To the Graduate Council:

I am submitting herewith a thesis written by Floyd David Rutter entitled "Relationships Between Characteristics of Beef Producers, Their Production Operations and Their Use of Management Practices and the Number of Contacts They Had With Extension." 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 Chancellor
Graduate Studies and Research

RELATIONSHIPS BETWEEN CHARACTERISTICS OF BEEF PRODUCERS, THEIR PRODUCTION OPERATIONS AND THEIR USE OF MANAGEMENT PRACTICES AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION

A Thesis

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ABSTRACT

The major purpose of this survey study was to determine the relationship between characteristics of beef producers, their production operation, their use of recommended beef production practices and the number of contacts they had with the Agricultural Extension Service. Another purpose of the study was to determine the relationships between beef producers' participation in the Tennessee Beef Cattle Improvement Program and the number of Extension contacts, and the use of recommended practices the TBCIP producers had with Extension. Data were obtained through personal interviews with 1047 beef producers located in 58 Tennessee counties. The 1977 Beef Cow-Calf Producer Survey was used to collect data from the beef producers. Extension agents used the "nth" number technique on their beef mailing list to identify producers to be surveyed and interviews were conducted in 1977. Producers interviewed had 15 or more beef females (12-15 months of age or older) in their herd the previous year to the survey. Information was obtained about their general production characteristics, their use of recommended beef production practices and the number of contacts they had with Extension Agents over a 12-month period.

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

Major findings included the following:

1. Almost 50 percent of the beef producers in Tennessee were part-time operators and about 50 percent receive their major source of income from the farm.

2. The average age of beef producers was 51 years of age, had 48 breeding cows in the herd, farmed 130 acres of pasture, weaned 44 calves and used two herd bulls.

3. The majority of beef producers were following 13 of the 24 recommended beef production practices studied.

4. The average number of contacts producers had per year with Extension agents was 16.7. Beef producers averaged attending 2.8 Extension meetings, 1.1 Beef Extension meetings, 4.0 visits to the Extension office, 5.5 telephone calls to Extension, and 3.5 farm visits by Extension agents.

5. The number of farm visits producers received from Extension agents related to the farm status (part-time versus full-time) and the producers' major source of income (farm versus non-farm).

6. There was a significant relationship between the use of 13 recommended beef production practices by beef producers and the total number of contacts producers had per year with Extension agents.

7. There was a significant relationship between the producers' use of 15 recommended beef production practices and their participation in the Tennessee Beef Cattle Improvement Program.

8. There was a significant relationship between participation in the TBCIP and the number of beef Extension meetings attended, the number of office visits, the number of telephone calls and the number

of farm visits. Also there was a significant relationship between the total number of contacts beef producers had with Extension agents and their participation in the Tennessee Beef Cattle Improvement Program.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	THE PROBLEM AND ITS SETTING	1
	Introduction	1
	Need for the Study	3
	Purpose of the Study	4
	Limitations of the Study	5
	Methods and Procedures	5
	Definition of Terms	6
II.	REVIEW OF RELATED STUDIES	8
	Characteristics of Tennessee Beef Producers and Their Farm Operation	8
	Producer Use of Recommended Production Practices and Factors Influencing the Adoption of Practices	10
	Extension Contacts with Agriculture Producers and Factors Influencing Practice Use	12
III.	STUDY FINDINGS	15
	Characteristics of Beef Producers and Their Farm Operations	16
	Use of Recommended Beef Production Practices	22
	Beef Producers Contact With Extension	34
	Relationships Between Producer Characteristics and Extension Contacts	38
	Relationships Between Recommended Beef Production Practices Used and the Number of Extension Contacts	43

CHAPTER PAGE

Relationships Between the Use of Recommended Beef Production Practices and Participation in the Tennessee Beef Cattle Improvement Program 56

Relationships Between the Number of Extension Contacts and Beef Producers Participation in the TBCIP. 72

IV. SUMMARY OF MAJOR FINDINGS 77

Purposes and Specific Objectives 77

Method of Investigation 78

Major Findings 79

Implications and Recommendations 86

Recommendations for Use of Findings and Further Study . 87

BIBLIOGRAPHY 88

APPENDIX 91

VITA 97

LIST OF TABLES

TABLE		PAGE
I.	Characteristics of Beef Producers and Their Farm Operation	17
II.	Use of Recommended Beef Production Practices	23
III.	Beef Producers Contact With Extension	35
IV.	Relationships Between Beef Producer Characteristics and Extension Contacts	39
V.	Relationships Between Recommended Beef Practices Used and the Number of Extension Contacts	44
VI.	Relationships Between the Use of Recommended Beef Production Practices and Participation or Non-Participation in the Tennessee Beef Cattle Improvement Program	57
VII.	Relationships Between the Number of Extension Contacts and Beef Producers Participation in the TBCIP	74

CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

Beef cattle numbers in Tennessee have grown tremendously during the last three decades. Beef cattle numbers have increased from 302,000 head in 1953 to 1,087,000 in 1981. Tennessee now ranks twelfth nationwide in beef cattle numbers. (7)* Cash receipts from cattle and calves amounted to $312,664,000 in 1980. (17:5) This accounted for 18 percent of the total cash receipts in 1980 for Tennessee agriculture products.

Ample pastures continue to offer opportunities for increasing beef production in Tennessee. There are more acres in pasture than all other crops combined. There are 5,000,000 acres of pasture land in Tennessee. With adequate fundamental resources of land, grass and water, the cow-calf phase of production will likely continue to be the greatest area of beef production in Tennessee.

The Agricultural Extension Service has played an important role in the progress of Tennessee agriculture including beef production. The Extension Service has been active in promoting improved beef production techniques and practices. Much of the information on improved beef cattle management practices gets to the producer by way of the Agriculture Extension Service.

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

Since beef production is such an important part of Tennessee agriculture production and because Tennessee is well suited for beef production with adequate resources, a great challenge continues to exist in beef production and beef production education. The Tennessee cow-calf beef business has the potential for being more efficient than it is. (14) For example, the percent calf crop in Tennessee is about 70 percent. However, a calf crop of 90 percent is possible to obtain with good management. Another way beef producers can be more efficient is to increase weaning weights. Heavy weaning weights and high calf crop percents can mean a greater return to producers.

The Tennessee Beef Cattle Improvement Program (TBCIP), may be one means by which a producer can increase his efficiency. The TBCIP is a performance testing program available to beef producers in Tennessee. It is a systematic way of recording differences in certain economical traits among animals. (6) By selecting for these traits, a producer can increase financial returns of the herd by improving growth rate, improving the quality of calves, and increasing calving percentage.

The TBCIP began in 1956 with 12 herds and with 322 calves recorded. (16) The number of herds had increased to 96 by 1962 and the TBCIP had a high enrollment of 232 herds with 6,464 calves recorded in 1974. However, since 1974 the number of herds in the TBCIP have decreased. In 1977 there were 175 herds with 6,003 calves recorded.

This study was concerned with the characteristics of beef producers, the extent to which beef producers were following recommended beef production practices, and beef producer contacts with Extension.

This study was also concerned with participants in the Tennessee Beef Cattle Improvement Program and their characteristics, practices and contacts with Extension.

II. NEED FOR THE STUDY

Under provisions of the Smith-Lever Act, the Cooperative Extension Service exists to diffuse among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same. (12) Extension agents assist people to utilize more fully their own resources available to them. Production techniques exist for more efficient beef production in Tennessee. This study was an effort to analyze the beef industry of Tennessee in order to provide a basis for improved Extension education programs in beef production.

Data were available from the 1977 Cow-Calf Producer Survey. There was a need to analyse the data to determine characteristics of beef producers and to determine to what extent the recommended beef production practices were being followed. There also was a need to examine the characteristics of producers participating in the Tennessee Beef Cattle Improvement Program and their use of recommended practices. There also was a need to examine the relationship between Extension contacts and the use of recommended practices by beef producers.

III. PURPOSE OF THE STUDY

The Agricultural Extension Service provides research tested information to beef producers in Tennessee. The overall objective of this study was to obtain information that might be useful in developing plans and programs for the beef producers of Tennessee.

Furthermore, the purpose of this study was to determine the relationships between selected characteristics of beef producers and their use of recommended beef practices. The purpose of this study also was to determine the extent of Extension contact with Tennessee beef producers and the relationship of Extension contact to practice use. Another purpose was to determine the characteristics of producers participating in the Tennessee Beef Cattle Improvement Program.

Specifically, the objectives of this study were:

1. To characterize Tennessee beef producers and their beef production operations.

2. To determine the extent of use of recommended beef production practices.

3. To determine the extent of contact beef producers had with Extension.

4. To determine the relationship between certain characteristics of the beef producer and farm operation and their extent of contact with Extension.

5. To determine the relationship between the use of recommended beef production practices and extent of Extension contact.

6. To determine the relationship between the use of recommended beef production practices and participation in the Tennessee Beef Cattle Improvement Program.

7. To determine the relationship between Extension contacts and participation in the Tennessee Beef Cattle Improvement Program.

IV. LIMITATIONS OF THE STUDY

This study was limited to the analysis of the data available from the 1977 Tennessee Beef Cow-Calf Producer Survey. The data was obtained by Extension Agents through personal interviews and included beef cow-calf producers. The number of interviews varied from county to county, depending on the number of beef producers in the county. Fifty-eight of the 95 counties in Tennessee were surveyed and 1,047 producers were included.

V. METHODS AND PROCEDURES

Population and Sample Studied

The population of this study included 1,047 beef cow-calf producers in 58 counties in Tennessee. The survey instructions suggested that producers have 15 or more beef females (12-15 months of age or older) in their herd of the previous year to the survey.

The 1977 Tennessee Beef Cow-Calf Producer Survey and the 1977 Tennessee Pasture (Forage) Survey was used to collect data from the beef producers. Extension agents obtained the data by personal interviews with the beef producers.

Selection of Sample

Extension agents used their County list of beef producers to obtain the sample. The "nth" number technique was used to identify

producers to be surveyed. Alternate producers were selected to replace producers who could not be interviewed for some reason.

Development of Survey

The 1977 Beef Cow-Calf Producer Survey and the 1977 Tennessee Pasture (Forage) Survey were developed by The University of Tennessee Agriculture Extension Specialist staff in Animal Science, Plant and Soil Science, and The Extension Education departments.

Conducting the Survey

The Survey was conducted by Extension agents in the 58 counties through personal interviews. A Guide Sheet for both Surveys accompanied the Surveys.

Extension agents scheduled interviews with producers and completed the survey on the farm or at the county Extension office.

Methods of Analysis

The data were coded and punched on computer cards. Computations were made by The University of Tennessee Computing Center. The one-way analysis of variance F test and Chi Square test were used to determine probability levels and the strength of the relationship between dependent and independent variables. The .05 probability level was the point at which a relationship was considered to be significant.

VI. DEFINITION OF TERMS

The following terms are defined to give the writer and reader a common understanding of the terms of this study.

Cow-Calf Producer. A beef producer who maintains a herd of brood cows for the purpose of producing calves which are primarily marketed as feeder calves or as yearlings. Producing calves is the cow-calf producers main phase of beef production.

Recommended Practice. A research verified and commonly accepted procedure that, if performed correctly and on a scheduled basis, will increase the incidence of a desired outcome or return.

Tennessee Beef Cattle Improvement Program (TBCIP). A performance testing program provided by the Agricultural Extension Service available to beef producers in Tennessee. Performance testing is a systematic way of recording differences in certain economical traits among animals.

Percent Calf Crop. Percent calf crop is the ratio of calves weaned to all females in the herd that are exposed to a bull during the breeding season.

Extension Contact. One of the various methods, such as a farm visit, by which Extension agents provide agriculture information to producers on subject matters of interest to the producer.

CHAPTER II

REVIEW OF RELATED STUDIES

There is a vast amount of literature available on beef production. Most of the studies are concerned with technical subject matter in beef production and not directly related to this study. There have been several studies, however, in the past two decades related to the characteristics of beef producers and factors influencing beef practice adoption. There have also been several studies of Extension contacts and its relationship to agriculture production in areas other than beef production. These studies and their findings will be reported in this review.

Review of related studies cited in this chapter is reported under the following headings: (1) Characteristics of Tennessee Beef Producers and Their Farm Operation; (2) Producer Use of Recommended Beef Production Practices and Factors Influencing Their Adoption; (3) Extension Contacts With Agriculture Producers and Factors Influencing Producer Use.

I. CHARACTERISTICS OF TENNESSEE BEEF PRODUCERS AND THEIR FARM OPERATION

Several survey-type studies have been done on Tennessee beef producer characteristics and farm operation characteristics. Studies reviewed in this section are county studies with the exception of Mohamad's statewide study.

