chain	102	50	.5	1	.473
Total Responding	471				
Adequate Working Facilities					
Yes	608	50			
No	325	51	.9	1	.334
Total Responding	933				
<u>Breeding</u>					
Length of Breeding Season					
4 Months—Less	450	50			
5 Months—More	492	50	.0	1	.881
Total Responding	942				
No. Times Cows Checked During Breeding Season					
None	99	50			
1 Time—More	843	51	.3	1	.577
Total Responding	942				
Cows Pregnancy Checked Following Breeding Season					
Yes	99	48			
No	818	51	4.7	1	.031
Total Responding	917				

Table V (continued).

Name of Variable	Number of Producers	Age of Producer			
		Mean*	F Value	df	p
Age Replacement Heifers Bred					
16 Months—Less	450	51			
17 Months—More	492	51	.0	1	.931
Total Responding	942				
Weight Replacement Heifers Bred					
700 Pounds—Less	598	51			
701 Pounds—More	344	50	.4	1	.556
Total Responding	942				
<u>Calving</u>					
No. Times Cows Checked During Calving Season					
1 Time—Less	492	50			
2 Times—More	450	51	1.8	1	.183
Total Responding	942				
No. Times Heifers Checked During Calving Season					
1 Time—Less	390	51			
2 Times—More	552	51	.0	1	.852
Total Responding	942				
<u>Calf Practices</u>					
Age Calves Castrated and Dehorned					
2 Months—Less	400	51			
3 Months—More	542	51	.2	1	.651
Total Responding	942				
Vaccinated for Blackleg and Malignant Edema					
Yes	770	51			
No	159	52	1.3	1	.252
Total Responding	929				
Used Growth Stimulants					
Yes	128	48			
No	804	51	6.9	1	.009
Total Responding	932				

Table V (continued).

Name of Variable	Age of Producer				
	Number of Producers	Mean*	F Value	df	p
<u>Feeding Practices</u>					
Stockpiled Fescue					
Yes	620	51			
No	312	51	.0	1	.933
Total Responding	932				
Crop Residues Used					
Yes	508	50			
No	434	52	3.4	1	.066
Total Responding	942				
Mineral Fed Free Choice					
Yes	795	50			
No	139	52	2.6	1	.110
Total Responding	934				
Used Protein with Low Quality Roughage					
Yes	471	51			
No	380	51	.1	1	.784
Total Responding	851				
Gave Needy Cows Extra Feed					
Yes	377	51			
No	547	51	.1	1	.801
Total Responding	924				
<u>Health Practices</u>					
Fed Magnesium Oxide					
Yes	622	50			
No	307	52	2.2	1	.135
Total Responding	929				
Fly Control Program Used					
Yes	887	51			
No	55	55	5.5	1	.018
Total Responding	942				

Table V (continued).

Name of Variable	Age of Producer				
	Number of Producers	Mean*	F Value	df	p
Used Grub and Lice Control					
Yes	582	50			
No	354	52	5.1	1	.024
Total Responding	936				
Vaccinated for Lepto					
Yes	259	49			
No	672	52	7.4	1	.006
Total Responding	931				
No. Times Cows Wormed					
1 Time	494	50			
2 Times	90	50	.1	1	.804
Total Responding	584				

*Rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

63 producers (7 percent) gave other as their tenure status and the mean age was 41 years. When tested by the F test, these differences were significant at the .05 level. Producers who owned their farm were significantly older than those who did not own their farm.

Full-time/part-time farmer. Forty-six percent (435) of 941 respondents indicated they were part-time farmers and their mean age was 48 years, while 54 percent (or 506 producers) listed full-time as their farming status and their mean age was 53 years. When tested by the F test, these differences were significant at the .05 level. Full-time farmers were significantly older than those who farmed part-time.

Major source of income. Over one-half (55 percent) of the producers gave farm as their major source of income and their mean age was 52 years, whereas 45 percent of the producers gave nonfarm as their major source of income and their mean age was 49 years. When tested by the F test, these differences were significant at the .05 level. Producers who gave farm as their major source of income were significantly older than those who gave nonfarm.

Farm Characteristics

Major agricultural enterprise. There were 698 (74 percent) of the producers who gave livestock as their major agricultural enterprise and their mean age was 52 years, whereas only 26 percent of the producers gave other as their major agricultural enterprise

and their mean age was 48 years. When tested by the $\underline{F}$ test, these differences were significant at the .05 level. Producers whose major agricultural enterprise was livestock were significantly older than those who gave "other."

Acres of pasture. There were 469 producers who had 95 acres of pasture or less and their mean age was 51 years, while 473 producers had 96 acres or more and their mean age was 50 years. When tested by the $\underline{F}$ test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to the number of acres of pasture that producers had.

Recommended Practices/General

Used performance tested bulls. Of the 932 respondents, 268 (29 percent) used performance tested bulls and their mean age was 50 years, while 664 producers did not use performance tested bulls and their mean age was 51 years. When tested by the $\underline{F}$ test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to the use of performance tested bulls.

Bulls met minimum requirements of performance tested bull sale. Forty-eight percent (412) of the producers used bulls which met the minimum requirements of performance tested bull sales and their mean age was 50 years, whereas 52 percent (454) of the producers did not use bulls meeting the minimum requirements. When tested

by the F test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to producers using bulls which met the minimum requirements of performance tested bull sales.

Herd enrolled in T.B.C.I.P. Only 6 percent (54) of the producers had their herds enrolled in the Tennessee Beef Cattle Improvement Program and their mean age was 45 years, while 94 percent (875) did not have their herds enrolled in the T.B.C.I.P. and their mean age was 51 years. When tested by the F test, these differences were significant at the .05 level. Producers who had their herds enrolled in the T.B.C.I.P. were significantly younger than those who did not have their herds enrolled.

Identification system used. Of the 471 producers, 369 used ear tags as their herd identification system and their mean age was 49 years, while only 102 producers used neck chains and their mean age was 50 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to the type of identification system used.

Adequate working facilities. Of the 933 producers who responded, 608 producers had adequate working facilities and their mean age was 50 years, whereas 325 of the producers did not have adequate working facilities and their mean age was 51 years. When tested by the F test, these differences were not significant at the

.05 level. Therefore, age of producer was not significantly related to having adequate working facilities.

Breeding

Length of breeding season. Four hundred and fifty of the producers had a breeding season of 4 months or less and their mean age was 50 years, while 492 producers had a breeding season of over 4 months and their mean age was 50 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to the length of their herd breeding season.

Number of times cows checked during breeding season. Only 11 percent of the producers did not check their cows during the breeding season and their mean age was 50 years, whereas 89 percent of the producers checked their cows one time or more during the breeding season and their mean age was 51 years. However, when tested by the F test, these differences were not significantly related at the .05 level. Therefore, age of producer was not significantly related to the number of times producers checked their cows during the breeding season.

Cows pregnancy checked following the breeding season. Only 99 of the 917 producers responding indicated that they had their cows checked following the breeding season. The mean age of this group was 48 years as compared to 51 years for the group who did not pregnancy check. However, when tested by the F test, this

difference was significant at the .05 level. Producers who pregnancy checked following the breeding season were significantly younger than those who did not pregnancy check.

Age replacement heifers bred. Of the 942 producers responding, 450 bred replacement heifers at 16 months or less of age and the mean age of the producers was 51 years; 492 bred their replacement heifers at over 16 months of age and their mean age was also 51 years. When tested by the F test, this difference was not significant at the .05 level. Therefore, the age replacement heifers were bred was not significantly related to the age of producers.

Weight replacement heifers bred. Sixty-three percent (598) of the producers bred their replacement heifers at 700 pounds or less and their mean age was 51 years, whereas 344 or 37 percent of the producers bred their heifers at over 700 pounds and their mean age was 50 years. When tested by the F test, these differences were not significantly related at the .05 level. Therefore, the weight that producers bred heifers was not significantly related to the age of the producer.

Calving

Number of times cows checked during calving season. Four hundred ninety-two producers (52 percent) checked their cows at least one time during the calving season and their mean age was 50 years, whereas an almost equal number, 450 producers, checked

their cows more than one time during the calving season and their mean age was 51 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to the number of times producers checked their cows during the calving season.

Number of times heifers checked during calving season. Of the 942 producers responding, 390 or 41 percent checked their heifers one time or less during the calving season and their mean age was 51 years, whereas 552 producers checked their heifers more than one time during the calving season and their mean age was 51 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to the number of times producers checked their heifers during the calving season.

Calf Practices

Age calves castrated and dehorned. Four hundred of the 942 producers responding castrated and dehorned their calves at 2 months of age or less and their mean age was 51 years, whereas 542 producers castrated and dehorned calves over 2 months of age and their mean age was 51 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer and the age that they castrated and dehorned calves was not significantly related.

Vaccinated for blackleg and malignant edema. Almost 83 percent of the producers vaccinated for blackleg and malignant edema and their mean age was 51 years, whereas only 17 percent did not vaccinate and their mean age was 52 years. However, when tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer and vaccinating for blackleg and malignant edema were not significantly related.

Use of growth stimulants. Of the 932 producers responding, only 128 or 14 percent used growth stimulants and their mean age was 48 years, whereas 804 or 86 percent did not use growth stimulants and their mean age was 51 years. When tested by the F test, these differences were significant at the .05 level. Producers who used growth stimulants were significantly younger than those who did not use growth stimulants.

Feeding Practices

Stockpiled fescue. Six hundred twenty of the 932 producers responding stockpiled fescue and their mean age was 51 years. Only one-half as many producers, 312, did not stockpile fescue and their mean age was 51 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producers and stockpiling fescue were not significantly related.

Crop residues used. Five hundred and eight (54 percent) of the producers responding used crop residues and their mean age was 50 years, whereas 434 of the producers did not use crop residues

and their mean age was 52 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer was not significantly related to producers using crop residues.

Minerals fed free choice. Over 85 percent (795) of the 934 producers responding fed minerals free choice and their mean age was 50 years. Only 139 producers did not feed minerals free choice and their mean age was 52 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer and feeding a mineral mixture free choice were not significantly related.