In a 1979 study, Lovely (9) surveyed 52 beef producers in Campbell County to secure data concerning beef producer characteristics. In the Campbell County study Lovely reported the following characteristics by those surveyed: the average age of the producer was 51, 58 percent were full-time farmers, the average number of farm acres was 93, the average number of cows was 20, and the average number of calves weaned was 18.

In a similar 1972 study, Brewer (3) surveyed 40 beef producers in Marshall County. The Marshall County study found the following characteristics: the average age of producer was 55, 58 percent were full-time farmers, beef was the major income source of 48 percent, the average farm size was 140 acres, the average number of cows was 35, and the average number of calves raised to weaning was 32.

In a study of Lawrence County beef cattle producers by Matthews (15) in 1968, the following characteristics were reported: the average age of the beef cattle producers was 55, 27 percent were full-time farmers, 90 percent were farm owners, the average size farm was 179 acres, the average number of cows was 18, and the average number of calves weaned was 19.

In a 1979 statewide study Mohamad analyzed the characteristics of beef producers, their use of recommended beef production practices, and the contacts producers had with Extension agents. (13:74-75) Mohamad's study found the following characteristics about Tennessee beef producers:

1. Producers averaged 21.1 years in beef production
2. They averaged 50.2 years in age

3. Producers had 47.6 breeding cows in their herd
4. They kept 2.2 bulls in the herd
5. They raised 43.6 calves
6. Producers had 129.1 farm acres
7. Producers weaned 43.8 calves on the average

II. PRODUCER USE OF RECOMMENDED PRODUCTION PRACTICES AND FACTORS INFLUENCING THE ADOPTION OF PRACTICES

Mohamad's study of beef producers surveyed in 1977 found the following information regarding the use of recommended beef production practices. (18:78-81) Most producers were doing the following:

1. Vaccinating calves for blackleg and malignant edema
2. Allowing cows free access to mineral mixture
3. Providing cows with magnesium oxide to prevent grass tetaney
4. Stockpiling fescue
5. Using grub/lice control practices
6. Maintaining adequate working facilities
7. Waiting until heifers were more than 15 months before breeding
8. Waiting until heifers were more than 650 pounds before breeding
9. Checking cows more than once daily
10. Castrating calves before four months of age
11. Worming cows at least once a year

It was found in this study of Mohamad's that all five kinds of contacts were found to be significantly related to the use of many beef

and pasture practices by both large and small producers and it was implied that the number of Extension contacts may have influenced beef producers to adopt related Extension practices. (13:86)

Lovely's study in Campbell County found that only certain recommended management practices were being used. Castration, dehorning, and control of internal and external parasites were used by the majority of all producers. Breeding and feeding practices were not used as the other management practices. Producers were not on a limited breeding season and confining their herd bull from July through March. No producers were enrolled in the Tennessee Beef Cattle Improvement Program and only five were using a performance tested bull. Over 53 percent of all the producers were interested in improving their beef cattle operation. In all, utilization of the recommended practices showed that producers were only 25 to 50 percent effective in their use. (9:68)

Brewer's study in Marshall County showed that more high producers used recommended practices than low producers and that the management level averaged by the high producers was considerably above that of the low producers. High producers were keeping bulls whose records met minimum requirements of the breeder's performance tested bull sale. Brewer cited that County Agents, cattle buyers, and local veterinarians were most often used when advice was sought. Eighty-seven percent of the high producers listed County Agents as their main source of information. Among other sources of information were farm magazines and The University of Tennessee bulletins or publications. (3:76-78)

Matthew's Lawrence County study found also that high producers had higher ratings on 23 of 31 practices studied. Reasons reported most often by producers to explain why cattlemen do not adopt more recommended practices were: (1) lack of time and labor; (2) too small a margin of profit; and (3) lack of technical knowledge. (15:100,129-131)

III. EXTENSION CONTACTS WITH AGRICULTURE PRODUCERS AND FACTORS INFLUENCING PRACTICE USE

Gordon, in a study of 20 Haywood County feeder pig producers in 1975, reported that the number of contacts producers had with Extension were significantly associated with their use of 5 of the 21 recommended swine management practices. Producers using the resommended practices had a larger number of Extension contacts than did producers not using the practices. Producers who sold larger numbers of pigs tended to have a larger number of contacts with Extension. (5:71-73).

Freeman, in a study of 651 Grade A Tennessee dairymen in 1978, reported that dairy farmers who had large herds and large farms tended to use significantly more practices than those dairymen who had smaller herds and farms. He also found that dairymen who had high herd averages in pounds of milk and butterfat tended to use significantly more of the total number of recommended dairy practices. Dairy farmers with high silage yields tended to use significantly more forage production practices than farmers with low silage yields. The producers education level or the number of years he planned to continue dairying were more highly related to the total number of Extension contacts than to any of the other management variables. (4:184-186)

McLemore in a statewide study of Tennessee swine producers in 1975 found that the total number of contacts with Extension related to the producers use of 23 of the 25 recommended practices. He also cited that the number of females farrowing twice per year and the number of pigs raised to weaning were significantly related to the total number of contacts producers had with Extension agents. (11:69)

Perry, in a Tennessee swine producer survey, found that 14 of the 18 recommended production practices studied were used by at least 50 percent of the producers. Nine of the 18 recommended practices was significantly related to each type of Extension contact and to the total number of contacts producers had with Extension agents over a 12 month period. The type of swine operation (feeder pig or farrow-to-finish) was significantly related to the number of contacts with Extension. Farrow-to-finish producers had more contacts. (15:72-80)

Bradley, in a cotton producer study in West Tennessee, found that producers used an average of five and seven tenths of the nine recommended production practices and the number of practices used was significantly related to their cotton yield. There was also a significant relationship between cotton producers receiving the kind of help they wanted and the number of contacts they had with Extension. Cotton yield was significantly related to the number of Extension meetings attended during the year. (2:63-69)

Jenkins, in a study of 50 Soybean producers selected randomly in Fayette County, indicated that neither a soybean producer's major occupation nor his major source of income had significant influence upon the number of Extension contacts he made. Soybean producers with larger

acreages made significantly greater number of Extension contacts than smaller producers. (8:50)

Arnett, in a study of 203 Wilson County farmers who either made a telephone call or visit to the Extension office during a three year period, found that a farmer's age, race, or whether he was a full-time or part-time farmer did not influence the number of visits made to the Extension office. However, education of the farmer was significantly related. A significant association was found between the number of office visits and type of farming enterprise, size of farm, gross farm income, yield of tobacco or serving actively in other farm related associations such as being a director of Farm Bureau. Farmers having dairy, beef, or tobacco as their major farm enterprise made more visits than did those with either swine, sheep, or poultry. Farmers with larger farms, more gross farm income and higher tobacco yields made more office visits. (1:96-98)

CHAPTER III

STUDY FINDINGS

The findings of this study were organized into seven major sections according to the specific objectives of the study. Data pertaining to each objective of the study are presented in separate tables.

In Section I major findings are reported regarding selected characteristics of the beef producers and of their farming operations to provide background information for the reader.

In Section II major findings are reported regarding the beef producers' use of 24 beef production practices. The recommended practices are grouped into six management categories.

In Section III major findings are reported regarding the number of contacts producers had with Extension. Five contact methods were analyzed, also the total number of contacts beef producers made with Extension agents over a 12 month period.

In Section IV major findings are reported regarding selected characteristics of the beef producers and of their beef operation in relationship to the number of contacts of various types producers made with Extension agents.

In Section V major findings are reported regarding the use of selected recommended beef production practices in relationship to the number of contacts of various types producers made with Extension agents.

In Section VI major findings are reported regarding relationships between the use of selected recommended beef practices and participation in the Tennessee Beef Cattle Improvement Program (TBCIP).

In Section VII major findings are reported regarding the number of Extension contacts and participation in the TBCIP.

I. CHARACTERISTICS OF BEEF PRODUCERS AND THEIR FARM OPERATIONS

Section I presents findings regarding selected characteristics of the beef producers and their farming operations. Table I presents 11 variables which tend to characterize the beef producers. Numbers and percent of producers are reported for each variable. Variable means, as well as low and high values, are reported for the quantitative variables.

Producer Characteristics

The characteristics of tenure, farming status, major source of income, and age of producer are shown in the first part of Table I.

Tenure. Table I shows that 965 (93.1 percent) of the producers were owners of their beef operation. Renters or other tenure situations amounted to only 71 (6.9 percent) of the 1,036 producers responding to the question on tenure.

Farming status. The number of part-time beef operators was 483 (46.8 percent) compared to 549 (53.2 percent) full-time beef operators.

Major source of income. Of the 1,032 beef producers responding, 54 percent gave farm as their major source of income.

Age of producer. Of the 1,024 beef producers who gave their age, 56 (5.5 percent) were less than 30 years in age. There were 387 (37.8 percent) between 30 and 49 years of age and 581 (56.7 percent) were 50 and over. The average age for all beef producers was 50.8 years.

TABLE I

CHARACTERISTICS OF BEEF PRODUCERS
AND THEIR FARM OPERATION

Characteristic	Number of Producers	Percent of Producers
Producer Characteristics		
Tenure		
Owner	965	93.1
Other	71	6.9
Total	1036	100.0
Farming Status		
Part-time	483	46.8
Full-time	549	53.2
Total	1032	100.0
Major Source of Income		
Farm	557	54.0
Non-farm	475	46.0
Total	1032	100.0
Age of Producer		
Less than 30	56	5.5
30-49	387	37.8
50 and over	581	56.7
Total	1024	100.0
Mean = 50.8 Low = 17 High = 84		
Production Characteristics		
Major Livestock Enterprise		
Beef	941	91.2
Swine	75	7.3
Sheep	1	0.1
Horses	1	0.1
Other	14	1.4
Total	1032	100.0

TABLE I (Continued)

Characteristic	Number of Producers	Percent of Producers
Major Agriculture Enterprise		
Livestock	776	75.1
Row Crops	220	21.3
Dairy	14	1.4
Fruits and Vegetables	7	0.7
Other	16	1.5
Total	1033	100.0
Number Breeding Cows in Herd		
Less than 15	19	1.9
15-25	276	27.0
26-50	443	43.4
51-100	210	20.6
Over 100	73	7.1
Total	1021	100.0
Mean = 48.4 Low = 10 High = 480		
Acres Beef Pasture		
Under 25	25	2.4
25-50	217	20.9
51-100	384	37.0
101-200	276	26.5
200-500	116	11.2
Over 500	21	2.0
Total	1039	100.0
Mean = 129.9 Low = 18 High = 1800		
Calves Raised to Weaning		
1-25	333	33.2
26-50	430	42.9
51-100	183	18.3
101 and over	56	5.6
Total	1002	100.0
Mean = 43.7 Low = 10 High = 450		

TABLE I (Continued)

Characteristic	Number of Producers	Percent of Producers
Number of Bulls Used		
1	490	48.2
2	309	30.4
3	115	11.4
Over 3	102	10.0
Total	1016	100.0
Mean = 2.1 Low = 1 High = 27		
Years Beef On Farm		
1-10	234	22.7
11-25	453	43.0
25 or more	345	33.4
Total	1032	100.0
Mean = 22.1 Low = 1 High = 70		

The youngest was 17 and the oldest was 84 years of age.

Production Characteristics

The characteristics of the beef production operation are shown in the second part of Table I (p. 17). The characteristics of major livestock enterprise, major agriculture enterprise, number of breeding cows in herd, acres of beef pasture, number of calves raised to weaning, number of bulls used and years beef on the farm are reported below.

Major livestock enterprise. Regarding major livestock enterprise, 941 (91.3 percent) of the producers considered beef as their major livestock enterprise, 75 (7.3 percent) reported swine, 1 reported sheep, 1 horses and 14 reported an enterprise other than those mentioned.

Major agriculture enterprise. Seven hundred and seventy-six (75.1 percent) of the beef producers reported livestock as their major agriculture enterprise. The other major agriculture enterprises reported were row crops 220 (21.3 percent), dairy 14 (1.4 percent), fruits and vegetables 7 (0.7 percent), and other than these 16 (1.5 percent).

Number breeding cows in herd. For reporting purposes the producers were divided into five groups according to the number of breeding cows in the herd. The producers reported the following number of breeding cows in the herd: 19 (1.9 percent) had less than 15 breeding cows, 276 (27 percent) had 15 to 25 head, 443 (43.4 percent)

had 26 to 50 head, 210 (20.6 percent) had over 100 head of breeding cows in their herd. The average number of breeding cows for beef producers reporting in this survey was 48.4 head. The minimum number of breeding cows was 10 and the maximum was 480.

Acres beef pasture. Beef producers were divided into six groups according to the number of acres of beef pasture reported. The producers reported the following acres of beef pasture: 25 producers (2.4 percent) had under 25 acres, 217 (20.9 percent) had 25 to 50 acres, 384 (37.0 percent) had 51 to 100 acres, 276 (26.6 percent) had 100 to 200 acres, 116 (11.2 percent) had 200 to 500 acres, 21 (2.0 percent) had over 500 acres. The mean number of acres of beef pasture reported by producers in this survey was 129.9. The smallest acreage reported was 18 and the largest number of acres was 1,800.

Calves raised to weaning. Producers were divided into four groups according to the number of calves raised to weaning. The producers reported the following number of calves raised to weaning: 333 producers (33.2 percent) raised 1 to 15 calves, 430 producers (42.9 percent) raised 26 to 50 calves, 183 (18.3 percent) raised over 100 calves, 56 producers (5.6 percent) raised over 100 calves to weaning. All beef producers reported an average of 43.7 calves raised to weaning. The lowest number of calves reported raised to weaning was 10 and the maximum was 450.

Number bulls used. Four hundred and ninety (48.2 percent) of the beef producers reported using one herd bull. Producers reporting

using 2 bulls was 309 (30.4 percent), 3 bulls 115 (11.4 percent), and over 3 bulls 102 (10 percent). The average number of herd bulls reported used was 2.1 with the minimum being 1 and the maximum was 27.

Years beef on farm. Beef producers responding to the question regarding years beef raised on the farm were divided into three groups for reporting purposes: (1) from 1 to 10 years, 234 producers (22.7 percent); (2) 11 to 25 years, 453 (43.4 percent); (3) 25 years and over, 345 (33.4 percent). The average number of years beef had been reported to be on the farms was 22.1 years. The low was 1 year and the high 70 years.

II. USE OF RECOMMENDED BEEF PRODUCTION PRACTICES

Section II findings are reported regarding the beef producers' use of 24 recommended beef production practices. Table II presents data regarding the number and percents of producers using each of the recommended beef production practices. Practices were classified by types of management categories.

Cow Herd Management

The recommended production practices considered relating to cow herd management were whether or not the herd was enrolled in TBCIP or a breed performance testing program, length of breeding season, number of times cows were checked during the breeding season, if cows were pregnancy tested, cow identification system, number of times cows were checked during calving season, and if working facilities were considered adequate.

TABLE II

USE OF RECOMMENDED BEEF PRODUCTION PRACTICES

Recommended Production Practice	Number of Producers	Percent of Producers
Cow Herd Management		
Herd Enrolled in TBCIP		
No	957	94.2
Yes	59	5.8
Total	1016	100.0
Length of Breeding Season		
1-3 months	243	26.1
4-8 months	688	73.9
Total	931	100.0
Mean = 5.1 Low = 1.0 High = 8.0		
Number Times Per Day Cows Checked During Breeding Season		
Less than 1	101	9.6
1 to 3	946	90.4
Total	1047	100.0
Mean = 1.2 Low = 0 High = 3		
Cows Pregnancy Checked		
No	902	89.5
Yes	106	10.5
Total	1008	100.0
Cow I.D. System		
Ear Tag	407	77.7
Neck Chain	117	22.3
Total	524	100.0

TABLE II (Continued)

Recommended Production Practice	Number of Producers	Percent of Producers
Number Times Per Day Cows Checked During Calving Season		
0	18	1.8
1	539	53.5
2-3	451	44.7
Total	1008	100.0
Mean = 1.5 Low = 0 High = 3		
Working Facilities Adequate		
No	362	35.2
Yes	666	64.8
Total	1028	100.0
Herd Bull Management		
Used Performance Tested Bull		
No	733	71.6
Yes	291	28.4
Total	1024	100.0
Bulls Meet Minimum Requirement for PTB Sale		
No	500	52.5
Yes	453	47.5
Total	953	100.0
Replacement Herd Management		
Age Heifers Bred		
Less than 15 months	138	14.6
15-24 months	806	85.4
Total	944	100.0
Mean = 17.2 Low = 12 High = 24		

TABLE II (Continued)

Recommended Production Practice	Number of Producers	Percent of Producers
Weight Heifers Bred		
Less than 600 pounds	63	6.0
600-800 pounds	984	94.0
Total	1047	100.0
Number Times Per Day Heifers Checked During Calving Season		
0	18	1.9
1	429	44.1
2-4	525	54.0
Total	972	100.0
Mean = 1.7 Low = 0 High = 4		
Calf Crop Management		
Age Calves Castrated		
Less than 3 months	453	47.0
3 months or older	511	53.0
Total	964	100.0
Calves Vaccinated for Blackleg/ Malignant Edema		
No	183	17.9
Yes	838	82.1
Total	1021	100.0
Used Growth Stimulant		
No	889	86.7
Yes	136	13.3
Total	1025	100.0

TABLE II (Continued)

Recommended Production Practice	Number of Producers	Percent of Producers
Feeding Management		
Fed Mineral Free Choice		
No	152	14.8
Yes	875	85.2
Total	1027	100.0
Fed Magnesium Oxide - Tetany		
No	361	35.4
Yes	660	64.6
Total	1021	100.0
Stockpiled Fescue		
No	353	34.5
Yes	671	65.5
Total	1024	100.0
Gave Needy Cows Special Treatment		
No	588	58.6
Yes	416	41.4
Total	1004	100.0
Used Protein With Low Quality Roughage		
No	421	45.0
Yes	515	55.0
Total	936	100.0
Herd Health Management		
Fly Control Program		
None	64	6.2
Back-Rub	514	49.8
Dustbag	84	8.1
Oral	19	1.9
Combination	351	34.0
Total	1032	100.0

TABLE II (Continued)

Recommended Production Practice	Number of Producers	Percent of Producers
Used Grub/Lice Control		
No	384	37.2
Yes	648	62.8
Total	1032	100.0
Vaccinated for Leptospirosis		
No	749	73.3
Yes	273	26.7
Total	1022	100.0
Number of Times Per Year Cows Wormed		
1	543	85.2
2	94	14.8
Total	637	100.0

Mean = 1.1 Low = 1 High = 2

Herd enrolled in Tennessee Beef Cattle Improvement Program or breed performance testing program. Only 59 (5.8 percent) of the 1,016 producers surveyed reported being enrolled in the Tennessee Beef Cattle Improvement Program or a breed performance testing program. Nine hundred and fifty-seven (84.2 percent) of the producers were not participating in the TBCIP or in any breed performance testing program.

Length of breeding season. Two hundred and forty-three (26.1 percent) of the 931 producers reported a breeding season of three months or less. Six hundred and eighty-eight (73.9 percent) reported a breeding season of four to eight months. The average length of breeding season was 5.1 months. The minimum was one month and the maximum was eight months.

Number of times cows check during breeding season. Of the 1,047 producers surveyed, 946 (90.4 percent) checked their cows 1 to 3 times a day during the breeding season. Only 9.6 percent did not check their cows at least once a day.

Cows pregnancy tested. Most producers indicated that they did not pregnancy check their cows. Nine hundred and two reported not pregnancy checking their cows while 106 (10.5 percent) of the 1,008 producers were pregnancy checking their cows.

Cow I.D. system. Four hundred and seven of the producers (77.7 percent) reported that they permanently identified their cows with an ear tag. The remaining 117 (22.3 percent) reported using neck chains for identification.

Number of times per day cows checked during calving season. Only 18 (1.8 percent) of the beef producers reported not checking their cows during the calving season. Five hundred and thirty-nine of the 1,008 beef producers reporting checked their cows once a day during the calving season and 451 (44.7 percent) checked their cows 2 or 3 times per day during the calving season. On the average, all producers checked their cows 1.5 times per day.

Working facilities adequate. More than half of the 1,028 beef producers indicated that their beef cattle working facilities were adequate for safe and effective management purposes. The number of producers with adequate facilities was 666 (64.8 percent) compared to 362 (35.2 percent) who indicated that they did not have adequate facilities.

Herd Bull Management

The recommended production practices considered relating to herd bull management were if performance tested bulls were used, and if bulls met minimum requirements of performance tested bull sales.

Performance tested bull used. Two hundred and ninety-one (28.4 percent) of the 1,024 producers indicated that they were using a performance tested bulls. The number of producers not using a performance tested bull was 733 (71.6 percent).

Bulls met minimum requirements of Performance Tested Bull sale. Four hundred and fifty-three (47.5 percent) of the beef producers

indicated that they were using bulls that met the minimum requirements of the Performance Tested Bull sale. Five hundred (52.5 percent) of the 953 beef producers indicated they were not using bulls that met the requirements of the PTB sale.

Replacement Herd Management

The recommended production practices considered relating to replacement herd management were age heifers bred, weight heifers bred, and the number of times heifers checked during calving season.

Age heifers bred. Most of the producers responding were waiting until heifers were a minimum of 15 months in age before breeding them. Eight hundred and six (85.4 percent) were waiting until heifers were 15 to 24 months old to breed. One hundred and thirty-eight (14.6 percent) were breeding heifers before 15 months of age. The mean age for breeding heifers was 17.2. The minimum age was 12 months and the maximum was 24 months.

Weight heifers bred. Nine hundred and forty-four (94.0 percent) reported that they were waiting until heifers were at least 600 pounds before breeding them. Sixty-three (6.0 percent) were not waiting until heifers reached 600 pounds before breeding. The minimum weight for breeding heifers was 600 pounds and the maximum breeding weight was 800 pounds. The average weight producers were breeding heifers was 697 pounds.

Number of times heifers checked during calving season. Almost all beef producers checked their heifers at least one time a day during the calving season. Four hundred and twenty-nine (44.1 percent) checked their heifers 1 time a day and 525 (54.0 percent) 2 to 4 times per day during the calving season. Only 63 (1.9 percent) did not check their heifers at least once a day. The average number of times heifers were checked was 1.7, the minimum 0, and the maximum times heifers were checked was 4.

Calf Crop Management

The recommended production practices considered relating to calf crop management were whether or not calves were castrated before three months, calves vaccinated for blackleg and malignant edema, and using growth stimulants.

Age calves castrated. Four hundred and fifty-three (47.0 percent) of the beef producers castrated calves before they were three months olds. Five hundred and eleven (53.0 percent) of the producers reported castration at three months or older. The average age calves were castrated was 2.7 months and the minimum age was the first month and the maximum was 8 months.

Calves vaccinated for blackleg and malignant edema. Eight hundred and thirty-eight (82.1 percent) of the 1,021 beef producers were vaccinating calves for blackleg and malignant edema. One hundred and eighty-three (17.9 percent) were not vaccinating for blackleg and malignant edema.

Used growth stimulant. One hundred and thirty-six (13.3 percent) of the beef producers were using a growth stimulant. Eight hundred and eighty-nine (86.7 percent) were not following the practice of using a growth stimulant.

Feeding Management

The recommended production practices considered relating to feeding management were whether or not minerals were fed free choice, magnesium oxide fed to prevent grass tetany, fescue stockpiled, needy cows given special treatment, protein used with low quality forage.

Mineral fed free-choice. Eight hundred and seventy five (85.2 percent) of the 1,027 beef producers indicated that they were using the practice of feeding minerals free choice. One hundred and fifty-two producers (14.8 percent) were not using the practice.

Fed magnesium oxide-grass tetany prevention. Six hundred and seventy-one (64.6 percent) of the beef producers were feeding magnesium oxide to prevent grass tetany. The remaining 361 (35.4 percent) were not following this practice.

Stockpiled fescue. Six hundred and seventy-one (65.5 percent) of the beef producers were stockpiling fescue as a part of the pasture feeding management program. Three hundred and fifty-three (34.5 percent) of the producers surveyed were not stockpiling fescue.

Gave needy cows special treatment. Four hundred and sixteen (41.4 percent) of the beef producers gave special feeding treatment to

needy cows, such as replacement heifers, thin cows, and cows that had recently calved. Five hundred and eighty-eight (58.6 percent) did not give needy cows special feeding treatment.

Used protein with low quality forage. Five hundred and fifteen (55.0 percent) of the beef producers were using protein with low quality roughages. Four hundred and twenty-one (45.0 percent) were not feeding protein with low quality roughages.

Herd Health Management

The recommended production practices considered relating to herd health management were fly control program, grub/lice control, vaccination for leptospirosis, and the number of times cows were wormed.

Fly control program used. Most beef producers reported some type of fly control program. Five hundred and fourteen (49.8 percent) used backrub treatment, 84 (8.1 percent) used dustbags, and 19 (1.9 percent) used oral insecticides. Three hundred and fifty-one (34.0 percent) were using a combination of fly control treatments.

Used grub/lice control. Six hundred and forty-eight (62.8 percent) of the producers used insecticides for grub and lice control. Three hundred and eighty-four (37.2 percent) of the 1,032 producers did not use the grub and lice control recommendation.

Vaccinated for leptospirosis. Two hundred and seventy-three (26.7 percent) of the beef producers were vaccinating brood cows and replacement for leptospirosis. Seven hundred and forty-nine (72.3 percent) of the 1,022 producers were not vaccinating for leptospirosis.