Used protein with low quality roughage. Four hundred seventy-one (55 percent) producers used protein with low quality roughage and their mean age was 51 years, whereas 380 (45 percent) did not use extra protein and their mean age was also 51 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer and feeding protein with low quality roughage were not significantly related.

Gave needy cows extra feed. Almost 41 percent (377 producers) of the 924 producers responding gave needy cows extra feed and their mean age was 51 years. However, a larger number (547 producers) did not give needy cows extra feed and their mean age was 51 years. When tested by the F test, these differences were not significant

at the .05 level. Therefore, age of producer and giving needy cows extra feed were not significantly related.

Health Practices

Fed magnesium oxide. Six hundred and twenty-two (67 percent) producers fed magnesium oxide and their mean age was 50 years, while only 307 producers did not feed magnesium oxide and their mean age was 52 years. When tested by the F test, these differences were not significant at the .05 level. Therefore, age of producers and feeding magnesium oxide were not significantly related.

Fly control program used. Over 94 percent (887 producers) of the 942 producers responding used a fly control program and their mean age was 51 years. Only 55 producers used no fly control program and their mean age was 55 years. When tested by the F test, these differences were significant at the .05 level. Producers who used a fly control program were significantly younger than those who did not use a fly control program.

Used grub and lice control. Of the 936 producers responding, 582 (62 percent) used a grub and lice control and their mean age was 50 years, whereas 354 producers indicated that they did not use a grub and lice control and their mean age was 52 years. When tested by the F test, these differences were significant at the .05 level. Producers who used grub and lice controls were significantly younger than those who did not use grub and lice controls.

Vaccinated for leptospirosis. Only 259 (28 percent) of the 931 producers responding vaccinated for leptospirosis and their mean age was 49 years, whereas 672 producers did not vaccinate for leptospirosis and their mean age was 52 years. When tested by the F test, these differences were significant at the .05 level. Producers who vaccinated for leptospirosis were significantly younger than those who did not vaccinate.

Number of times cows wormed. Four hundred and ninety-four (85 percent) of the producers responding wormed their cows one time and their mean age was 50 years, whereas only 90 producers, with a mean age of 50 years, wormed their cows two times. However, when tested by the F test, these differences were not significant at the .05 level. Therefore, age of producer and the number of times producers wormed their cows were not significantly related.

Section V Summary

In summarizing the data in Table V (p. 73), major findings include the following:

1. The age of producer significantly influenced 10 of the 30 variables studied at the .05 level when tested by the F test.
2. Of the variables that were significantly related, the differences in the age of producers varied from a low of 2 years to a high of 11 years.
3. There seemed to be no pattern between the variables and whether or not they were significantly related to the age of producers.

However, all of the producers' characteristics (tenure, full-time/part-time farmer, major source of income) were significantly related and the older producers tended to own their farm, were full-time farmers, and their major source of income came from the farm.

VI. RELATIONSHIPS BETWEEN THE NUMBER OF BREEDING COWS
IN HERD AND SELECTED PRODUCER CHARACTERISTICS, FARM
CHARACTERISTICS, AND RECOMMENDED PRACTICES USED
BY TENNESSEE COW-CALF PRODUCERS

Table VI presents data indicating the relationships between the number of breeding cows in herd and selected producer characteristics, farm characteristics, and recommended practices used by Tennessee cow-calf producers. The purpose of this analysis was to determine what influence the number of cows in the breeding herd had on the producer, his farm, and the recommended practices that he used.

The variables are grouped under three major subheadings and six minor subheadings. The major subheadings are: (1) producer characteristics, (2) farm characteristics, and (3) recommended practices. The minor subheadings are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices.

Producer Characteristics

There are three variables included in this major subsection.

Table VI. Relationships between the Number of Breeding Cows in Herd and Selected Producer Characteristics, Farm Characteristics, and Recommended Practices Used by Tennessee Cow-Calf Producers, 1977.

Name of Variable	Number of Cows in Herd				
	Number of Producers	Mean*	F Value	df	p
<u>Producer Characteristics**</u>					
Tenure					
Owner	860	48			
Other	65	56	2.5	1	.114
Total Responding	925				
Full-Time/Part-Time Farmer					
Part-Time	428	42			
Full-Time	507	55	20.4	1	.001
Total Responding	935				
Major Source of Income					
Farm	515	56			
Nonfarm	420	41	28.3	1	.001
Total Responding	935				
<u>Farm Characteristics</u>					
Major Agricultural Enterprise					
Livestock	694	47			
Other	241	54	4.1	1	.043
Total Responding	935				
Years Beef on Farm					
20—Under	496	46			
21—Over	439	52	5.1	1	.043
Total Responding	935				
<u>Recommended Practices</u>					
<u>General</u>					
Used Performance Tested Bulls					
Yes	268	63			
No	664	44	37.9	1	.001
Total Responding	932				

Table VI (continued).

Name of Variable	Number of Cows in Herd				
	Number of Producers	Mean*	F Value	df	p
Bulls Met Minimum Requirements of P.T. Bull Sale					
Yes	410	56			
No	456	44	15.9	1	.001
Total Responding	866				
Herd Enrolled in TBCIP					
Yes	54	75			
No	875	48	21.5	1	.001
Total Responding	929				
Identification System Used					
Yes	367	61			
No	101	41	12.9	1	.001
Total Responding	468				
Adequate Working Facilities					
Yes	603	55			
No	327	38	33.3	1	.001
Total Responding	930				
<u>Breeding</u>					
Length of Breeding Season					
4 Months—Less	451	51			
5 Months—More	484	47	1.9	1	.169
Total Responding	935				
No. Times Cows Checked During Breeding Season					
None	99	53			
1 Time—More	836	49	0.8	1	.358
Total Responding	935				
Cows Pregnancy Checked Following Breeding Season					
Yes	97	58			
No	821	48	5.3	1	.021
Total Responding	918				

Table VI (continued).

Name of Variable	Number of Cows in Herd				
	Number of Producers	Mean*	F Value	df	p
Age Replacement Heifers Bred					
700 Pounds—Less	596	50			
701 Pounds—More	339	47	0.9	1	.334
Total Responding	935				
<u>Calving</u>					
No. Times Cows Checked During Calving Season					
1 Time—Less	491	46			
2 Times—More	444	52	4.4	1	.035
Total Responding	935				
No. Times Heifers Checked During Calving Season					
1 Time—Less	388	47			
2 Times—More	547	51	1.8	1	.178
Total Responding	935				
<u>Calf Practices</u>					
Age Calves Castrated and Dehorned					
2 Months—Less	400	49			
3 Months—More	535	49	0.0	1	.913
Total Responding	935				
Vaccinated for Blackleg and Malignant Edema					
Yes	767	53			
No	161	32	30.7	1	.001
Total Responding	928				
Use of Growth Stimulants					
Yes	128	64			
No	803	47	18.5	1	.001
Total Responding	931				

Table VI (continued).

Name of Variable	Number of Cows in Herd				
	Number of Producers	Mean*	F Value	df	p
<u>Feeding Practices</u>					
Stockpiled Fescue					
Yes	617	50			
No	312	48	0.4	1	.504
Total Responding	929				
Crop Residues Used					
Yes	502	52			
No	433	46	4.2	1	.040
Total Responding	935				
Mineral Fed Free Choice					
Yes	793	51			
No	140	37	12.9	1	.001
Total Responding	933				
Used Protein with Low Quality Roughage					
Yes	473	52			
No	379	46	5.0	1	.026
Total Responding	852				
Gave Needy Cows Extra Feed					
Yes	376	52			
No	548	48	1.9	1	.167
Total Responding	924				
<u>Health Practices</u>					
Fed Magnesium Oxide					
Yes	622	51			
No	307	44	5.5	1	.019
Total Responding	929				
Fly Control Program Used					
Yes	880	49			
No	55	51	0.1	1	.707
Total Responding	935				

Table VI (continued).

Name of Variable	Number of Cows in Herd				df	p
	Number of Producers	Mean*	F Value			
Used Grub and Lice Control						
Yes	577	54				
No	356	42	17.5	1	.001	
Total Responding	933					
Vaccinated for Lepto						
Yes	257	61				
No	673	45	25.9	1	.001	
Total Responding	930					
No. Times Cows Wormed						
1 Time	491	52				
2 Times	89	59	1.9	1	.170	
Total Responding	580					

*Rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

Tenure. There were 860 producers (93 percent) who gave owner as their tenure status and the mean number of cows in their herds was 48, whereas 65 producers (7 percent) gave other as their tenure status and the mean number of cows in their herds was 56. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of breeding cows in herd was not significantly related to producer's tenure status.

Full-time/part-time farmer. Almost one-half (46 percent) of the producers indicated that they were part-time farmers and the mean number of breeding cows in their herds was 42, whereas 54 percent of producers indicated that they were full-time farmers and the mean number of breeding cows in their herds was 55. When tested by the F test, these differences were significant at the .05 level. Full-time farmers had a significantly higher proportion of cows in their herds than those who were part-time farmers.

Major source of income. Fifty-five percent (515) of the producers responding gave farm as their major source of income and the number of breeding cows in their herd was 56. Forty-five percent (420) of the producers gave nonfarm as their major source of income and the mean number of cows in their breeding herd was 41. When tested by the F test, these differences were significant at the .05 level. Producers who gave farm as their major source of income had a significantly higher proportion of cows in their breeding herd than those who gave nonfarm.

Farm Characteristics

There are two variables included in this major subsection.

Major agricultural enterprise. Almost 75 percent (694) of the producers responding gave livestock as their major agricultural enterprise and the mean number of cows in their herd was 47. However, the remaining 25 percent (241) of the producers had a mean number of 54 cows in their herd and they gave other as their major agricultural enterprise. When tested by the F test, these differences were significant at the .05 level. Producers who gave other as their major agricultural enterprise had a significantly higher proportion of cows in their herds than those who gave livestock as their major enterprise.