Number of times cows wormed. Five hundred and forty-three (85.2 percent) of the beef producers wormed their cow herd one time per year. Ninety-four (14.8 percent) responded that they were worming cow herds twice. There were only 637 producers responding to this variable.

III. BEEF PRODUCERS CONTACT WITH EXTENSION

Table III presents five Extension contact methods commonly used by the Agriculture Extension Service. The five methods were: Extension meetings, beef Extension meetings, office calls, telephone calls, and farm visits.

The producers were classified for reporting purposes into three groups. The groups were: producers that had no contact with Extension, producers that had one or two contacts with Extension, and producers that had three and over contacts with Extension. The total number of beef producers and the percent of producers are given for each category. The mean, low, and high are also given.

Number of Extension Meetings Attended

Two hundred and twenty-five (21.5 percent) of the 1,045 beef producers reported that they did not attend any meetings. Four hundred and ninety-eight (47.7 percent) attended 1 or 2 meetings and 322 (30.8 percent) attended 3 or more Extension meetings. The mean number of meetings attended was 2.8, the low was 0 and the high was 36.

TABLE III

BEEF PRODUCERS CONTACT WITH EXTENSION

Name of Variable	Number of Producers	Percent of Producers
Number of Extension Meetings Attended		
Not any	225	21.5
1-2	498	47.7
3-over	322	30.8
Total	1045	100.0
Mean = 2.8 Low = 0 High = 36		
Number of Beef Extension Meetings		
Not any	411	39.4
1-2	519	49.7
3-over	114	10.9
Total	1044	100.0
Mean = 1.1 Low = 0 High = 8		
Visits to Extension Office		
Not any	231	22.1
1-2	279	26.7
3-over	535	51.2
Total	1045	100.0
Mean = 4.0 Low = 0 High = 50		
Telephone Calls to Extension		
Not any	149	14.2
1-2	218	20.9
3-over	679	64.9
Total	1046	100.0
Mean = 5.5 Low = 0 High = 50		

TABLE III (Continued)

Name of Variable	Number of Producers	Percent of Producers
Farm Visits Received		
Not any	174	16.6
1-2	372	35.5
3-over	501	47.9
Total	1047	100.0
Mean = 3.5 Low = 0 High = 30		

Number of Beef Extension Meetings Attended

Five hundred and nineteen (49.7 percent) of the beef producers had attended at least one or two Extension beef meetings during the past twelve months. One hundred and fourteen producers (10.9 percent) had attended 3 or more meetings and 411 (39.4 percent) had not attended any beef Extension meetings. The mean was 1.1, the low 0 and the high number of beef meetings attended was 8.

Visits to Extension Office

Five hundred and thirty five (51.2 percent) of the beef producers had visited the Agriculture Extension office three or more times during the past twelve months. Two hundred and seventy-nine (26.7 percent) reported visiting one or two times and 22 percent reported not visiting the Extension office during the past twelve months. The mean was four, the minimum number of times was zero, and the maximum was fifty visits.

Telephone Calls to Extension

Six hundred and seventy-nine (64.9 percent) of the 1,046 beef producers surveyed had made 3 or more telephone calls to Extension agents during the past 12 months. Two hundred and eighteen (20.9 percent) had made 1 or 2 calls and 149 (14.2 percent) had not made any telephone calls to the Extension office. The mean was 5.5, the low was 0 and the high was 50 telephone calls.

Farm Visits Received

Five hundred and one (47.9 percent) of the beef producers had received three or more farm visits from an Extension agent. Three

hundred and seventy-two (35.5 percent) had received 1 or 2 visits and 174 (16.6 percent) of the beef producers had not received any visits from the Extension agents during the past 12 months. The average was 3.5 visits, the minimum was 0 visits, and the maximum number of visits was 30.

IV. RELATIONSHIPS BETWEEN PRODUCER CHARACTERISTICS AND EXTENSION CONTACTS

Section IV presents findings regarding the relationship between selected characteristics of beef producers, their farm operation and the number of contacts they had with Extension agents over a 12 month period. The mean number of contacts are given in Table IV for each of the five methods of Extension contact and also for the total Extension contacts. The number of producers is given for each characteristic considered. The independent and dependent variables were tested by the analysis of variance F test to determine the strength of relationship between them. The .05 probability level was accepted as significant.

Major Agriculture Enterprise

As seen in Table IV, 776 of the 1,033 beef producers reported livestock as their major agriculture enterprise. These producers attended more Extension beef meetings than producers reporting in each of the other major agriculture enterprise areas. The 14 producers reporting dairy as their major agriculture enterprise averaged attending more Extension meetings and received more farm visits from Extension

TABLE IV

RELATIONSHIPS BETWEEN BEEF PRODUCER CHARACTERISTICS AND EXTENSION CONTACTS

Characteristic	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Major Agriculture Enterprise						
Livestock (n=776)	2.4	1.1	3.8	5.3	3.3	16.4
Crops (n=220)	2.5	0.8	3.3	5.2	3.3	15.8
Dairy (n=14)	3.9	0.7	4.2	6.7	6.3	22.0
Fruit/Vegetable (n=7)	2.2	0.7	3.7	10.4	6.0	23.1
Other (n=16)	2.6	0.8	4.8	6.1	5.1	22.4
Total (n=1033)	2.5	1.0	3.7	5.3	3.4	16.5
	$F = 0.9$ $p > .05$	$F = 2.1$ $p > .05$	$F = 0.9$ $p > .05$	$F = 1.5$ $p > .05$	$F = 3.6$ $p < .05$	$F = 1.4$ $p > .05$
Major Livestock Enterprise						
Beef (n=940)	2.4	1.0	3.7	5.3	3.4	16.1
Swine (n=75)	2.7	0.8	4.4	5.8	3.3	19.3
Sheep (n=1)	0.0	0.0	2.0	2.0	4.6	6.0
Horses (n=1)	3.0	1.0	2.0	2.0	2.0	9.0
Other (n=14)	3.5	0.8	3.6	4.6	1.0	21.1
Total (n=1031)	2.4	1.0	3.7	5.3	3.4	16.4
	$F = 1.0$ $p > .05$	$F = 0.81$ $p > .05$	$F = 0.58$ $p > .05$	$F = 0.31$ $p > .05$	$F = 2.9$ $p < .05$	$F = 1.2$ $p > .05$

TABLE IV (Continued)

Characteristic	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Farm Status						
Part-Time (n=483)	2.1	1.9	3.5	5.4	3.6	15.4
Full-Time (n=548	2.7	1.0	3.9	5.3	4.0	17.3
Total (n=1031)	2.4	1.0	3.7	5.3	3.9	16.4
	$F = 11.9$ $p < .05$	$F = 0.66$ $p > .05$	$F = 3.1$ $p > .05$	$F = 0.15$ $p > .05$	$F = 12.4$ $p < .05$	$F = 3.6$ $p > .05$
Major Source of Income						
Farm (n=557)	2.7	1.0	4.0	5.4	3.8	17.6
Non-Farm (n=475)	2.1	0.9	3.4	5.2	2.8	15.1
Total (n=1032)	2.4	1.0	3.7	5.3	3.4	16.4
	$F = 14.6$ $p < .05$	$F = 0.56$ $p > .05$	$F = 3.9$ $p < .05$	$F = 0.3$ $p > .05$	$F = 17.5$ $p < .05$	$F = 6.8$ $p < .05$

than did other producers. The seven producers reporting fruits and vegetables as their major agriculture enterprise made more telephone calls to Extension agents. Beef producers reporting fruits and vegetables as their major agriculture enterprise had the highest total Extension contacts. The mean number of contacts of all types during the past 12 months was 16.5. When the five methods of Extension contact and the total Extension contacts were tested by the analysis of variance F test, there was no significant difference in the number of Extension meetings attended, number of beef Extension meetings attended, office visits made, telephone calls to Extension, or total Extension contacts by major livestock enterprise. There was, however a significant relationship between the number of farm visits and the producers' major agriculture enterprise.

Major Livestock Enterprise

The 940 producers reporting beef as their major livestock enterprise averaged 16.1 total contacts with Extension over a 12 month period. Beef producers reporting swine as their major livestock enterprise made more office visits and telephone calls to Extension. The one producer reporting sheep had more farm visits than did other producers. Producers reporting other as their major livestock enterprise had attended more Extension meetings and had made more total Extension contacts than producers in the above categories. The average number of contacts made by all beef producers was 16.4. When each of the five methods of Extension contacts were tested by the analysis of variance F test, there was no significant difference in the number of Extension meetings attended,

office visits, telephone calls or total Extension contacts when major livestock enterprise was considered. There was, however, significant difference in the number of farm visits producers received by major livestock enterprises.

Farm Status

The 548 (53.2 percent) beef producers citing full-time as their farm status attended more Extension meetings, attended more beef Extension meetings, made more office visits, and received more farm visits than part-time producers. Full-time producers also had more total contacts with Extension agents. Part-time farmers did average more telephone calls to Extension than full-time farmers. The average number of contacts with Extension was 16.4 for the 1,031 producers. There was not a significant difference in Extension beef meetings attended, office visits made, telephone calls made or the total number of Extension contacts as to farming status of the producers. There was a significant difference, however, in the number of Extension meetings, and farm visits received by beef producers by farming status.

Major Source Income

The five hundred and fifty-seven (54.0 percent) beef producers reporting farm as their major source of income had more contacts of each type than did producers who were classed as non-farm. Beef producers who reported farm as the major source of income had an average of 17.3 total contacts compared to non-farm producers who averaged 15.4 total contacts. When these differences in the number of Extension

contacts were tested by the analysis of variance F test, significant differences were found between the number of Extension meetings attended, office visits made, farm visits received, and also the total Extension contacts. Therefore, there was a positive significant relationship between the number of Extension meetings attended, office visits made, farm visits received, and total Extension contacts and the major source of income.

V. RELATIONSHIPS BETWEEN RECOMMENDED BEEF PRODUCTION PRACTICES USED AND THE NUMBER OF EXTENSION CONTACTS

Section V presents findings regarding the relationship between the producers use of 15 recommended beef production practices and the number of contacts they had with Extension agents. The mean number of contacts are given in Table V for each of the five types of Extension contacts by whether or not producers were using each recommended practice. The independent and dependent variables were tested by the analysis of variance F test to determine the strength of relationship between them. The .05 probability level was accepted as significant.

Used Performance Tested Bull

Two hundred and ninety one (28.4 percent) of the 1,024 beef producers were using a performance tested bull. These producers averaged a greater number of Extension contacts of all types than producers not using the practice. The mean total Extension contacts for producers using the recommended practice was 22.8 compared to 13.9 for producers not using the practice. When tested by the analysis of

TABLE V

RELATIONSHIPS BETWEEN RECOMMENDED BEEF PRACTICES USED AND THE NUMBER OF EXTENSION CONTACTS

Recommended Practice	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Used Performance Tested Bull						
No (n=733)	2.2	0.8	3.2	4.3	3.0	13.9
Yes (n=291)	3.1	1.4	5.2	7.9	4.4	22.8
Total (n=1024)	2.4	1.0	3.7	5.3	3.4	16.4
	$F = 28.3$ $p < .05$	$F = 80.1$ $p < .05$	$F = 46.2$ $p < .05$	$F = 79.8$ $p < .05$	$F = 27.7$ $p < .05$	$F = 73.2$ $p < .05$
Bulls Met Minimum Requirement of PTB Sale						
No (n=500)	2.1	0.8	2.9	4.0	2.7	13.0
Yes (n=453)	2.8	1.2	4.7	6.9	4.3	20.5
Total (n=953)	2.4	1.0	3.7	5.4	3.4	16.5
	$F = 8.6$ $p < .05$	$F = 15.3$ $p < .05$	$F = 20.1$ $p < .05$	$F = 28.8$ $p < .05$	$F = 21.1$ $p < .05$	$F = 27.9$ $p < .05$
Herd Enrolled in TBCIP						
No (n=957)	2.4	0.9	3.6	5.1	3.3	15.9
Yes (n=59)	3.0	1.4	6.1	10.1	5.7	26.5

TABLE V (Continued)

Recommended Practice	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Total (n= 1024)	2.5	1.0	3.7	5.4	3.4	16.5
	$F = 3.0$ $p > .05$	$F = 7.4$ $p < .05$	$F = 19.2$ $p < .05$	$F = 40.7$ $p < .05$	$F = 21.6$ $p < .05$	$F = 26.2$ $p < .05$
Cows Pregnancy Checked						
No (n=902)	2.5	1.0	3.8	5.2	3.3	16.6
Yes (n=106)	2.3	1.0	3.8	6.9	4.2	18.3
Total (n=1008)	2.5	1.0	3.8	5.4	3.4	16.8
	$F = 0.7$ $p > .05$	$F = 0.0$ $p > .05$	$F = 0.0$ $p > .05$	$F = 7.6$ $p < .05$	$F = 4.4$ $p < .05$	$F = 1.1$ $p > .05$
Calves Vaccinated for Blackleg/Malignant Edema						
No (n=183)	1.7	0.5	2.6	3.5	2.6	11.6
Yes (n=838)	2.7	1.1	4.1	5.8	3.6	17.9
Total (n=1021)	1.6	1.0	3.8	5.4	3.4	16.8
	$F = 16.0$ $p < .05$	$F = 37.9$ $p < .05$	$F = 14.5$ $p < .05$	$F = 21.3$ $p < .05$	$F = 17.7$ $p < .05$	$F = 22.3$ $p < .05$

TABLE V (Continued)

Recommended Practice	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Used Growth Stimulant						
No (n=889)	2.3	1.1	3.4	4.8	3.2	15.2
Yes (n=136)	4.3	1.0	6.7	8.9	4.7	26.7
Total (n=1025)	2.5	1.0	3.8	5.4	3.4	16.7
	$F = 50.5$ $p < .05$	$F = 64.7$ $p < .05$	$F = 61.1$ $p < .05$	$F = 56.6$ $p < .05$	$F = 17.7$ $p < .05$	$F = 62.3$ $p < .05$
Mineral Fed Free Choice						
No (n=152)	1.7	0.7	2.6	3.5	2.3	11.2
Yes (n=875)	2.6	1.1	3.9	5.7	3.6	17.4
Total (n=1027	2.5	1.0	3.7	5.3	3.4	16.9
	$F = 15.1$ $p < .05$	$F = 12.9$ $p < .05$	$F = 12.1$ $p < .05$	$F = 16.8$ $p < .05$	$F = 7.3$ $p < .05$	$F = 322.5$ $p < .05$
Fed Magnesium Oxide						
No (n=361)	2.0	0.7	3.1	4.5	3.2	13.8
Yes (n=660)	2.7	1.1	4.1	5.8	3.5	17.9
Total (n=1021)	2.4	1.0	3.7	5.4	3.4	16.9

TABLE V (Continued)

Recommended Practice	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
	$F = 16.8$ $p < .05$	$F = 32.6$ $p < .05$	$F = 13.8$ $p < .05$	$F = 11.7$ $p < .05$	$F = 1.2$ $p > .05$	$F = 322.5$ $p < .05$
Stockpiled Fescue						
No (n=361)	2.3	1.0	3.3	5.0	3.3	15.8
Yes (n=660)	2.5	1.0	4.0	5.5	3.4	16.9
Total (n=1021)	2.5	1.0	3.7	5.4	3.4	16.9
	$F = 1.0$ $p > .05$	$F = 0.0$ $p > .05$	$F = 5.9$ $p < .05$	$F = 1.9$ $p > .05$	$F = 0.2$ $p > .05$	$F = 306.3$ $p < .05$
Needy Cows Special Treatment						
No (n=598)	2.3	0.9	3.6	5.1	3.1	15.0
Yes (n=418)	2.9	1.1	4.0	5.7	3.8	19.0
Total (n=1016)	2.7	1.0	4.0	5.4	3.5	17.8
	$F = 61.6$ $p < .05$	$F = 29.0$ $p < .05$	$F = 27.8$ $p < .05$	$F = 1.9$ $p > .05$	$F = 5.3$ $p < .05$	$F = 22.5$ $p < .05$
Used Protein With Low Quality Hay						
No (n=421)	2.2	0.9	3.4	4.8	3.0	15.0

TABLE V (Continued)

Recommended Practice	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Yes (n=515)	2.6	1.0	3.8	5.6	3.6	17.2
Total (n=936)	2.4	0.9	3.6	5.3	3.3	16.2
	$F = 7.5$ $p < .05$	$F = 3.3$ $p > .05$	$F = 1.4$ $p > .05$	$F = 4.1$ $p < .05$	$F = 5.8$ $p < .05$	$F = 4.9$ $p < .05$
Used Grub/Lice Control						
No (n=384)	2.1	0.7	3.2	4.1	2.7	14.1
Yes (n=648)	2.8	1.1	4.1	6.1	3.8	18.8
Total (n=1032)	2.5	1.0	3.8	5.4	3.4	17.1
	$F = 16.1$ $p < .05$	$F = 34.4$ $p < .05$	$F = 8.9$ $p < .05$	$F = 27.5$ $p < .05$	$F = 19.7$ $p < .05$	$F = 13.1$ $p < .05$
Vaccinated for Leptospirosis						
No (n=749)	2.4	0.9	3.4	4.6	3.0	15.0
Yes (n=273)	2.7	1.2	4.8	7.4	4.4	21.2
Total (n=1022)	2.5	1.0	3.8	5.4	3.4	16.6
	$F = 2.9$ $p > .05$	$F = 15.6$ $p < .05$	$F = 19.1$ $p < .05$	$F = 42.0$ $p < .05$	$F = 25.2$ $p < .05$	$F = 31.3$ $p < .05$

TABLE V (Continued)

Recommended Practice	Mean Number of Extension Contacts					
	Extension Meetings	Beef Meetings	Office Visits	Telephone Calls	Farm Visits	Total Contacts
Facilities Adequate						
No (n=362)	2.3	0.9	3.3	4.3	2.7	13.9
Yes (n=66)	2.7	1.1	4.1	6.0	3.8	18.2
Total (n=1028)	2.6	1.0	3.8	5.4	3.4	16.7
	$F = 4.8$ $p < .05$	$F = 7.0$ $p < .05$	$F = 6.3$ $p < .05$	$F = 17.9$ $p < .05$	$F = 16.8$ $p < .05$	$F = 17.1$ $p < .05$

variance F test there was a positive and significant relationship between producers using the recommended practice and each of the methods of Extension contact. Therefore, there was a significant relationship between producers using performance tested bulls and the number of contacts producers had over a 12 month period with Extension agents.

Bulls Met Minimum Requirements of PTB Sale

Four hundred and fifty three (47.5 percent) of the beef producers were using bulls that met requirements of the Performance Tested Bull Sale. Producers following the recommended practice had more Extension contacts of each type than producers not following the practice. The average number of Extension contacts by producers using the practice was 20.5 compared to 13.0 for producers not using the practice. When tested by the F test there was a positive and significant relationship between producers using bulls that met minimum requirements of the PTB Sale and each type of Extension contact and also for the total number of Extension contacts. Therefore, there was a significant relationship between producers using the recommended practice and the number of contacts they had over a 12 month period with Extension agents.

Herd Enrolled in TBCIP

Only 59 (5.8 percent) of the beef producers used the recommended practice of enrolling in the Tennessee Beef Cattle Improvement Program (TBCIP). Producers using the practice of TBCIP averaged more contacts

of each type than those producers not using this practice. The number of Extension contacts of all types by producers using the practice of enrolling in TBCIP was 18.3 compared to 16.6 by producers not using the practice. When tested by the F test the difference in numbers of contacts by each method was significant except meetings.

Cows Pregnancy Checked

One hundred and six (10.5 percent) of the 1,008 producers followed the practice of pregnancy checking cows. The producers following the recommended practice made more telephone calls, received more farm visits, and made more total Extension contacts than producers not using the practice. The 902 producers (89.5 percent) not using the practice attended more Extension meetings than producers using the practice and averaged the same number of beef Extension meetings attended and made the same number of office visits. The mean number of contacts by producers using the recommended practice was 18.3 compared to 16.6 for the producers not using the practice. When tested by the analysis of variance F test, there was not a significant relationship between the number of Extension meetings, beef Extension meetings, office visits, and use of the recommended practice. There was not significant relationship between total Extension contacts and use of this recommended practice. There was a positive and significant relationship, however, between the number of telephone calls made and number of farm visits received and the use of the practice of pregnancy checking cows.

Calves Vaccinated for Blackleg and Malignant Edema

Eight hundred and thirty eight (82.1 percent) of the beef producers vaccinated for blackleg and malignant edema. These producers on the average made more Extension contacts of each type than producers not using the practice. The mean number of total contacts by producers who vaccinated was 17.9 compared to 11.6 contacts by producers not using the practice. When tested by the F test there was a significant relationship between producers' use of the recommended practice and each type of Extension contact. Therefore, there was a significant relationship between producers' vaccination for blackleg and malignant edema and the number of contacts they made with Extension agents.

Used Growth Stimulant

Only 136 (13.3 percent) of the 1,025 beef producers responding on the survey used growth stimulants. Producers that did use the recommended practice had more Extension contacts through Extension meetings, office visits, telephone calls, and farm visits. Producers using growth stimulants on the average had a greater total number of Extension contacts (26.7 compared to 15.2) for producers not using growth stimulants. When tested by the F test there was a positive and significant relationship between each of the methods of contact as well as the total Extension contacts and the use of growth stimulants. Therefore, there was a positive and significant relationship between using growth stimulants and Extension contacts.

Mineral Fed Free Choice

Eight hundred and seventy five (85.2 percent) of the beef producers fed minerals free choice. On the average producers using the practice made more Extension contact of each type and also more total contacts (17.4 compared to 11.2) than producers not using the practice. When tested by the analysis of variance F test there was a significant relationship between using the practice and Extension contacts by each type of contact and also for the total Extension contacts. Therefore, producers who were feeding minerals free choice had made more contacts with Extension agents than those who were not using this practice.

Fed Magnesium Oxide

Six hundred and sixty (64.6 percent) of the 1,021 beef producers that fed magnesium oxide made more Extension contacts of each type except farm visits, than those who did not feed magnesium oxide. The total Extension contacts by producers using the practice was 17.9 compared to 13.8 for producers not using the practice. When tested by the analysis of variance F test there was a significant relationship between using the practice and the number of contacts through Extension meetings, beef meetings, office visits, telephone calls, and for total Extension contacts. There was not a significant relationship between using the practice and farm visits.

Stockpiled Fescue

Six hundred and seventy one (65.5 percent) of the 1,024 beef producers surveyed stockpiled fescue. The producers that used this

practice made more Extension contacts through Extension meetings, office visits, telephone calls, farm visits and more total contacts. Producers not stockpiling fescue attended the same number of beef meetings. Producers using the practice on the average made 16.9 total contacts compared to 15.8 for producers not using the practice. When tested by the F test only office visits and total contacts were significantly related to the use of this practice.

Needy Cows Special Treatment

Four hundred and eighteen (41.1 percent) of the beef producers gave special treatment to needy cows. The producers that used the recommended practice averaged making more Extension contacts of each type than those not using the practice. Producers using the practice on the average made 19 contacts compared to 15.7 by producers not using the practice. When tested by the F test there was a significant relationship between giving cows special treatment and the number of Extension contacts of all types except telephone calls. There was not a significant relationship between telephone calls and the use of the practice.

Used Protein With Low Quality Hay

Five hundred and fifteen (55.0 percent) of the beef producers used protein with low quality hay. The producers using the practice made more mean Extension contacts of each type and also more mean total contacts. The mean total contacts for producers using the practice was 17.2 compared to 15.0 by the producers not using the practice. When

tested by the F test there was not a significant relationship between producers using the practice and the number of beef meetings attended or office visits made. There was, however, a significant relationship between using protein with low quality hay and the number of meetings, telephone calls, farm visits, and total Extension contacts made.

Used Grub/Lice Control

Six hundred and forty eight (62.8 percent) of the 1,032 beef producers used grub and lice control measures. Producers that used the recommended practice had made more Extension contacts of each type than those not using the practice. Producers using the practice made 18.8 total Extension contacts compared to 14.1 by producers not using the practice. When tested by the analysis of variance F test, a significant relationship was shown between each Extension contact method as well as total Extension contacts and the use of this practice. Therefore, there was significant relationship between beef producers using grub and lice control measures and the number of contacts beef producers had with Extension agents.

Vaccinated for Leptospirosis

Two hundred and seventy three (26.7 percent) of the beef producers vaccinated for leptospirosis. The producers that used the recommended practice had made more Extension contacts of each type than those not using the practice. When tested by the F test there was a positive but not significant relationship between the use of the practice and Extension meetings. There was, however, a positive and significant

relationship between vaccinating for leptospirosis and the number of Extension contacts through beef meetings, office visits, telephone calls, farm visits and also total Extension contacts.

Facilities Adequate

Six hundred and sixty six (64.8 percent) of the 1,028 beef producers surveyed had adequate beef facilities compared to 362 (35.2 percent) that did not have adequate facilities. The producers that had adequate facilities had made more contacts through Extension meetings, beef Extension meetings, office visits, telephone calls, and farm visits. Producers using this recommended practice had made a total of 18.2 Extension contacts compared to 13.9 by producers not using the practice. When tested by the analysis of variance F test there was a positive and significant relationship between each type of contact, the total Extension contacts, and having adequate beef cattle facilities.