Years beef on farm. There were 496 producers (53 percent) who had beef cows on their farm for 20 years or less and the mean number of cows in their herd was 46, whereas 439 producers (47 percent) had beef cows on their farm for 21 years or more and the mean number of cows in their herd was 52. When tested by the F test, these differences were significant at the .05 level. Producers who had beef on their farm for more than 20 years had a significantly higher proportion of cows in their herds than those who had beef on their farm for less than 20 years.

Recommended Practices

There are six minor subsections and 25 variables in this major subsection.

General

Used performance tested bulls. There were only 29 percent (268) of the producers who used performance tested bulls and the mean number of cows in their herd was 63, whereas 71 percent (664) of the producers indicated that they did not use performance tested bulls and their mean number of cows was 44. When tested by the F test, these differences were significant at the .05 level. Producers who used performance tested bulls had a significantly higher proportion of cows in their herd than those who did not use performance tested bulls.

Bulls met minimum requirements of performance tested bull sale. Almost one-half (47 percent) of the producers indicated that their herd bulls met the minimum requirements of performance tested bull sales and their mean number of cows in the herd was 56, whereas 53 percent indicated that their herd bull did not meet the minimum requirements and their mean number of cows was 44. When tested by the F test, these differences were significant at the .05 level. Producers who used bulls meeting the minimum requirements of performance tested bull sales had a significantly higher proportion of cows in their herds than those who did not have bulls meeting the requirements.

Herd enrolled in T.B.C.I.P. There were only 6 percent of the producers who indicated that their herds were enrolled in T.B.C.I.P. and their mean number of cows was 75. Ninety-four percent of the

producers indicated that their herds were not enrolled in T.B.C.I.P. and their mean number of cows was 48. When tested by the F test, these differences were significant at the .05 level. Producers who had their herds enrolled in the T.B.C.I.P. had a significantly higher proportion of cows in their herds than those who did not have their herds enrolled.

Identification system used. Of the 468 producers responding, 78 percent (367) used ear tags for identification and their mean number of cows was 61, while the remaining number of producers (101) used neck chains or some other method of identification and their mean number of cows was 41. When tested by the F test, these differences were significant at the .05 level. Producers who used an identification system had a significantly higher proportion of cows in their herds than those who used no identification system.

Adequate working facilities. Sixty-five percent (603 producers) had adequate working facilities and their mean number of cows was 55, while 35 percent (327 producers) did not have adequate working facilities and their mean number of cows was 38. When tested by the F test, these differences were significant at the .05 level. Producers who had adequate working facilities had a significantly higher proportion of cows in their herds than those who did not have adequate facilities.

Breeding

Length of breeding season. Four hundred fifty-one (48 percent) of the producers had a breeding season of 4 months or less and their mean number of cows was 51, while 484 (52 percent) producers had a breeding season of over 4 months and their mean number of cows was 47. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the length of breeding season producers used.

Number times cows checked during breeding season. Only 99 (11 percent) producers did not regularly check their cows during the breeding season and their mean number of cows was 53, whereas 836 (89 percent) producers checked their cows one or more times and their mean number of cows was 49. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the number of times producers checked their cows during the breeding season.

Cows pregnancy checked following breeding season. There were 97 (11 percent) producers who indicated that they pregnancy checked their cows following the breeding season and their mean number of cows was 58, while 821 producers (89 percent) did not pregnancy check their cows and their mean number of cows was 48. When tested by the F test, these differences were significant at the

.05 level. Producers who pregnancy checked their cows had a significantly higher proportion of cows in their herds than those who did not pregnancy check following the breeding season.

Age replacement heifers bred. There were 452 producers (48 percent) who bred their replacement heifers at 16 months of age or less and their mean number of cows was 49, while 483 producers (52 percent) bred their heifers at over 16 months of age and their mean number of cows was also 49. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the age producers bred their replacement heifers.

Weight replacement heifers bred. Sixty-four percent (596 producers) bred their replacement heifers at 700 pounds or less and their mean number of cows was 50, while 36 percent (339 producers) bred their heifers at over 700 pounds and their mean number of cows was 47. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the weight at which producers bred their replacement heifers.

Calving

Number times cows checked during calving season. There were 491 producers (53 percent) who checked their cows during the calving season one time or less daily and their mean number of cows was 46,

while 444 producers (47 percent) checked their cows over one time and their mean number of cows was 52. When tested by the F test, these differences were significant at the .05 level. Producers who checked their cows more often during the calving season had a significantly higher proportion of cows in their herds than those who did not check their cows as frequently.

Number times heifers checked during calving season. There were 388 producers (41 percent) who checked their heifers one time or less daily during the calving season and their mean number of cows was 47, while 547 producers (59 percent) checked their heifers over one time and their mean number of cows was 51. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the number of times producers checked their heifers during calving season.

Calf Practices

Age calves castrated and dehorned. Four hundred (43 percent) of the producers castrated and dehorned their calves at 2 months of age or less and their mean number of cows was 49, whereas 535 producers (57 percent) castrated and dehorned their calves at over 2 months of age and their mean number of cows was also 49. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the age producers castrated and dehorned their calves.

Vaccinated for blackleg and malignant edema. Over three-fourths (83 percent) of the producers vaccinated for blackleg and malignant edema and their mean number of cows was 53, while only 17 percent indicated that they did not vaccinate and their mean number of cows was 32. When tested by the F test, these differences were significant at the .05 level. Producers who vaccinated for blackleg and malignant edema had a significantly higher proportion of cows in their herds than those who did not vaccinate.

Use of growth stimulants. Only 14 percent (128 producers) used growth stimulants and their mean number of cows was 64, while 86 percent (803 producers) did not use growth stimulants and their mean number of cows was 47. When tested by the F test, these differences were significant at the .05 level. Producers who used growth stimulants had a higher proportion of cows in their herds than those who did not use growth stimulants.

Feeding Practices

Stockpiled fescue. Sixty-six percent (617 producers) indicated that they stockpiled fescue and their mean number of cows was 50, while 34 percent (312 producers) did not stockpile fescue and their mean number of cows was 48. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to stockpiling fescue.

Crop residues used. Over one-half (54 percent) of the producers used crop residues and their mean number of cows was 52, whereas 46 percent did not use crop residues and their mean number of cows was 46. When tested by the F test, these differences were significant at the .05 level. Producers who used crop residues had a higher proportion of cows in their herds than those who did not use crop residues.

Minerals fed free choice. Seven hundred ninety-three producers (85 percent) fed minerals free choice and their mean number of cows was 51, while 140 producers (15 percent) did not feed minerals free choice and their mean number of cows was 37. When tested by the F test, these differences were significant at the .05 level. Producers who fed minerals free choice had a higher proportion of cows in their herds than those who did not feed minerals free choice.

Used protein with low quality roughage. Fifty-six percent (473 producers) used protein with low quality roughage and their mean number of cows was 52, whereas 44 percent (379 producers) did not use protein with low quality roughage and their mean number of cows was 46. When tested by the F test, these differences were significant at the .05 level. Producers who used protein with low quality roughage had a higher proportion of cows in their herds than those who did not use supplemental protein.

Gave needy cows extra feed. Only 376 producers (41 percent) gave needy cows extra feed and their mean number of cows was 52, whereas 548 producers (59 percent) did not give needy cows extra feed and their mean number of cows was 48. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to producers giving needy cows extra feed.

Health Practices

Fed magnesium oxide. Sixty-seven percent (622 producers) fed magnesium oxide and their mean number of cows was 51, while 33 percent (307 producers) did not feed magnesium oxide and their mean number of cows was 44. When tested by the F test, these differences were significant at the .05 level. Producers who fed magnesium oxide had a significantly higher proportion of cows in their herds than those who did not feed magnesium oxide.

Fly control program used. Eight hundred eighty (94 percent) of the producers used a fly control program and their mean number of cows was 49, whereas only 55 producers did not use a fly control program and their mean number of cows was 51. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to producers using a fly control program.

Used grub and lice control. Sixty-two percent (577 producers) used a grub and lice control and their mean number of cows was 54,

while 38 percent (356 producers) did not use a grub and lice control and their mean number of cows was 42. When tested by the F test, these differences were significant at the .05 level. Producers who used grub and lice control had a significantly higher proportion of cows in their herds than those who did not use a control for grubs and lice.

Vaccinated for leptospirosis. Only 257 producers (27 percent) vaccinated for leptospirosis and their mean number of cows was 61, whereas 673 producers (73 percent) did not vaccinate and their mean number of cows was 45. When tested by the F test, these differences were significant at the .05 level. Producers who vaccinated for leptospirosis had a significantly higher proportion of cows in their herds than those who did not vaccinate for leptospirosis.

Number of times cows wormed. There were 491 producers (85 percent) who wormed their cows only one time and their mean number of cows was 52, while 89 producers (15 percent) wormed their cows two times and their mean number of cows was 59. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows in herd was not significantly related to the number of times producers wormed their cows.

Section VI Summary

In summarizing the data in Table VI (p. 89), major findings include the following.

1. The number of breeding cows in herd was significantly related to 19 out of the 30 variables studied.

2. Of the variables that were significantly related, the mean number of cows in herd varied from a low of 32 to a high of 75.

3. There seemed to be no correlation between the variables in whether or not they were significantly related to the number of breeding cows in herd.

4. The practice used by the smallest percentage of producers (herd enrolled in T.B.C.I.P.) had the highest mean number of cows in herd which probably indicates that the record keeping system of the Tennessee Beef Cattle Improvement Program enables producers to manage larger herds.

VII. RELATIONSHIPS BETWEEN PERCENT OF COWS WEANING CALVES AND SELECTED PRODUCER CHARACTERISTICS, FARM CHARACTERISTICS, AND RECOMMENDED PRACTICES USED BY TENNESSEE COW-CALF PRODUCERS

Table VII presents data indicating relationships between the percent of cows weaning calves and selected producer characteristics, farm characteristics, and recommended practices used by Tennessee cow-calf producers. The purpose of this analysis was to determine relationships between the percent of cows weaning calves and selected producer and farm characteristics and the use of selected recommended practices.