VI. RELATIONSHIPS BETWEEN THE USE OF RECOMMENDED BEEF PRODUCTION PRACTICES AND PARTICIPATION IN THE TENNESSEE BEEF CATTLE IMPROVEMENT PROGRAM

Section VI presents data in Table VI regarding the relationship between beef producers use of recommended beef production practices and participation or non-participation in the Tennessee Beef Cattle Improvement Program (TBCIP). Table VI gives the number and percent of producers using the recommended beef production practices for participating and

TABLE VI

RELATIONSHIPS BETWEEN THE USE OF RECOMMENDED BEEF PRODUCTION PRACTICES AND PARTICIPATION OR NON-PARTICIPATION IN THE TENNESSEE BEEF CATTLE IMPROVEMENT PROGRAM

Recommended Practice	Producer Status			
	TBCIP		Non-TBCIP	
	Number	Percent	Number	Percent
Used PT Bull				
Yes	42	71.2	247	25.9
No	17	23.8	707	74.1
Total	59	100.0	954	100.0
	$x^2 = 53.7$	df = 1	$p < 0.05$	
Bulls Met Minimum Requirement PTB Sale				
Yes	51	89.5	402	45.1
No	6	10.5	489	54.9
Total	57	100.0	891	100.0
	$x^2 = 40.5$	df = 1	$p < 0.05$	
Length Breeding Season 3 Months or Less				
Yes	19	34.5	222	25.6
No	36	65.5	645	74.4
Total	55	100.0	867	100.0
	$x^2 = 2.1$	df = 1	$p < 0.05$	
Age Heifers Bred 15 Months or Less				
Yes	52	92.9	746	85.3
No	4	7.1	130	14.7
Total	56	100.0	876	100.0
	$x^2 = 2.5$	df = 1	$p < 0.05$	

TABLE VI (Continued)

Recommended Practice	Producer Status			
	TBCIP		Non-TBCIP	
	Number	Percent	Number	Percent
Weight Heifers Bred 600 lb. or More				
Yes	56	95.0	900	94.0
No	3	5.0	57	6.0
Total	59	100.0	957	100.0
	$x^2 = .01$	df = 1		$p > 0.05$
Cows Checked--Breeding Season 1 or More Times				
Yes	54	91.6	864	90.3
No	5	8.4	93	9.7
Total	59	100.0	957	100.0
	$x^2 = .31$	df = 1		$p > 0.05$
Cows Pregnancy Checked				
Yes	16	28.1	90	9.6
No	41	71.9	852	90.4
Total	57	100.0	942	100.0
	$x^2 = 19.7$	df = 1		$p < 0.05$
Stockpiled Fescue				
Yes	46	78.0	616	64.8
No	13	22.0	335	35.2
Total	59	100.0	951	100.0
	$x^2 = 3.7$	df = 1		$p > 0.05$
Needy Cows Special Treatment				
Yes	36	61.0	380	39.7
No	22	39.0	565	60.3
Total	58	100.0	945	100.0
	$x^2 = 11.7$	df = 1		$p < 0.05$

TABLE VI (Continued)

Recommended Practice	Producer Status			
	TBCIP		Non-TBCIP	
	Number	Percent	Number	Percent
Used Protein With Low Quality Roughage				
Yes	41	77.4	474	54.2
No	12	22.6	401	45.8
Total	53	100.0	875	100.0
	$x^2 = 10.0$		df = 1	$p < 0.05$
Fly Control Program Combination				
Yes	24	41.4	325	34.2
No	34	58.6	625	65.8
Total	58	100.0	950	100.0
	$x^2 = 1.25$		df = 1	$p < 0.05$
Grub/Lice Control				
Yes	54	91.5	582	60.9
No	5	8.5	373	39.1
Total	59	100.0	955	100.0
	$x^2 = 20.9$		df = 1	$p < 0.05$
Vaccinated for Leptospirosis				
Yes	32	54.2	239	25.1
No	27	45.8	713	74.9
Total	59	100.0	952	100.0
	$x^2 = 22.6$		df = 1	$p < 0.05$
Adequate Facilities				
Yes	52	88.1	605	63.5
No	7	11.9	348	36.5
Total	59	100.0	951	100.0
	$x^2 = 13.8$		df = 1	$p < 0.05$

TABLE VI (Continued)

Recommended Practice	Producer Status			
	TBCIP		Non-TBCIP	
	Number	Percent	Number	Percent
Cows Checked Calving 2 Or More Times				
Yes	36	64.3	404	43.5
No	20	35.7	524	56.5
Total	56	100.0	928	100.0
	$x^2 = 9.74$	df = 1		$p < 0.05$
Heifers Checked Calving 2 or More Times				
Yes	39	72.2	472	52.9
No	15	27.8	422	47.1
Total	54	100.0	894	100.0
	$x^2 = 7.7$	df = 1		$p < 0.05$
Calves Castrated By 3 Months				
Yes	21	39.6	423	47.5
No	32	60.4	467	52.5
Total	53	100.0	890	100.0
	$x^2 = 1.3$	df = 1		$p < 0.05$
Calves Vaccinated Against Blackleg and Malignant Edema				
Yes	52	89.7	776	81.9
No	6	10.3	172	18.1
Total	58	100.0	948	100.0
	$x^2 = 1.8$	df = 1		$p > 0.05$
Used Growth Stimulant				
Yes	19	32.8	114	11.9
No	39	67.2	840	88.1
Total	58	100.0	954	100.0
	$x^2 = 19.0$	df = 1		$p < 0.05$

TABLE VI (Continued)

Recommended Practice	Producer Status			
	TBCIP		Non-TBCIP	
	Number	Percent	Number	Percent
Mineral Free Choice				
Yes	55	93.2	809	84.7
No	4	6.8	146	15.3
Total	59	100.0	955	100.0
	$x^2 = 2.6$	df = 1		$p > 0.05$
Fed Magnesium Oxide				
Yes	43	72.9	613	64.4
No	16	27.1	339	35.6
Total	59	100.0	952	100.0
	$x^2 = 1.4$	df = 1		$p > 0.05$

non-participating TBCI producers. The data were statistically analyzed by the chi square (x^2) test. Chi square values achieving the .05 level of probability were considered significant.

Used Performance Tested Bull

Forty-two (71.2 percent) of the 59 beef producers enrolled in the TBCIP were using a performance tested bull compared to 247 (25.9 percent) of the 954 producers who were not enrolled in the program. These data indicate a larger percentage of producers participating in the TBCIP who were using the recommended practice than non-participating producers. Differences in the use of performance tested bulls among those participating and those not participating in the TBCIP were found significant when tested by the chi square test at one degree of freedom. Therefore, there was a significant relationship between participation in the TBCIP and the use of the practice. A significantly higher percent of producers participating in the TBCIP were using performance tested bulls than non-participants in the TBCIP.

Bulls Met Minimum Requirements of PTB Sale

Over 89 percent of the beef producers participating in the TBCIP used bulls that met the minimum requirements of the Performance Tested Bull Sale compared to 45.1 percent of the non-participating producers. These data indicate a greater percentage of producers participating in the TBCIP using the recommended practice than non-participating producers. These differences in the use of the recommended practice among participants and non-participants in the TBCIP were found

significant when tested by the x^2 test at one degree of freedom. Therefore, there was a significant relationship between the recommended practice of using bulls that met minimum requirements of the PTB Sale and participation in the TBCIP. A significantly higher percent of participating TBCIP producers were using the bulls that met minimum requirements of the PTB Sale than non-participants in the TBCIP was found.

Length of Breeding Season

Over 34 percent of the producers participating in the TBCIP were limiting the breeding season to three months or less compared to 25.6 percent of the non-participating producers in the TBCIP. These data indicate a larger percentage of producers who were participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants in the TBCIP were found significant when tested by the x^2 test.

Age Heifers Bred

Fifty-two (92.9 percent) of the 56 producers participating in the TBCIP bred heifers at 15 months of age or older compared to 746 (85.3 percent) of the non-participating producers. These data indicate a larger percentage of producers who were participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants in the TBCIP were found significant when tested by the x^2 test. Therefore, there was a significant relationship between

participation in the TBCIP and the use of the recommended practice. A significantly higher percent of producers enrolled in the TBCIP were breeding heifers after 15 months of age than non-participants in the TBCIP.

Weight Heifers Bred

Fifty-six (95.0 percent) of the 59 beef producers participating in the TBCIP and 900 (94.0 percent) of the 957 producers not participating in the TBCIP waited until heifers weighed at least 600 pounds before breeding. These data indicate that the percentage of producers enrolled in the TBCIP using the recommended practice was about the same as for non-participating producers. These differences were found not to be significant when tested by the chi square (x^2) test. Therefore, there was not a significant relationship between participation in the TBCIP and using the practice of waiting until heifers were 600 pounds before breeding. There was a higher, but not significantly higher, percent of producers participating in the TBCIP breeding heifers over 600 pounds than non-participants in the TBCIP.

Cows Checked--Breeding Season

Almost 92 percent of the beef producers participating in the TBCIP and 90.3 percent of the producers not participating in the TBCIP checked their cows at least one time a day during the breeding season. These data indicate that the percentage of producers participating in the TBCIP using the recommended practice was about the same as for non-participating producers. These observed differences were found not to be significant when tested by the x^2 test. Therefore, there was not a

significant relationship between participation in the TBCIP and checking cows at least once a day during the breeding season. There was a higher, but not a significantly higher, percent of producers participating in the TBCIP who checked cows one or more times than non-participants in the TBCIP.

Cows Pregnancy Checked

A total of 28 percent of the producers participating in the TBCIP pregnancy checked cows compared to 9.2 percent of the producers not participating in the TBCIP. These data indicate a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These observed differences in the use of the practice and participation or non-participation in the TBCIP were found significant when tested by the x^2 test. Therefore, there was a significant relationship between pregnancy checking cows and participation in the TBCIP. A significantly higher percent of producers participating in the TBCIP pregnancy checked cows than non-participants in the TBCIP.

Stockpiled Fescue

Of the beef producers participating in the TBCIP, 78 percent stockpiled fescue compared to 64.8 percent of the non-participants in the TBCIP. These data indicate that a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These observed differences in the use of the practice by participants or non-participants in the TBCIP were not

significant when tested by the x^2 test at one degree of freedom. Therefore, there was not a significant relationship between participation in the TBCIP and use of the practice. There was a higher but not significantly higher percent of producers participating in the TBCIP stockpiling fescue than non-participants in the TBCIP.

Gave Needy Cows Special Treatment

Of the beef producers participating in the TBCIP, 61 percent were giving needy cows special treatment compared to 39.7 percent of the non-participants in the TBCIP. These data indicate a higher percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants were significant when tested by the x^2 test. Therefore, there was a significant relationship between participation in the TBCIP and the use of the practice. A significantly higher percent of producers participating in the TBCIP gave needy cows special treatment than non-participants in the TBCIP.

Used Protein With Low Quality Hay

Over 71 percent of the beef producers participating in the TBCIP fed additional protein with low quality roughage compared to 54.2 percent of the non-participants in the TBCIP. These data indicate a higher percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These observed differences in the use of the practice by participants and

non-participants in the TBCIP were significant when tested by the x^2 test. Therefore, there was a significant relationship between participation in the TBCIP and the use of the practice. A significantly higher percent of producers participating in the TBCIP fed additional protein with low quality hay than non-participants.

Fly Control Program

Over 41 percent of the beef producers participating in the TBCIP used a combination of methods for fly control compared to 34.2 percent of the non-participants. These data indicate a higher percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. Differences in the use of the practice by participants and non-participants in the TBCIP were significant when tested by the x^2 test. Therefore, there was a significant relationship between participation in the TBCIP and use of the practice. A significantly higher percent of producers participating in the TBCIP used a combination of fly control methods than did non-participants.

Used Grub/Lice Control

Fifty-four (91.5 percent) of the beef producers participating in the TBCIP used grub and lice control compared to 582 (60.9 percent) of the non-participants in the TBCIP. These data indicate a higher percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants

in the TBCIP were found significant when tested by the chi square test. Therefore, there was a significant relationship between participation in the TBCIP and use of the practice. A higher percent of producers participating in the TBCIP used grub and lice control than non-participants.

Vaccinated for Leptospirosis

The survey showed 54 percent of the beef producers participating in TBCIP vaccinated for leptospirosis compared to 25.1 percent of the non-participants. These data indicate a higher percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants in the TBCIP were significant. Therefore, there was a significant relationship between participation in the TBCIP and use of the practice. A higher percent of producers participating in the TBCIP vaccinated for leptospirosis than non-participants in the TBCIP.

Adequate Working Facilities

Fifty-two (88.1 percent) of the 59 beef producers participating in the TBCIP had adequate working facilities compared to 605 (63.5 percent) of the non-participants in the TBCIP. These data indicate a higher percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants in the TBCIP were found significant when tested by the chi

square (x^2) test. Therefore, there was a significant relationship between participation in the TBCIP and use of the practice. A significantly higher percent of producers participating in the TBCIP had adequate working facilities than non-participants in the TBCIP.

Cows Checked--Calving Season

Over 64 percent of the producers participating in the TBCIP compared to 43.5 percent of those not participating in the TBCIP checked cows during the calving season at least twice a day. These data indicate a larger percentage of TBCIP participants checked cows twice a day during the calving season than did non-participants in TBCIP. These differences in the use of the recommended practice between participants and non-participants were significant. Therefore, there was a significant relationship between participation in the TBCIP and the use of the recommended practice of checking cows twice a day or more during the calving season. The recommended practice of checking cows twice in the calving season was used by a significantly greater percentage of TBCIP participants than non-participants in the TBCIP.

Heifers Checked Calving

Over 72 percent of the beef producers participating in the TBCIP were checking heifers two or more times per day as compared to 52.9 percent of the non-participating producers. These data indicate a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of performance tested bulls by participants and

non-participants in the TBCIP were found significant when tested by the x^2 test. Therefore, there was a significant relationship between participation in the TBCIP and the use of the practice. A significantly higher percent of producers participating in the TBCIP were checking heifers two or more times than non-participants in the TBCIP.

Age Calves Castrated

Over 39 percent of the beef producers enrolled in the TBCIP were castrating calves before three months of age compared to 47.5 percent of the non-participating producers. These data indicate a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. Differences in the use of the practice of castrating before three months and participation or non-particiation in the TBCIP were found significant when tested by the x^2 test. Therefore, there was a significant relationship between participation in the TBCIP and the use of the practice. A significantly higher percent of producers participating in the TBCIP were castrating calves before three months than non-participants in the TBCIP.

Calves Vaccinated for Blackleg and Malignant Edema

Fifty-two (89.7 percent) of the 58 producers participating in the TBCIP were vaccinating calves for blackleg and malignant edema compared to 776 (81.9 percent) of the non-participants in the TBCIP. These data indicate a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants

or non-participants in the TBCIP were not significant, however, when tested by the x^2 test. Therefore, there was not a significant relationship between participation in the TBCIP and the use of the practice. There was a higher, but not significantly higher, percent of producers participating in the TBCIP that were vaccinating calves for blackleg and malignant edema than non-participants in the TBCIP.

Used Growth Stimulant

Over 32 percent of the beef producers participating in the TBCIP were using growth stimulants compared to 11.9 percent of the non-participants in the TBCIP. These data indicate a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. Differences in the use of the practice and participation or non-participation in the TBCIP were found significant when tested by the chi square test. Therefore, there was significant relationship between participation in the TBCIP and the use of the practice. A significantly higher percent of producers participating in the TBCIP were using growth stimulants than non-participants in the TBCIP.

Mineral Fed Free Choice

Fifty-five (93.2 percent) of the producers participating in the TBCIP were feeding minerals free choice compared to 809 (84.2 percent) of the non-participants in the TBCIP. These data indicate a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. Differences in

the use of the practice and participation or non-participation in the TBCIP were not significant. Therefore, there was not a significant relationship between participation in the TBCIP and the use of the practice.

Fed Magnesium Oxide

Almost 73 percent of the beef producers participating in the TBCIP fed magnesium oxide to prevent grass tetany compared to 64.4 percent of the non-participants in the TBCIP. Therefore, a larger percentage of producers participating in the TBCIP were using the recommended practice than non-participating producers. These differences in the use of the practice by participants and non-participants in the TBCIP were not significant. Therefore, there was not a significant relationship between participation in the TBCIP and the use of the practice. There was a higher, but no significantly higher, percent of producers participating in the TBCIP feeding magnesium oxide than non-participants in the TBCIP.

VII. RELATIONSHIPS BETWEEN THE NUMBER OF EXTENSION CONTACTS AND BEEF PRODUCERS PARTICIPATION IN THE TBCIP

Section VII presents findings regarding the relationship between the number of contacts producers had with Extension over a 12 month period and their participation or non-participation in the Tennessee Beef Cattle Improvement Program. The mean number of contacts are given for each contact method. Differences were tested by the one way analysis of variance test. F values which achieved the .05 level was considered significant.

Extension Meetings of All Types and TBCIP Participation

Beef producers participating in the TBCIP attended an average of three Extension meetings of all types compared to 2.4 meetings attended by non-participating producers as seen in Table VII. These observed differences in Extension meetings attended were not significant, however, at the .05 level when tested by the analysis of variance F test. Therefore, there was not a significant relationship in participation in the TBCIP and the number of Extension meetings attended. TBCIP participants attended more, but not significantly more, Extension meetings than non-participating producers.

Beef Extension Meetings and TBCIP Status

Beef producers participation in the TBCIP attended 1.4 beef Extension meetings compared to 0.9 beef Extension meetings by non-participating producers. These data indicate that producers participating in the TBCIP attended more beef Extension meetings than did non-participating producers. These differences in beef meetings attended were significant at the .05 level when tested by the analysis of variance F test. Therefore there was a significant relationship between the number of beef Extension meetings attended and participation in the TBCIP. TBCIP participating producers attended significantly larger numbers of beef Extension meetings than non-participating producers.

Office Visits and TBCIP Status

Beef producers participating in the TBCIP made 6.1 office visits to Extension compared to 3.6 office visits by non-participating

TABLE VII

RELATIONSHIPS BETWEEN THE NUMBER OF EXTENSION CONTACTS AND BEEF PRODUCERS PARTICIPATION IN THE TBCIP

Type of Extension Contact	TBCIP Status	
	Participation Mean Contacts	Non-Participation Mean Contacts
Extension Meetings	3.0	2.4
	$F = 3.0$, df = 1, $p > 0.05$	
	N = 59	N = 956
Beef Extension Meetings	1.4	0.9
	$F = 7.4$, df = 1, $p < 0.05$	
	N = 59	N = 955
Office Visits	6.1	3.6
	$F = 19.2$, df = 1, $p < 0.05$	
	N = 59	N = 956
Telephone Calls	10.1	5.1
	$F = 40.7$, df = 1, $p < 0.05$	
	N = 59	N = 957
Farm Visits	5.7	3.3
	$F = 21.6$, df = 1, $p < 0.05$	
	N = 59	N = 957
Total Extension Contacts	26.5	15.9
	$F = 26.2$, df = 1, $p < 0.05$	
	N = 59	N = 957

producers. These data indicate that producers participating in the TBCIP made more office visits to Extension than did non-participating producers. These differences in office visits were significant at the .05 level when tested by the F test. Therefore, there was a significant relationship between the number of office visits and participation in the TBCIP. TBCIP participating producers made significantly larger numbers of office visits than non-participating producers.

Telephone Calls and TBCIP Status

Beef producers participating in the TBCIP made 10.1 telephone calls while non-participating producers made 5.1. These data indicate that producers participating in the TBCIP made more telephone calls to Extension than did non-participating producers. These differences in telephone calls were significant at the .05 level when tested by the F test. Therefore, there was a significant relationship between the number of office visits and participation in the TBCIP. TBCIP participating producers made significantly larger numbers of telephone calls to Extension than non-participating producers.

Farm Visits and TBCIP Status

Beef producers participating in the TBCIP received 5.7 farm visits by Extension agents compared to 3.3 farm visits of non-participating producers. These data indicate that producers participating in the TBCIP received more farm visits to Extension than did non-participating producers. These differences in farm visits were significant at the .05 level when tested by the F test. Therefore,

there was a significant relationship between the number of farm visits received and participation in the TBCIP. TBCIP participants received significantly more farm visits than non-participating producers.

Total Extension Contacts and TBCIP Status

Beef producers participating in the TBCIP made 26.5 total contacts with Extension compared to 15.9 total contacts of non-participating producers. These data indicate that participating producers made more total contacts with Extension than did non-participating producers. These differences in total contacts were significant at the .05 level when tested by the F test. Therefore, there was a significant relationship between the number of total contacts and participation in the TBCIP. TBCIP participants had significantly more total contacts than non-participating producers.

CHAPTER IV

SUMMARY OF MAJOR FINDINGS

I. PURPOSES AND SPECIFIC OBJECTIVES

Purposes

The purposes of this study were to determine the characteristics of beef cattle producers' production practices, the numbers of contacts they had with Extension, and the relationships between their numbers of Extension contacts and the use of recommended beef production practices. Also, the purpose of this study was to determine the relationship between participation in the Tennessee Beef Cattle Improvement Program, Extension contacts, and the use of recommended practices.

Specific Objectives

The specific objectives of this study were:

1. To characterize Tennessee beef cattle producers and their beef production operations.

2. To determine the extent to which beef producers were using recommended beef production practices.

3. To determine the exxtent to which beef producers had contact with Extension agents.

4. To determine the relationship between selected characteristics of the beef producer, their farm operation and the extent of contact with Extension.

5. To determine the relationship between the use of recommended beef production practices and extent of Extension contact.

6. To determine the relationship between the use of recommended beef production practices and participation in the Tennessee Beef Cattle Improvement Program.

7. To determine the relationship between Extension contacts and participation in the Tennessee Beef Cattle Improvement Program.

II. METHOD OF INVESTIGATION

A total of 1,047 Tennessee beef producers were randomly selected in 58 beef producing counties. The population of the study included beef cow-calf producers that had 15 or more beef females (12-15 months of age or older) in their herd the previous year to survey.

The 1977 Tennessee Beef Cow-Calf Producer Survey and the 1977 Tennessee Pasture (forage) Survey was used to collect data from the beef producers. Extension agents used the "nth" number technique on their county list of beef producers to identify producers to be surveyed. Alternate producers were selected to replace producers who could not be interviewed for some reason. Extension agents obtained the data by personal interviews with the beef producers.

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

values, and percentages were computed and given for the variables where appropriate.

III. MAJOR FINDINGS

Major findings were classified and presented under headings related to objectives of the study.

Characteristics of Beef Cow-Calf Operations in 1977

Beef producer characteristic findings and beef production characteristic findings will be presented in this section.

Producer characteristics.

1. It was found that 93 percent of the beef producers owned their farm land.

2. Fifty-three percent of the beef producers were full-time farmers.

3. Farming was the major source of income for 54 percent of the beef producers.

4. Fifty-six percent of the farmers were 50 years old or older. The average age was 50 years.

Production characteristics.

1. The major livestock enterprise of 91 percent of the producers was beef.

2. The major agriculture enterprise of 75 percent of the producers was livestock.

3. The average size cow herd in 1977 was 48 breeding age cows. The low number of cows reported was 10 and the high was 480.

4. The average number of acres of beef pasture was 130 acres. The low acreage was 18 and the high was 1,800.

5. The average number of calves raised to weaning was 44; the low was 10 and the high was 450.

6. The average number of bulls used was 2 and the high number was 27.

7. The average number of years beef had been raised on the farm was 22 years.

Use of Recommended Beef Production Practices

The recommended beef production practices are presented by categories under Cow Herd Management, Herd Bull Management, Replacement Herd Management, Calf Crop Management, Feeding Management, and Herd Health Management.

Cow herd management.

1. Only 6 percent of the beef producers were enrolled in the TBCIP.

2. The average length of breeding season was five months. The recommended practice of having a breeding season of not more than three months was followed by 26 percent.

3. The cows were checked during the breeding season at least once a day by 90 percent of the producers.

4. Only 10 percent of the producers pregnancy checked their cows.

5. The cows were checked at least once a day during the calving season by 98 percent.

6. At least 65 percent of the producers felt they had adequate working facilities.

Herd bull management.

1. Performance tested bulls were used by 28 percent of the producers.

2. Bulls that met the minimum requirements of the PTB Sale were used by 48 percent of the producers.

Replacement herd management.

1. The average age for breeding heifers was 17 months. The percentage of producers breeding their heifers between 16 and 24 months was 85.

2. Heifers were bred between 600 and 800 pounds by 94 percent of the producers.

3. Heifers were checked at least twice a day during calving season by 98 percent of the producers.

Calf crop management.

1. Calves were castrated before three months of age by 47 percent of the producers.

2. Calves were vaccinated for blackleg and malignant edema by 82 percent of the producers.

3. Growth stimulants were not used by 87 percent of the producers as a production management tool.

Feeding management.

1. Minerals were fed free choice by 85 percent of the producers.

2. Magnesium oxide was fed free choice by 64 percent.

3. Fescue was stockpiled by 66 percent of the producers.

4. Needy cows were given special treatment by 41 percent.

5. Protein was fed with low quality roughage by 55 percent of the producers.

Herd health management.