The variables are grouped under three major subheadings and six minor subheadings. The major subheadings are: (1) producer

Table VII. Relationships between Percent of Cows Weaning Calves and Selected Producer Characteristics, Farm Characteristics, and Recommended Practices Used by Tennessee Cow-Calf Producers, 1977.

Name of Variable	Percent Cows Weaning Calves				
	Number of Producers	Mean*	F Value	df	p
<u>Producer Characteristics**</u>					
Tenure					
Owner	764	88			
Other	55	85	3.2	1	.072
Total Responding	819				
Full-Time/Part-Time Farmer					
Part-Time	380	87			
Full-Time	445	89	4.8	1	.029
Total Responding	825				
Major Source of Income					
Farm	453	89			
Nonfarm	372	87	10.1	1	.001
Total Responding	825				
<u>Farm Characteristics</u>					
Major Agricultural Enterprise					
Livestock	616	88			
Other	213	86	4.2	1	.039
Total Responding	829				
Years Beef on Farm					
20—Under	430	87			
21—Over	399	89	7.1	1	.008
Total Responding	829				
Acres of Pasture					
95—Under	388	87			
96—Over	441	89	3.0	1	.083
Total Responding	829				
Major Livestock Enterprise					
Beef	751	88			
Other	78	85	4.6	1	.033
Total Responding	829				

Table VII (continued).

Name of Variable	Percent Cows Weaning Calves				
	Number of Producers	Mean*	F Value	df	p
<u>Recommended Practices</u>					
<u>General</u>					
Used Performance Tested Bulls					
Yes	242	90			
No	582	87	6.2	1	.012
Total Responding	824				
Bulls Met Minimum Requirements of P.T. Bull Sale					
Yes	364	89			
No	404	86	9.3	1	.002
Total Responding	768				
Herd Enrolled in TBCIP					
Yes	46	89			
No	774	88	.4	1	.518
Total Responding	820				
Identification System Used					
Ear Tag	335	88			
Neck Chain	89	90	2.7	1	.102
Total Responding	424				
Adequate Working Facilities					
Yes	538	88			
No	284	87	.7	1	.411
Total Responding	822				
<u>Breeding</u>					
Length of Breeding Season					
4 Months—Less	397	89			
5 Months—More	432	87	7.2	1	.007
Total Responding	829				
No. Times Cows Checked During Breeding Season					
None	91	84			
1 Time—More	738	88	8.9	1	.003
Total Responding	829				

Table VII (continued).

Name of Variable	Percent Cows Weaning Calves				
	Number of Producers	Mean*	F Value	df	p
Cows Pregnancy Checked Following Breeding Season					
Yes	80	89			
No	731	88	.6	1	.439
Total Responding	811				
Age Replacement Heifers Bred					
16 Months—Less	413	88			
17 Months—More	416	87	.3	1	.554
Total Responding	829				
Weight Replacement Heifers Bred					
700 Pounds—Less	542	88			
701 Pounds—More	287	88	.3	1	.559
Total Responding	829				
<u>Calving</u>					
No. Times Cows Checked During Calving Season					
1 Time—Less	442	87			
2 Times—More	387	89	7.1	1	.007
Total Responding	829				
No. Times Heifers Checked During Calving Season					
1 Time—Less	348	87			
2 Times—More	481	89	3.9	1	.047
Total Responding	829				
<u>Calf Practices</u>					
Age Calves Castrated and Dehorned					
2 Months—Less	349	88			
3 Months—More	480	88	0.0	1	.968
Total Responding	829				
Vaccinated for Blackleg and Malignant Edema					
Yes	681	89			
No	138	85	15.1	1	.001
Total Responding	819				

Table VII (continued).

Name of Variable	Percent Cows Weaning Calves				
	Number of Producers	Mean*	F Value	df	p
Use of Growth Stimulants					
Yes	121	86			
No	702	88	2.4	1	.119
Total Responding	823				
<u>Feeding Practices</u>					
Stockpiled Fescue					
Yes	533	88			
No	286	87	0.8	1	.348
Total Responding	819				
Crop Residues Used					
Yes	443	88			
No	386	88	0.1	1	.723
Total Responding	829				
Mineral Fed Free Choice					
Yes	705	88			
No	119	87	0.2	1	.630
Total Responding	824				
Used Protein with Low Quality Roughage					
Yes	409	88			
No	344	88	0.4	1	.538
Total Responding	753				
Gave Needy Cows Extra Feed					
Yes	331	88			
No	486	88	1.9	1	.165
Total Responding	817				
<u>Health Practices</u>					
Fed Magnesium Oxide					
Yes	542	88			
No	279	87	3.2	1	.073
Total Responding	821				

Table VII (continued).

Name of Variable	Percent Cows Weaning Calves				
	Number of Producers	Mean*	F Value	df	p
Fly Control Program Used					
Yes	782	88			
No	47	87	0.4	1	.503
Total Responding	829				
Used Grub and Lice Control					
Yes	521	89			
No	302	87	5.5	1	.019
Total Responding	823				
Vaccinated for Lepto					
Yes	224	89			
No	597	88	2.7	1	.100
Total Responding	821				
No. Times Cows Wormed					
1 Time	430	88			
2 Times	79	86	0.8	1	.364
Total Responding	509				

*Rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

characteristics, (2) farm characteristics, and (3) recommended practices. The minor subheadings are: (1) general, (2) breeding, (3) calving, (4) calf practices, (5) feeding practices, and (6) health practices.

Producer Characteristics

There are three variables included in this major subsection.

Tenure. There were 764 producers (93 percent) who gave owner as their tenure status and 88 percent of their cows weaned calves, whereas 55 producers (7 percent) gave other as their tenure status and 85 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to tenure status of producers.

Full-time/part-time farmer. Three hundred eighty producers (46 percent) indicated that they were part-time farmers and 87 percent of their cows weaned calves, while 445 producers (54 percent) indicated that they were full-time farmers and 89 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers who were full-time farmers had a significantly higher percentage of cows weaning calves than producers who were part-time farmers.

Major source of income. Four hundred fifty-three producers (55 percent) indicated that the farm was their major source of

income and 89 percent of their cows weaned calves, while 372 producers (45 percent) gave nonfarm as their major source of income and 87 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers whose major source of income was the farm had a significantly higher percentage of cows weaning calves than those whose major source of income was nonfarm.

Farm Characteristics

There are four variables included in this major subsection.

Major agricultural enterprise. Almost three-fourths (616 producers) gave livestock as their major agricultural enterprise and 88 percent of their cows weaned calves, while 26 percent (213 producers) gave other as their major agricultural enterprise and 86 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers whose major agricultural enterprise was livestock had a significantly higher percentage of cows weaning calves than those who gave other as their major enterprise.

Years beef on farm. There were 430 producers (52 percent) who gave 20 years or less on the farm and 87 percent of their cows weaned calves, while 399 producers (48 percent) had beef on their farm for 21 years or more and 89 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers who had beef on their farms for more

than 20 years had a higher percentage of cows weaning calves than those who had beef on their farms for less than 20 years.

Acres of pasture. Three hundred eighty-eight producers (47 percent) had 95 or less acres of pasture and 87 percent of their cows weaned calves, while 441 producers (53 percent) had 96 or more acres of pasture and 89 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows weaning calves was not significantly related to the number of acres of pasture a producer had.

Major livestock enterprise. Ninety-one percent (751 producers) gave beef as their major livestock enterprise and 88 percent of their cows weaned calves, whereas 9 percent (78 producers) gave other as their major livestock enterprise and 85 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers whose major livestock enterprise was beef had a higher percentage of cows weaning calves than those who gave other as their major enterprise.

Recommended Practices

There are six minor subsections and 25 variables included in this major subsection.

General

Used performance tested bulls. There were 29 percent (242 producers) who used performance tested bulls and their mean number of cows weaning calves was 90, while 582 producers (71 percent) did not use performance tested bulls and their mean number of cows weaning calves was 87. When tested by the F test, these differences were significant at the .05 level. Producers who used performance tested bulls had a higher percentage of cows weaning calves than those who did not use performance tested bulls.

Bulls met minimum requirements of performance tested bull sale. Three hundred sixty-four producers (47 percent) used bulls meeting the requirements of performance tested bull sales and their mean number of cows weaning calves was 89, while 404 producers (53 percent) did not use bulls meeting the requirements and their mean number of cows weaning calves was 86. When tested by the F test, these differences were significant at the .05 level. Producers who used bulls meeting the minimum requirements of performance tested bull sales had a higher percentage of cows weaning calves than those who did not use bulls meeting the minimum requirements.

Herd enrolled in Tennessee Beef Cattle Improvement Program. There were only 46 producers (6 percent) who had their herds enrolled in the T.B.C.I.P. and their mean number of cows weaning calves was 89, whereas 774 producers (94 percent) did not have their herd enrolled in the program and their mean number of cows weaning calves

was 88. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to producers having their herds enrolled in the Tennessee Beef Cattle Improvement Program.

Identification system used. Over three-fourths of the producers (335) used ear tags as an identification system for their cows and their mean number of cows weaning calves was 88, while 89 producers (21 percent) used neck chains to identify their cows and their mean number of cows weaning calves was 90. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to the type identification system used.

Adequate working facilities. There were 538 producers (65 percent) who had adequate working facilities and their mean number of cows weaning calves was 88, whereas 284 producers (35 percent) did not have adequate working facilities and their mean number of cows weaning calves was 87. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to producers having adequate working facilities.

Breeding

Length of breeding season. Three hundred ninety-seven producers (48 percent) had a breeding season of 4 months or less and

their mean number of cows weaning calves was 89, whereas 432 producers (52 percent) had a breeding season of over 4 months and their mean number of cows weaning calves was 87. When tested by the F test, these differences were significant at the .05 level. Producers who used a short breeding season had a higher percentage of cows weanings calves than those who had longer breeding seasons of over 4 months.

Number times cows checked during breeding season. There were only 91 producers (11 percent) who did not check their cows daily during the breeding season and their mean number of cows weaning calves was 84, whereas 738 producers (89 percent) checked their cows one time or more daily during the breeding season and their mean number of cows weaning calves was 88. When tested by the F test, these differences were significant at the .05 level. Producers who checked their cows more often during the breeding season had a higher percentage of cows weaning calves than those who did not check their cows.

Cows pregnancy checked following breeding season. Only 80 producers (10 percent) pregnancy checked their cows following the breeding season and their mean number of cows weaning calves was 89, whereas 731 producers (90 percent) did not pregnancy check their cows and their mean number of cows weaning calves was 88. When tested by the F test, these differences were not significant at the .05 level. Therefore, the number of cows weaning calves was not significantly related to producers pregnancy checking their cows following the breeding season.

Age replacement heifers bred. Almost one-half of the producers (413) bred their replacement heifers at 16 months of age or less and their mean number of cows weaning calves was 88, while 416 producers (50 percent) bred their heifers at over 16 months of age and their mean number of cows weaning calves was 87. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to the age replacement heifers were bred.

Weight replacement heifers bred. Five hundred forty-two producers (65 percent) bred their replacement heifers at 700 pounds or less and their mean number of cows weaning calves was 88, while 287 producers (35 percent) bred their replacement heifers at 700 pounds or more and their mean number of cows weaning calves was also 88. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to the weight replacement heifers were bred.

Calving

Number times cows checked during calving season. Over one-half (53 percent) of the producers checked their cows one time or less daily during the calving season and their mean number of cows weaning calves was 87, whereas 47 percent checked their cows over one time daily and their mean number of cows weaning calves was 89. When tested by the F test, these differences were significant

at the .05 level. Producers who checked their cows more often during the calving season had a higher percentage of cows weaning calves than those who did not check their cows as often.

Number times heifers checked during calving season. Forty-two percent (348 producers) checked their heifers one time or less daily during the calving season and their mean number of cows weaning calves was 87, while 58 percent (481 producers) checked their heifers over one time daily and 89 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers who checked their heifers more often during the calving season had a higher number of cows weaning calves than those who did not check during the calving season as often.

Calf Practices

Age calves castrated and dehorned. There were 349 producers (42 percent) who castrated and dehorned their calves at 2 months of age or less and 88 percent of their cows weaned calves, while 480 producers (58 percent) castrated and dehorned their calves at over 2 months of age and 88 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to the age calves were castrated and dehorned.

Vaccinated for blackleg and malignant edema. Eighty-three percent (681 producers) vaccinated for blackleg and malignant edema

and 89 percent of their cows weaned calves, whereas 17 percent (138 producers) did not vaccinate and 85 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05 level. Producers who vaccinated for blackleg and malignant edema had a higher percentage of cows weaning calves than those who did not vaccinate.

Use of growth stimulants. One hundred twenty-one producers (15 percent) used growth stimulants and 86 percent of their cows weaned calves, whereas 702 producers (85 percent) did not use growth stimulants and 88 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to the use of growth stimulants.

Feeding Practices

Stockpiled fescue. Five hundred thirty-three producers (65 percent) stockpiled fescue and 88 percent of their cows weaned calves, while 286 producers (35 percent) did not stockpile fescue and 87 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to producers stockpiling fescue.

Crop residues used. Four hundred forty-three producers (53 percent) used crop residues and 88 percent of their cows weaned calves, whereas 386 producers (47 percent) did not use crop residues

and 88 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to using crop residues.

Minerals fed free choice. Eighty-six percent (705 producers) fed minerals free choice and 88 percent of their cows weaned calves, while 14 percent (119 producers) did not feed minerals free choice and 87 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to feeding minerals free choice.

Used protein with low quality roughage. Four hundred nine producers (54 percent) used protein with low quality roughage and 88 percent of their cows weaned calves, while 344 producers (46 percent) did not use protein with low quality roughage and 88 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to using protein with low quality roughage.

Gave needy cows extra feed. Three hundred thirty-one producers (41 percent) gave needy cows extra feed and 88 percent of their cows weaned calves, while 486 producers (59 percent) did not give needy cows extra feed and 88 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the

.05 level. Therefore, the percentage of cows weaning calves was not significantly related to producers giving needy cows extra feed.

Health Practices

Fed magnesium oxide. Five hundred forty-two producers (66 percent) fed magnesium oxide and 88 percent of their cows weaned calves, whereas 279 producers (34 percent) did not feed magnesium oxide and 87 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to producers feeding magnesium oxide.

Fly control program used. Ninety-four percent (782 producers) used a fly control program and 88 percent of their cows weaned calves, while 6 percent (47 producers) did not use a fly control program and 87 percent of their cows weaned calves. However, when tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to producers using a fly control program.

Used grub and lice control. Sixty-three percent (521 producers) used a grub and lice control and 89 percent of their cows weaned calves, whereas 37 percent (302 producers) did not use a grub and lice control and 87 percent of their cows weaned calves. When tested by the F test, these differences were significant at the .05

level. Producers who used grub and lice control had a higher percentage of cows weaning calves than those who did not use grub and lice control.

Vaccinated for leptospirosis. Only 224 producers (27 percent) vaccinated for leptospirosis and 89 percent of their cows weaned calves, while 597 producers (73 percent) did not vaccinate and 88 percent of their cows weaned calves. However, when tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to vaccinating for leptospirosis.

Number times cows wormed. Eighty-four percent (430 producers) wormed their cows one time and 88 percent of their cows weaned calves, whereas 16 percent (79 producers) wormed their cows two times and 86 percent of their cows weaned calves. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of cows weaning calves was not significantly related to the number of times cows were wormed.

Section VII Summary

In summarizing the data in Table VII (p. 106), major findings include the following:

1. The percentage of cows weaning calves was significantly related to 13 out of the 32 variables studied at the .05 level of significance when tested by the F test.

2. Of the variables studied, the percentage of cows weaning calves varied from a low of 84 to a high of 90.

3. All of the recommended calving practices were significantly related to the percentage of cows weaning calves.

4. The use of performance tested bulls showed the highest percentage of cows weaning calves whereas producers not checking their cows during the breeding season showed the lowest percentage of cows weaning calves.

5. This section may not show a true percentage calf crop due to the fact that many respondents calve year round and may count calves that were born at the end of the previous year; therefore, the survey may not have been able to adequately determine the percentage calf crop.

VIII. RELATIONSHIPS BETWEEN THE PERCENT OF 11 SELECTED
RECOMMENDED PRACTICES USED AND SELECTED PRODUCER
AND FARM CHARACTERISTICS OF TENNESSEE
COW-CALF PRODUCERS

Table VIII presents data indicating the relationship between the percentage of 11 selected recommended practices used and selected producer and farm characteristics of Tennessee cow-calf producers. The purpose of this analysis was to determine what influence the percentage of 11 selected recommended practices used had on the producer and his farm. The 11 selected practices are: pregnancy checking following breeding season; vaccinating calves for blackleg

Table VIII. Relationships between the Percent of 11 Selected Recommended Practices Used and Selected Producer Characteristics and Farm Characteristics of Tennessee Cow-Calf Producers, 1977.

Name of Variable	Percent Selected Practices Used				
	Number of Producers	Mean*	F Value	df	p
<u>Producer Characteristics</u>					
Tenure					
Owner	885	57			
Other	66	64	4.3	1	.038
Total Responding	951				
Full-Time/Part-Time Farmer					
Part-Time	440	57			
Full-Time	575	58	.2	1	.671
Total Responding	1,015				
Major Source of Income					
Farm	520	59			
Nonfarm	431	57	1.9	1	.172
Total Responding	951				
<u>Farm Characteristics</u>					
Major Agricultural Enterprise					
Livestock	705	59			
Other	312	45	55.4	1	.001
Total Responding	1,017				
Years Beef on Farm					
20—Under	527	56			
21—Over	520	51	7.8	1	.005
Total Responding	1,047				
Acres of Pasture					
95—Under	472	53			
96—Over	575	53	.1	1	.823
Total Responding	1,047				
Major Livestock Enterprise					
Beef	863	59			
Other	184	24	257.2	1	.001
Total Responding	1,047				

Table VIII (continued).

Name of Variable	Percent Selected Practices Used				
	Number of Producers	Mean*	F Value	df	p
Number of Bulls Used					
1	446	50			
2—More	601	55	7.5	1	.006
Total Responding	1,047				
Number of Calves Raised					
32—Less	459	52			
33—More	588	54	2.3	1	.132
Total Responding	1,047				

*Percents rounded off to nearest whole number.

**Totals vary since some respondents did not answer all questions.

and malignant edema; use of growth stimulants; free access to mineral mixture; provided magnesium oxide; gave extra feed to needy cows and heifers; provided supplemental protein with low quality roughage; used a fly control program; used a grub and lice control; vaccinated for leptospirosis; had adequate working facilities.

The variables are grouped under two major subheadings. The major subheadings are: (1) producer characteristics and (2) farm characteristics.

Producer Characteristics

There are three variables included in the major subsection.

Tenure. Eight hundred eighty-five producers (93 percent) who gave owner as their tenure status used 57 percent of the 11 selected recommended practices, while 66 producers (7 percent) used 64 percent of the practices. When tested by the F test, the differences were significant at the .05 level. Producers whose tenure status was owner used a significantly higher percentage of the 11 selected practices than those who gave other as their tenure status.

Full-time/part-time farmer. Four hundred forty producers (46 percent) gave part-time as their farming status and used 57 percent of the 11 selected recommended practices, whereas 525 producers (54 percent) used 58 percent of the practices. However, when tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of selected practices

used was not significantly related to whether a producer was part-time or full-time.

Major source of income. Fifty-five percent (520 producers) gave farm as their major source of income and they used 59 percent of the 11 selected recommended practices, while 45 percent (431 producers) gave nonfarm as their major source of income and they used 57 percent of the practices. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of selected practices used was not significantly related to a producer's major source of income.