1. A backrub was used by 50 percent of the beef producers to control flies. Nothing was used by 36 percent to control flies while 34 percent used a combination of fly control methods.

2. A grub/lice control material was used by 63 percent.

3. Only 27 percent vaccinated for leptospirosis.

4. Cows were wormed one time during the year by 85 percent of the beef producers.

Beef Producers Contact with Extension

1. At least one Extension meeting of any type had been attended by 79 percent of the beef producers. The average number of Extension meetings attended by beef producers was three.

2. At least 1 Extension beef meeting was attended by 61 percent of the producers.

3. The Extension office had been visited by 78 percent of the producers at least once while 51 percent had visited 3 or more times. The average number of visits to the Extension office by beef producers was four.

4. At least 1 telephone call to Extension was made by 86 percent during the past 12 months. Three or more calls had been made by 65 percent of all producers and an average of 6 telephone calls had been made during the past 12 months by all producers.

5. During the past 12 months, 83 percent of the beef producers had received farm visits by Extension agents. Three or more visits were reported by 48 percent and the average number of farm visits received was 4.

Relationships Between Producer Characteristics and Extension

1. The average number of contacts beef producers had with Extension by all methods was 17. There was a significant difference in the number of farm visits and the number of telephone calls to Extension by the type of major farm enterprise. There was not a significant difference in the number of Extension contacts through Extension meetings, Extension beef meetings, office visits, or total Extension contacts by major agricultural enterprise.

2. The average number of contacts with Extension during the previous year by beef producers reporting beef as their major livestock enterprise was 16. There was a significant difference in the number of Extension contacts through farm visits by the major livestock enterprises. There was not a significant difference in the number of Extension contacts and the major livestock enterprises through Extension meetings, beef Extension meetings, office visits, and telephone calls.

3. Full-time farmers averaged slightly more total contacts with Extension than part-time farmers. Full-time farmers averaged 17 contacts versus 15 contacts by part-time farmers. These differences were not found to be significant.

4. There was a significant difference in the total number of Extension contacts by the producers' major source of income. The number of office visits, and farm visits also were significantly greater by those who depended upon the farm as their major source of income. There was not a significant difference in the number of contacts through beef meetings or telephone calls by those who depended upon the farm as compared to those whose major source of income was non-farm.

Relationships Between Recommended Beef Production Practices Used and the Number of Extension Contacts

1. There was a significant relationship in the total number of contacts beef producers had with Extension and the following recommended practices. In each case, producers who used the practice had made significantly more total contacts with Extension agents during the past 12 months.

a. Used performance tested bull

b. Bulls met minimum requirements of PTB Sale

c. Herd enrolled in TBCIP

d. Calves vaccinated for blackleg/malignant edema

e. Used growth stimulant

f. Mineral fed free choice

g. Fed magnesium oxide

h. Stockpiled fescue

i. Needy cows special treatment

j. Used protein with low quality forage

k. Used grub/lice control

l. Vaccinated for leptospirosis

m. Facilities adequate

Relationships Between the Use of Recommended Beef Production Practices and Participation in the TBCIP

1. There was a significant relationship between participation in the TBCIP and the use of 15 of 21 variables studied. In each case a significantly higher percentage of producers who were participants in the TBCIP were using the practice than those who were not participating in the program.

a. Using Performance Tested Bull

b. Bulls met minimum requirements of the PTB Sale

c. Breeding season three months or less

d. Heifers bred 15 months or less

e. Cows pregnancy checked

f. Needy cows special treatment

g. Used protein with low quality roughage

h. Used a combination fly control program

i. Used grub and lice control

j. Vaccinated for leptospirosis

k. Used adequate facilities

l. Cows checked calving two or more times

m. Heifers checked calving two or more times

n. Calves castrated by three months

o. Used growth stimulant

Relationships Between the Number of Extension Contacts and Beef Producers Participation in the TBCIP

There was a significant relationship between the total number of Extension contacts with beef producers and participation in the TBCIP.

IV. IMPLICATIONS AND RECOMMENDATIONS

Based upon the findings of this study, the implications and recommendations below are drawn.

1. Almost 50 percent of the beef producers surveyed were part-time farmers and almost 50 percent received the major source of their income from non-farm sources. It may be implied that Extension agents have a wide range of clientele in beef production. It seems important that Extension continue to have contacts with all beef producers regardless of farm status or major source of income.

2. Almost one-fourth of the producers surveyed had no contacts with Extension through one or more of the contact methods (i.e., meetings, office visits, telephone calls, or farm visits). The highly significant relationship between Extension contacts and practice use would indicate the need to reach this group.

3. Only 5.8 percent of the beef producers were enrolled in the TBCIP. However, there was a significant relationship in the total number of Extension contacts and participation in the TBCIP. There was also a significant relationship between the use of 15 of the 21 major practices surveyed and participation in the TBCIP. This would indicate that an increased effort to enroll beef producers in the TBCIP would increase the number of contacts with beef producers and increase the use of recommended beef production practices.

V. RECOMMENDATIONS FOR USE OF FINDINGS AND FURTHER STUDY

1. As long as beef production continues to be a major agriculture enterprise in Tennessee, similar studies should be made periodically to determine the use of recommended practices by beef producers and the relationship between practice use and Extension contacts.

2. The study findings should be useful at the state, district, and county level by Extension personnel to help improve Extension's educational programs for beef producers.

3. Similar studies should be conducted in other work areas in Tennessee to determine the effect of educational programs on the clientele.

4. A continuing effort should be made to improve surveys used to collect data from beef producers. A well-defined and carefully reported percent calf crop would provide a means of determining yield measurements in beef production.

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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 (1) Card Number

___ ___ ___ (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?

TAEE 416J1a
Revised 1/25/77

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

RECOMMENDED PRACTICES USED LAST YEAR

____ (30) 1. Was one or more Performance Tested bulls used? (1 = No, 2 = Yes; 9 = Does not apply)

____ (31) 2. Do bulls being used meet minimum requirements of the Breeder Performance Tested Bull Sale? (1 = No, 2 = Yes, 9 = Does not apply)

____ (32) 3. Was herd enrolled in TBCIP or breed performance testing program? (1 = No, 2 = Yes, 9 = Does not apply)

____ (33) 4. What is length of breeding season? Record number of months. (9 = Does not apply)

____ (34) ____ (35) 5. At what age were replacement heifers bred? Record number of months. (99 = Does not apply)

____ (36) ____ (37) ____ (38) 6. At what weight were replacement heifers bred? (Record actual weight - 999 = Does not apply)

____ (39) 7. How many times per day were cows checked during breeding season? (Record actual number - 9 = Does not apply)

____ (40) 8. Were cows pregnancy checked following the breeding season? (1 = No, 2 = Yes, 9 = Does not apply)

____ (41) 9. What type of system was used to provide permanent identification of cattle? (Select one: 1 = Ear Tag, 2 = Neck Chain, 3 = Fire Brand, 4 = Freeze Brand, 5 = None, 9 = Does not apply)

____ (42) 10. How many times per day were cows checked during the calving season? (Record actual number - 9 = Does not apply)

____ (43) 11. How many times per day were first calf heifers checked during the calving season? (Record actual number - 9 = Done not apply)

____ (44) 12. At what age were calves castrated and dehorned? (Record age in months - 9 = Does not apply)

____ (45) 13. Were calves vaccinated for blackleg and malignant edema? (1 = No, 2 = Yes, 9 = Does not apply)

____ (46) 14. Were growth stimulants used? (1 = No, 2 = Yes, 9 = Does not apply)

____ (47) 15. Were cattle allowed free access to a recommended mineral mixture? (1 = No, 2 = Yes, 9 = Does not apply)

____ (48) 16. Were cows provided magnesium oxide to aid in preventing grass tetany? (1 = No, 2 = Yes, 9 = Does not apply)

_____ (49) 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

_____ (50) 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

_____ (51) 19. Was some fescue stockpiled for use as late fall or early winter grazing? (1 = No, 2 = Yes, 9 = Does not apply)

_____ (52) 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)

_____ (53) 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)

_____ (54) 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)

_____ (55) 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

_____ (56) 24. Were recommended grub and lice control practices followed? (1 = No, 2 = Yes, 9 = Does not apply

_____ (57) 25. Were brood cows and replacements vaccinated for leptospirosis? (1 = No, 2 = Yes, 9 = Does not apply

_____ (58) 26. Were adequate working facilities available? (1 = No, 2 = Yes, 9 = Does not apply)

_____ (59) 27. How many times were cows wormed last year? (Record actual - 9 = Does not apply)

What percentage of calves were sold through:

_____ (60) _____ (61) _____ (62) 28. Weekly auctions? (Record actual percent - 999 = Does not apply)

_____ (63) _____ (64) _____ (65) 29. Organized feeder sales? (Record actual percent - 999 = Does not apply)

_____ (66) _____ (67) _____ (68) 30. Local traders? (Record actual percent - 999 Does not apply)

_____ (69) _____ (70) _____ (71) 31. Direct to backgrounder or feeder? (Record actual percent - 999 = Does not apply)

_____ (72) _____ (73) _____ (74) 32. Retained as replacements or for backgrounding? (Record actual percent - 999 = Does not apply)

TAEE 416J1a
Revised 1/25/77

BACKGROUNDING

____ (75) 33. Were calves backgrounded on this farm? (1 = No, 2 = Yes,

___ ___ ___ (76) (77) (78) 34. How many calves were backgrounded? (Record actual number: 999 = Does not apply)

____ (79) 35. Which system of backgrounding was used? (1 = Fescue pasture, 2 = Corn silage, 3 = Small grain, 4 - Combinations of above, 9 = Does not apply)

2 (1) Card Number

___ ___ ___ (8) (9) (10) 36. What percentage of calves being backgrounded were home-reared? (Record actual percent - 999 = Does not apply)

___ ___ ___ (11) (12) (13) 37. How were calves purchased? (1 = Self, 2 = Order buyer, 3 = Other, 999 = Does not apply)

___ ___ ___ (14) (15) (16) 38. What percentage of calves were steers? (Record actual percent - 999 = Does not apply)

____ (17) 39. What grade of calves were backgrounded? (Select one: 1 = Prime and choice, 2 = Good, 3 = Oddlot or mismanaged calves, 9 = Does not apply)

____ (18) 40. Which parasite treatments were used? (Select one: 1 = Lice and grubs, 2 = Internal parasites, 3 = Lice, grubs and internal parasites, 4 = None, 9 = Does not apply)

____ (19) 41. Which fly control program was followed? (Select one: 1 = None, 2 = Backrubbers and/or oilers, 3 = Dustbags, 4 = Oral larvacides, 5 = Combinations of above, 9 = Does not apply)

____ (20) 42. Which of the following animal health practices was used? (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)

____ (21) 43. Which growth stimulant was used? (Select one: 1 = None, 2 = DES, 3 = Ralgro, 4 = Synovex, 5 = MGA, 9 = Does not apply)

What percentage of backgrounded cattle were marketed through:

___ ___ ___ (22) (23) (24) 44. Local actions? (Record actual percent - 999 = Does not apply)

___ ___ ___ (25) (26) (27) 45. Organized yearling sales? (Record actual percent- 999 = Does not apply)

___ ___ ___ (28) (29) (30) 46. Order buyers? (Record actual percent - 999 = Does not apply)

___ ___ ___ (31) (32) (33) 47. Directly to feedlots? (Record actual percent - 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.)

___ ___ (34) (35) 48. Number of Extension meetings of all kinds attended? (Record actual number)

___ (36) 49. Number of Extension meetings where beef production discussed? (Record actual number)

___ ___ (37) (38) 50. Number of visits to County Extension Office? (Record actual number)

___ ___ (39) (40) 51. Number of telephone calls to County Extension Office? (Record actual number)

___ ___ (41) (42) 52. Number of farm visits received by respondent from all County Extension Agents? (Record actual number)

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

VITA

Floyd David Rutter was born in Shelby County, Tennessee on January 29, 1948. He is the son of Floyd Wayne Rutter and Dorothy Maxine Rutter. He attended public schools in Shelby County and graduated from Bolton High School in May 1966.

He attended college at Memphis State University and The University of Tennessee, Martin before entering the United States Air Force in 1969. After a four year tour he returned to The University of Tennessee, Martin in September 1973. Upon completing the requirements for a Bachelor of Science Degree in Agriculture in June 1976, he took the position of Assistant Extension Agent for the Agricultural Extension Service in Dyer County. In June of 1980, he transferred to Wilson County where he prsently is an Assistant Extension Agent. In February 1979, he began graduate study in Agricultural Extension Education.

He is married to the former Martha Jane Childress of La Follette, Tennessee and they have three sons, John Floyd (age four years), Joseph William (age two years), and Andrew Mark (age two months).