Farm Characteristics

Major agricultural enterprise. Seven hundred five producers (69 percent) gave livestock as their major agricultural enterprise and they used 59 percent of the 11 selected recommended practices, whereas 312 producers (31 percent) gave other as their major agricultural enterprise and they used 45 percent of the practices. When tested by the F test, these differences were significant at the .05 level. Producers who gave livestock as their major agricultural enterprise used a significantly higher percentage of the 11 selected practices than those who gave other as their major enterprise.

Years beef on farm. Five hundred twenty-seven of the producers (51 percent) indicated that beef had been on their farm 20 years or

less and they used 56 percent of the 11 selected recommended practices; however, 520 producers (49 percent) indicated that they had beef on their farm 21 years or more and they only used 51 percent of the practices. When tested by the F test, these differences were significant at the .05 level. Producers who had beef on their farms for 20 years or less used a significantly higher percentage of the 11 selected practices than those who had beef on their farm for more than 20 years.

Acres of pasture. Forty-five percent (472 producers) had 95 acres of pasture or less and they used 53 percent of the 11 selected recommended practices, while 55 percent (575 producers) had 96 acres or more and they also used 53 percent of the practices. When tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of selected practices used was not significantly related to the acres of pasture a producer had.

Major livestock enterprise. Eight hundred sixty-three producers (82 percent) gave beef as their major livestock enterprise and they used 59 percent of the 11 selected recommended practices, whereas 184 producers (18 percent) gave other as their major livestock enterprise and they used 24 percent of the practices. When tested by the F test, these differences were significant at the .05 level. Producers whose major livestock enterprise was beef used a significantly higher percentage of the 11 selected practices than those whose major enterprise was other.

Number of bulls used. Four hundred forty-six producers (43 percent) used one bull and used 50 percent of the 11 selected recommended practices, while 601 producers (57 percent) used two or more bulls and used 55 percent of the practices. When tested by the F test, these differences were significant at the .05 level. Producers who used 2 or more bulls used a significantly higher percentage of the 11 selected practices than those who used one bull.

Number of calves raised. Four hundred fifty-nine producers (44 percent) raised 32 calves or less and used 52 percent of the 11 selected recommended practices, while 588 producers (56 percent) raised 33 calves or more and used 54 percent of the practices. However, when tested by the F test, these differences were not significant at the .05 level. Therefore, the percentage of selected practices used was not significantly related to the number of calves raised.

Section VIII Summary

In summarizing the data in Table VIII, major findings include the following:

1. The percentage of the 11 selected practices used was significantly related to five of the nine variables studied at the .05 level of significance when tested by the F test.

2. Of the variables studied, the percentage of the 11 selected recommended practices varied from a low of 24 percent to a high of 64 percent.

CHAPTER III

SUMMARY OF MAJOR FINDINGS

I. PURPOSES AND SPECIFIC OBJECTIVES

Purposes

One purpose of this study was to determine the characteristics of beef cattle producers and their farm operation. Another was to determine the recommended beef cattle production practices used and any relationships between certain producer and farm characteristics and the use of the practices.

Specific Objectives

The specific objectives of this study were:

1. To characterize beef producers, their farm characteristics, and recommended practices used.
2. To determine the relationship between major agricultural enterprise and recommended practices used.
3. To determine the relationship between major source of income of producers and recommended practices used.
4. To determine the relationship between use of performance tested bulls by producers and other recommended practices used.
5. To determine the relationship between age of producers and other selected producer characteristics, farm characteristics, and recommended practices used.

6. To determine the relationship between number of breeding cows in the herd and selected producers and farm characteristics and recommended practices used.

7. To determine the relationship between percentage of cows weaning calves and selected producer and farm characteristics and recommended practices used.

8. To determine the relationship between the percentage of 11 selected recommended practices and selected producer and farm characteristics.

II. METHOD OF INVESTIGATION

One thousand and forty-seven (1,047) beef cattle producers were randomly selected from 58 Tennessee counties by Extension Agents to collect data.

The method of collecting data was a survey developed by The University of Tennessee Extension Animal Science Specialists. The "nth" number technique was used to identify beef cattle producers from county beef cattle mailing lists.

The data were coded and punched on computer cards. Computations were made by The University of Tennessee Computing Center. Chi square and analysis of variance were the statistics used to determine probability levels and the strength of the relationship between dependent and independent variables. F values which achieved the .05 probability level were accepted as indicating a significant relationship.

III. MAJOR FINDINGS

Beef Producer and Farm Characteristics and Recommended Practices Used

Beef producer characteristics:

1. Ninety-three percent of the producers interviewed owned the farm where they raised cattle.
2. Fifty-four percent were full-time farmers.
3. Fifty-five percent gave their farm as their major source of income.
4. Forty-eight percent were 50 years old or younger.

Farm characteristics:

1. Seventy-two percent had livestock as their major agricultural enterprise.
2. Eighty-eight percent had beef as their major livestock enterprise.
3. Fifty-nine percent had beef cattle on their farm for at least 21 years.
4. The average number of breeding age cows was 35.
5. Fifty-two percent used two or more bulls.
6. Thirty-two was the average number of calves raised.
7. The average number of acres used by beef cattle was 95.

Recommended practices used:

General practices:

1. Twenty-nine percent used performance tested bulls.

2. Forty-eight percent used bulls meeting the minimum requirements of performance tested bulls.
3. Six percent had their herds enrolled in the Tennessee Beef Cattle Improvement Program.
4. Seventy-seven percent used ear tags as an identification system.
5. Sixty-five percent had adequate working facilities.

Breeding practices:

1. Fifty-three percent had a breeding season of 4 months or less.
2. Sixty-nine percent checked their cows one time or less during the breeding season.
3. Eleven percent pregnancy checked cows following the breeding season.
4. Fifty-two percent bred replacement heifers at 16 months or less of age.
5. Fifty-eight percent bred replacement heifers at 700 pounds or less.

Calving practices:

1. Fifty-four percent checked their cows one time or less daily during calving season.
2. Forty-four percent checked their heifers one time or less daily during calving season.

Calf practices:

1. Forty-six percent castrated and dehorned calves at 2 months or less of age.
2. Eighty-three percent vaccinated for blackleg and malignant edema.
3. Thirteen percent used growth stimulants.

Feeding practices:

1. Eighty-five percent had fescue as their major grass species.
2. Eighty-three percent used hay as the major winter forage.
3. Sixty-seven percent stockpiled fescue.
4. Fifty-three percent did not use crop residues.
5. Eighty-five percent fed minerals free choice.
6. Forty-four percent fed protein with low quality roughage.
7. Forty-one percent gave needy cows and heifers extra feed.

Health practices:

1. Sixty-seven percent fed magnesium oxide.
2. Fifty-one percent used backrubs as their major fly control program.
3. Sixty-two percent used grub and lice control.
4. Twenty-eight percent vaccinated for leptospirosis.
5. Eighty-five percent wormed cows one time.

Major Agricultural Enterprise and Recommended Practices Used

1. Major agricultural enterprise had no significant influence on 19 of the 27 variables studied. Those variables were:

- a. Used performance tested bulls.
- b. Bulls met minimum requirements of P.T.B. sale.
- c. Herd enrolled in T.B.C.I.P.
- d. Identification system used.
- e. Adequate working facilities.
- f. Number times cows checked during breeding season.
- g. Age replacement heifers bred.
- h. Weight replacement heifers bred.
- i. Use of growth stimulants.
- j. Major winter forage fed.
- k. Stockpiled fescue.
- l. Minerals fed free choice.
- m. Used protein with low quality roughage.
- n. Gave needy cows extra feed.
- o. Fed magnesium oxide.
- p. Fly control program used.
- q. Grub and lice control.
- r. Vaccinated for leptospirosis.
- s. Number times cows wormed.

2. Eight of the variables studied were significantly related to the major agricultural enterprise. Those variables were:

- a. Length of breeding season.
- b. Cows pregnancy checked following breeding season.

- c. Number of times cows checked during calving season.
- d. Number of times heifers checked during breeding season.
- e. Age calves castrated and dehorned.
- f. Vaccinated for blackleg and malignant edema.
- g. Major grass species in pasture.
- h. Crop residues used.

3. Compared to producers who did not have livestock as their major farm enterprise, those who did had shorter breeding seasons, checked cows and heifers less frequently during calving season, castrated and dehorned at a younger age, were more likely to have vaccinated for blackleg and malignant edema, and were less likely to use bluegrass in their pasture and to use crop residues.

Major Source of Income and Recommended Practices Used

1. The major source of income had no significant influence on 21 of the 27 variables studied. Those variables were:

- a. Used performance tested bulls.
- b. Bulls met minimum requirements of P.T.B. sale.
- c. Herd enrolled in T.B.C.I.P.
- d. Identification system used.
- e. Adequate working facilities.
- f. Length of breeding season.
- g. Number times cows checked during breeding season.
- h. Cows pregnancy checked following breeding season.
- i. Age replacement heifers bred.
- j. Weight replacement heifers bred.

- k. Age calves castrated and dehorned.
 - l. Vaccinated for blackleg and malignant edema.
 - m. Use of growth stimulants.
 - n. Major grass species.
 - o. Stockpiled fescue.
 - p. Minerals fed free choice.
 - q. Fed magnesium oxide.
 - r. Fly control program used.
 - s. Used grub and lice control.
 - t. Vaccinated for leptospirosis.
 - u. Number of times cows wormed.
2. Six of the variables studied were significantly related to the major source of income of producers. Those variables were:
- a. Number of times cows checked during the calving season.
 - b. Number of times heifers checked during the calving season.
 - c. Major winter forage fed.
 - d. Crop residues used.
 - e. Used protein with low quality roughage.
 - f. Gave needy cows extra feed.
3. Compared to those producers who did not give farm as their major source of income, those who did checked their cows and heifers more frequently during the calving season, were more likely to use corn silage as their major winter forage, used crop residues, used protein with low quality roughage, and gave their cows and heifers extra feed.

Use of Performance Tested Bulls and Recommended Practices Used

1. The use of performance tested bulls was not significantly related to five of the 25 variables studied. Those variables were:

- a. Age replacement heifers bred.
- b. Weight replacement heifers bred.
- c. Major grass species in pastures.
- d. Stockpiled fescue.
- e. Crop residues used.

2. Twenty of the 25 variables studied were significantly related to producer use of performance tested bulls. Those variables were:

- a. Herd enrolled in T.B.C.I.P.
- b. Identification system used.
- c. Adequate working facilities.
- d. Length of breeding season.
- e. Number times cows checked during breeding season.
- f. Cows pregnancy checked following breeding season.
- g. Number times cows checked during calving season.
- h. Number times heifers checked during calving season.
- i. Age calves castrated and dehorned.
- j. Vaccinated for blackleg and malignant edema.
- k. Used growth stimulants.
- l. Major winter forage fed.
- m. Minerals fed free choice.
- n. Used protein with low quality roughage.

- o. Gave needy cows extra feed.
- p. Fed magnesium oxide.
- q. Fly control program used.
- r. Used grub and lice control.
- s. Vaccinated for leptospirosis.
- t. Number times cows wormed.

3. Compared to those producers who did not use performance tested bulls, those who did had a higher percentage enrolled in the T.B.C.I.P., used ear tags as their major identification system, had a higher percentage of adequate working facilities, used a shorter breeding season, checked cows more frequently during the breeding season, pregnancy checked more frequently, checked cows and heifers more frequently during the calving season, castrated and dehorned calves at a younger age, vaccinated for blackleg and malignant edema more frequently, used growth stimulants more often, used hay less frequently but corn silage more frequently, fed minerals free choice, used protein with low quality roughage, gave needy cows extra feed, fed magnesium oxide, used a fly control program, used a grub and lice control, vaccinated for leptospirosis, and wormed more frequently.

Age of Producer and Producer and Farm Characteristics and Recommended Practices Used

1. The age of producer was not significantly related to 20 of the 30 variables studied. Those variables were:

- a. Acres of pasture.

- b. Used performance tested bulls.
 - c. Bulls met minimum requirements of P.T.B. sale.
 - d. Identification system used.
 - e. Adequate working facilities.
 - f. Length of breeding season.
 - g. Number times cows checked during breeding season.
 - h. Age replacement heifers bred.
 - i. Weight replacement heifers bred.
 - j. Number times cows checked during calving season.
 - k. Number times heifers checked during calving season.
 - l. Age calves castrated and dehorned.
 - m. Vaccinated for blackleg and malignant edema.
 - n. Stockpiled fescue.
 - o. Crop residues used.
 - p. Minerals fed free choice.
 - q. Used protein with low quality roughage.
 - r. Gave needy cows extra feed.
 - s. Fed magnesium oxide.
 - t. Number times cows wormed.
2. Ten of the variables studied were significantly related to the age of producer. Those variables were:
- a. Tenure.
 - b. Full-time/part-time farmers.
 - c. Major source of income.
 - d. Major agricultural enterprise.

- e. Herd enrolled in T.B.C.I.P.
- f. Cows pregnancy checked following breeding season.
- g. Use of growth stimulants.
- h. Fly control program used.
- i. Grub and lice control.
- j. Vaccination for leptospirosis.

3. A majority of the producers tended to own their farms where they raised beef cattle, were full-time farmers, considered the farm as their major source of income, and their major agricultural enterprise was livestock. A significantly higher percentage of the young producers, as compared to older producers, enrolled their herds in T.B.C.I.P., pregnancy checked their cows following the breeding season, used growth stimulants, used a fly control program, used grub and lice controls, and vaccinated for leptospirosis.

Number of Breeding Cows and Producer and Farm Characteristics and Recommended Practices Used

1. The number of breeding cows in herd was not significantly related to 11 of the 30 variables studied. Those variables were:
- a. Tenure.
 - b. Length of breeding season.
 - c. Number times cows checked during breeding season.
 - d. Age replacement heifers bred.
 - e. Weight replacement heifers bred.
 - f. Number times heifers checked during calving season.
 - g. Age calves castrated and dehorned.

- h. Stockpiled fescue.
 - i. Gave needy cows extra feed.
 - j. Fly control program used.
 - k. Number of times cows wormed.
2. Nineteen of the 30 variables studied were significantly related to the number of cows in herd. Those variables were:
- a. Full-time/part-time farmers.
 - b. Major source of income.
 - c. Major agricultural enterprise.
 - d. Years beef on farm.
 - e. Used performance tested bulls.
 - f. Bulls met minimum requirements of P.T.B. sale.
 - g. Herd enrolled in T.B.C.I.P.
 - h. Identification system used.
 - i. Adequate working facilities.
 - j. Cows pregnancy checked following breeding season.
 - k. Number times cows checked during calving season.
 - l. Vaccinated for blackleg and malignant edema.
 - m. Use of growth stimulants.
 - n. Crop residues used.
 - o. Minerals fed free choice.
 - p. Used protein with low quality roughage.
 - q. Fed magnesium oxide.
 - r. Used grub and lice control.
 - s. Vaccinated for leptospirosis.

3. Compared to producers with larger cow herds, the producers with smaller herds tended to own their farm where they raised cattle; had a longer breeding season; checked their cows more often during the breeding season; bred replacement heifers at heavier weights; checked their heifers less frequently during calving season; were less likely to stockpile fescue, give needy cows extra feed, and worm their cows more than one time; but were more likely to use a fly control program.

Percent Cows Weaning Calves and Producer and Farm Characteristics and Recommended Practices Used

1. The percentage of cows weaning calves was not significantly related to 19 of the 32 variables studied. Those variables were:

- a. Tenure.
- b. Acres of pasture used by beef cattle.
- c. Herd enrolled in T.B.C.I.P.
- d. Identification system used.
- e. Adequate working facilities.
- f. Cows pregnancy checked following breeding season.
- g. Age replacement heifers bred.
- h. Weight replacement heifers bred.
- i. Age calves castrated and dehorned.
- j. Use of growth stimulants.
- k. Stockpiled fescue.
- l. Crop residues used.
- m. Minerals fed free choice.

- n. Used protein with low quality roughage.
- o. Gave needy cows extra feed.
- p. Feed magnesium oxide.
- q. Fly control program used.
- r. Vaccinated for leptospirosis.
- s. Number of times cows wormed.

2. Thirteen of the 32 variables were significantly related to the percentage of cows weaning calves. Those variables were:

- a. Full-time/part-time farmer.
- b. Major source of income.
- c. Major agricultural enterprise.
- d. Years beef on farm.
- e. Major livestock enterprise.
- f. Used performance tested bulls
- g. Bulls met minimum requirements of P.T.B. sale.
- h. Length of breeding season.
- i. Number times cows checked during breeding season.
- j. Number times cows checked during calving season.
- k. Number times heifers checked during calving season.
- l. Vaccinated for blackleg and malignant edema.
- m. Used grub and lice control.

3. When compared to producers with a lower percentage of cows weaning calves, the producers with a higher percentage were full-time farmers, the farm was the major source of income, livestock was their major agricultural enterprise, had more years with beef

on farm, had beef as their major livestock enterprise, used performance tested bulls or bulls which met the minimum requirements of the performance tested bull sales, had a shorter breeding season, checked cows more often during the breeding season, checked cows and heifers more often during the calving season, vaccinated for blackleg and malignant edema, and used a grub and lice control program.

Percentage of 11 Selected Recommended Practices and Producer and Farm Characteristics

1. The percentage of the 11 selected recommended practices used was not significantly related to four of the nine variables studied. Those variables were:

- a. Full-time/part-time farmer.
- b. Major source of income.
- c. Acres of pasture.
- d. Number of calves raised.

2. Five of the nine variables were significantly related to the percentage of the 11 selected recommended practices used.

Those variables were:

- a. Tenure.
- b. Major agricultural enterprise.
- c. Years beef on farm.
- d. Major livestock enterprise.
- e. Number of bulls used.

3. Producers who used a larger percentage of the 11 selected recommended practices gave other as their tenure status, were full-time

farmers, and gave farm as their major source of income, their major agricultural enterprise was livestock but had fewer number of years with beef cattle on their farm, gave beef as their major livestock enterprise, used two or more bulls, and raised a larger number of calves.

IV. IMPLICATIONS AND RECOMMENDATIONS

The results of these findings indicate that Tennessee beef cattle producers are not using a very high percentage of the recommended production practices. Sixty-five percent of the producers indicated that they had adequate working facilities yet only an average of 49 percent of the producers used recommended practices which require the use of adequate working and holding facilities.

Only three recommended practices were used by 75 percent or more of the producers. This suggests the need for educational efforts to sell producers on the value of following practices.

It has been noted that the beef cattle industry uses only about 40 percent of the technology available. With the continuing price-cost squeeze and advantages to be gained from practice use, this calls attention to higher net profits possibly available.

Beef cattle producers seeking advice and information frequently contact the Agricultural Extension Service. It is hoped that the findings in this study will help Extension Agents see where beef producers need help and adjust their programs accordingly. Research

has verified that using recommended practices can and does result in improved net income.

V. RECOMMENDATIONS FOR FURTHER STUDY

1. A similar study should be conducted over a period of years to determine if Tennessee beef cattle producers are using more recommended practices than this study indicates and to help the Extension Service adjust its teaching methods and educational programs.

2. The survey method of collecting data is only as good as the person who is interviewing the respondent. Extension Specialists should continue to improve survey instruments and procedures and provide instruction to Extension Agents gathering survey data. The survey instrument used for a similar study should be designed so that a more accurate calving and weaning percentage can be calculated.

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APPENDIX

THE AGRICULTURAL EXTENSION SERVICE
THE UNIVERSITY OF TENNESSEE
KNOXVILLE, TENNESSEE

1977 Tennessee Beef Cow-Calf Producer Survey
(For Cow Herds of 15 or More In Size)

Name of Respondent _____ Address _____

1 Card Number
(1)

(2) (3) (4) County _____ Date _____

(7) Tenure Status (1 = Owner, 2 = Other)

A. General Information

- (8) 1. What is the major agricultural enterprise?
(1 - Livestock; 2 = Row Crops; 3 = Dairy;
4 = Fruits and/or Vegetables; 5 = Other)
- (9) 2. What is the major livestock enterprise? (1 =
Beef; 2 = Swine; 3 = Sheep; 4 = Horses; 5 = Other)
- (10) (11) 3. Actual number of years beef cattle have been an
enterprise on respondent's farm?
- (12) 4. Is respondent a full-time farmer? (1 = No, 2 = Yes)
- (13) 5. What is respondent's major source of income? (1 =
Farm, 2 = Non-farm)
- (14) (15) 6. What is approximate age of respondent?
- (16) (17) (18) (19) 7. Actual number females of breeding age in herd last
year? (9999 = Does not apply, DNA)
- (20) (21) 8. Actual number bulls used last year? (99 = DNA)
- (22) (23) (24) (25) 9. Actual number calves raised to weaning last year?
(9999 = DNA)
- (26) (27) (28) (29) 10. Actual number acres pasture used by beef cattle last
year?

B. Recommended Practices (See Explanatory Guide, 416b)

RECOMMENDED PRACTICES USED LAST YEAR

- ____ 1. Was one or more Performance Tested bulls used? (1 = No, 2 = Yes;
(30) 9 = Does not apply)
- ____ 2. Do bulls being used meet minimum requirements of the Breeder
(31) Performance Tested Bull Sale? (1 = No, 2 = Yes, 9 = Does not apply)
- ____ 3. Was herd enrolled in TBCIP or breed performance testing program?
(32) (1 = No, 2 = Yes, 9 = Does not apply)
- ____ 4. What is length of breeding season? Record number of months. (9 =
(33) Does not apply)
- ____ 5. At what age were replacement heifers bred? Record number of
(34) (35) months. (99 = Does not apply)
- ____ 6. At what weight were replacement heifers bred? (Record actual weight -
(36) (37) (38) 999 = Does not apply)
- ____ 7. How many times per day were cows checked during breeding season?
(39) (Record actual number - 9 = Does not apply)
- ____ 8. Were cows pregnancy checked following the breeding season?
(40) (1 = No, 2 = Yes, 9 = Does not apply)
- ____ 9. What type of system was used to provide permanent identification
(41) of cattle? (Select one: 1 = Ear Tag, 2 = Neck Chain, 3 = Fire
Brand, 4 = Freeze Brand, 5 = None, 9 = Does not apply)
- ____ 10. How many times per day were cows checked during the calving season?
(42) (Record actual number - 9 = Does not apply)
- ____ 11. How many times per day were first calf heifers checked during the
(43) calving season? (Record actual number - 9 = Does not apply)
- ____ 12. At what age were calves castrated and dehorned? (Record age in
(44) months - 9 = Does not apply)
- ____ 13. Were calves vaccinated for blackleg and malignant edema? (1 = No,
(45) 2 = Yes, 9 = Does not apply)
- ____ 14. Were growth stimulants used? (1 = No, 2 = Yes, 9 = Does not apply)
(46)
- ____ 15. Were cattle allowed free access to a recommended mineral mixture?
(47) (1 = No, 2 = Yes, 9 = Does not apply)
- ____ 16. Were cows provided magnesium oxide to aid in preventing grass tetany?
(48) (1 = No, 2 = Yes, 9 = Does not apply)

17. What is major grass species used in pastures (Select one): 1 = Fescue, 2 = Orchardgrass, 3 = Bluegrass, 4 = Bermudagrass, 5 = Other, 9 = Does not apply
(49)
18. What is major forage used to winter cow herd? (Select one): 1 = 1 = Corn silage, 2 = Grass silage, 3 = Hay, 4 = Other, 9 = Does not apply
(50)
19. Was some fescue stockpiled for use as late fall or early winter grazing? (1 = No, 2 = Yes, 9 = Does not apply)
(51)
20. Which crop residues were used in order to reduce winter feed costs? (1 = None, 2 = Corn, 3 = Soybeans, 4 = Both corn and soybeans, 5 = Milo, 6 = Straw, 9 = Does not apply)
(52)
21. Were replacement heifers, thin cows, and cows that had recently calved fed more and better quality feed than others? (1 = No, 2 = Yes, 9 = Does not apply)
(53)
22. Were bred cows fed supplemental protein when low quality roughages such as hulls, straw, crop residues and poor quality hay were fed? (1 = No, 2 = Yes, 9 = Does not apply)
(54)
23. Which fly control program was followed? (Select one) 1 = None, 2 = Backrubbers and/or oilers, 3 = Dustbags, 4 = Oral larvacides, 5 = Combinations of above methods, 9 = Does not apply
(55)
24. Were recommended grub and lice control practices followed? (1 = No, 2 = Yes, 9 = Does not apply)
(56)
25. Were brood cows and replacements vaccinated for leptospirosis? (1 = No, 2 = Yes, 9 = Does not apply)
(57)
26. Were adequate working facilities available? (1 = No, 2 = Yes, 9 = Does not apply)
(58)
27. How many times were cows wormed last year? (Record actual - 9 = Does not apply)
(59)

What percentage of calves were sold through:

28. Weekly auctions? (Record actual percent - 999 = Does not apply)
(60) (61) (62)
29. Organized feeder sales? (Record actual percent - 999 = Does not apply)
(63) (64) (65)
30. Local traders? (Record actual percent - 999 Does not apply)
(66) (67) (68)
31. Direct to backgrounder or feeder? (Record actual percent - 999 = Does not apply)
(69) (70) (71)
32. Retained as replacements or for backgrounding? (Record actual percent - 999 = Does not apply)
(72) (73) (74)

 BACKGROUNDING

- _____ 33. Were calves backgrounded on this farm? (1 = No, 2 = Yes,
 (75)
- _____ 34. How many calves were backgrounded? (Record actual number:
 (76) (77) (78) 999 = Does not apply)
- _____ 35. Which system of backgrounding was used? (1 = Fescue
 (79) pasture, 2 = Corn silage, 3 = Small grain, 4 = Combinations
 of above, 9 = Does not apply)
- _____ 2
 (1) Card Number
- _____ 36. What percentage of calves being backgrounded were home-
 (8) (9) (10) reared? (Record actual percent - 999 = Does not apply)
- _____ 37. How were calves purchased? (1 = Self, 2 = Order buyer,
 (11) (12) (13) 3 = Other, 999 = Does not apply)
- _____ 38. What percentage of calves were steers? (Record actual
 (14) (15) (16) percent - 999 = Does not apply)
- _____ 39. What grade of calves were backgrounded? (Select one:
 (17) 1 = Prime and choice, 2 = Good, 3 = Oddlot or mismanaged
 calves, 9 = Does not apply)
- _____ 40. Which parasite treatments were used? (Select one: 1 =
 (18) Lice and grubs, 2 = Internal parasites, 3 = Lice, grubs
 and internal parasites, 4 = None, 9 = Does not apply)
- _____ 41. Which fly control program was followed? (Select one:
 (19) 1 = None, 2 = Backrubbers and/or oilers, 3 = Dustbags, 4 =
 Oral larvacides, 5 = Combinations of above, 9 = Does
 not apply)
- _____ 42. Which of the following animal health practices was used?
 (20) (Select one: 1 = Vaccinated for blackleg, malignant
 edema and hemorrhagic septicemia, 2 = Vaccinated for
 IBR, BVD and PI3, 3 = Injected with Vitamins A, D
 and E, 4 = 1 and 2 above, 5 = All of above, 9 = Does
 not apply)
- _____ 43. Which growth stimulant was used? (Select one: 1 =
 (21) None, 2 = DES, 3 = Ralgro, 4 = Synovex, 5 = MGA, 9 =
 Does not apply)
- What percentage of backgrounded cattle were marketed
 through:
- _____ 44. Local actions? (Record actual percent - 999 = Does
 (22) (23) (24) not apply)

- _____ 45. Organized yearling sales? (Record actual percent-
 (25) (26) (27) 999 = Does not apply)
- _____ 46. Order buyers? (Record actual percent - 999 = Does
 (28) (29) (30) not apply)
- _____ 47. Directly to feedlots? (Record actual percent -
 (31) (32) (33) 999 = Does not apply)

Number of contacts respondent had with County Extension Agents during previous
 12 months (record actual number). (TO THE EXTENSION AGENT: The purpose of the
 following questions is to provide information needed to help identify methods
 and approaches of greatest use to county personnel.)

- _____ 48. Number of Extension meetings of all kinds attended?
 (34) (35) (Record actual number)
- _____ 49. Number of Extension meetings where beef production
 (36) discussed? (Record actual number)
- _____ 50. Number of visits to County Extension Office? (Record
 (37) (38) actual number)
- _____ 51. Number of telephone calls to County Extension Office?
 (39) (40) (Record actual number)
- _____ 52. Number of farm visits received by respondent from all
 (41) (42) County Extension Agents? (Record actual number)

TO THE EXTENSION AGENT: Proceed to the survey on Pasture (Forage) that follows.

VITA

Jimmy J. Lumpkin was born May 26, 1952, to Mr. and Mrs. John W. Lumpkin of Huntingdon, Carroll County, Tennessee. He began his formal education at Huntingdon Elementary School and graduated from Huntingdon High School in 1970.

He attended The University of Tennessee at Martin from 1970 through 1974 and completed the requirements for a Bachelor of Science degree in Agriculture-Animal Science.

After working for Swift Fresh Meats Company as a hog buyer for two and one-half years, he was employed as Assistant Extension Agent in Benton County, Tennessee in July 1977.

He is married to the former Debra Ann McNutt of Paris, Tennessee.

He is a member of Epsilon Sigma Phi, an honorary Extension fraternity, and Gamma Sigma Delta, honorary agricultural fraternity.