To the Graduate Council:

I am submitting herewith a thesis written by Alfred Dean Headrick entitled "Influence of Selected Variables Upon Percent of Calves Born Within 45 Days of First Calf Born, Average Weight of Calves Sold at Weaning and the Number of Contacts Tennessee Beef Cow-Calf Producers Had with County Extension Agents." 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:

The Graduate School

INFLUENCE OF SELECTED VARIABLES UPON PERCENT OF CALVES BORN WITHIN 45 DAYS OF FIRST CALF BORN, AVERAGE WEIGHT OF CALVES SOLD AT WEANING AND THE NUMBER OF CONTACTS TENNESSEE BEEF COW-CALF PRODUCERS HAD WITH COUNTY EXTENSION AGENTS

A Thesis

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ABSTRACT

The major purpose of this survey type study was to determine the relationship between the characteristics of beef producers, their operation as to size, breeding and calving practices, marketing practices and the number of contacts they had with Extension.

A total of 1799 interviews was conducted by Extension agents in Tennessee. The 1981 Beef Cow-Calf Producer Survey was used to collect data from the beef producers. Counties having at least 15 beef cow-calf producers were surveyed. Producers were required to have 25 or more breeding age cows before they could participate in the survey.

The analysis of variance F test was used to determine probability levels and strength of relationships between dependent and independent variables. F values which achieved the .05 level of probability were accepted as being statistically significant. This analysis was achieved through computations of data on computer cards. These computations were made at The University of Tennessee Computing Center. Major findings included the following:

1. Forty-seven percent of beef producers interviewed had commercial crossbred herds.
2. Fifty-one percent indicated full-time farming status.
3. The average number of cows and breeding age heifers exposed to bulls during most recent breeding season was 61, the average number of bulls used per producer being 1.94.

4. The average number of contacts producers had per year with Extension was 18. Producers following recommended management and production practices, (i.e., those appearing to be doing the best job) averaged two to six more contacts with Extension than others.

5. The largest producers, those with 100 or more breeding age females in their herds, averaged 47 contacts with Extension.

6. Full-time farmers had a higher percent of calves born within a 45 day period. Producers with fewer than 25 cows in breeding herds reported 58 percent of their calves born within 45 days while those with 100 cows and over had only 49 percent of their calves born within 45 days.

7. Producers following research verified recommended practices had a higher percent of calves born within 45 days than others.

8. Purebred breeders and full-time farmers reported heavier average weights for feeder calves sold at weaning, producers in medium and large size herds reported heavier weights than smaller producers.

9. Producers following recommended production and management practices achieved heavier weights for feeder calves sold at weaning than did producers not using recommended practices.

Implications also were drawn and recommendations made for use of findings and further research.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	THE PROBLEM AND ITS SETTING	1
	Introduction	1
	Need for the Study	4
	Purposes of Study	4
	Limitations of the Study	5
	Method of Investigation	5
	Definition of Terms	7
II.	REVIEW OF RELATED LITERATURE	8
	The Influence of Selected Characteristics of Beef Cattle Operations upon the Length of Calving Season	8
	The Influence of Selected Factors upon the Average Weight of Feeder Calves Sold at Weaning	9
	The Relationship Between the Number of Contacts Beef Producers Had with Extension Agents and Other Factors Which Influence the Adoption of Recommended Beef Production Practices by Beef Cattle Producers.	11
III.	SURVEY FINDINGS	14
	Characteristics of Beef Producers and Their Farm Operations	14
	Average Number Contacts with County Extension Agents During Previous 12 Months	39
	Percentage of Calves, from Most Recently Weaned Calf Crop, Born Within 45 Days	73
	Average Weight Feeder Calves Sold at Weaning	95
IV.	SUMMARY OF MAJOR FINDINGS	126
	Purpose and Specific Objectives	126
	Method of Investigation	127
	Major Findings	128
	Implications and Recommendations	153
	Recommendations for Further Study	154
BIBLIOGRAPHY		155
APPENDIX		158
VITA		164

LIST OF TABLES

TABLE		PAGE
I.	Characteristics of Tennessee Beef Producers and Their Farm Operation	15
II.	Average Number of Contacts Tennessee Beef Producers Had with County Extension Agents During Previous 12 Months.	40
III.	Percentage Calves Born Within 45 Days.	74
IV.	Average Weight of Feeder Calves Sold at Weaning.	96

CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

Beef cattle production has long been a favorite livelihood for Tennessee farmers. Beef ranks second among agricultural enterprises in Tennessee with cash receipts of 312,664,000 dollars in 1980. This constituted 18.0 percent of the State's total agricultural receipts. (18)

The average Tennessee herd size in 1977 was slightly less than 20 cows per producer. At that time, average beef producer was 51 years old. Forty-seven of the State's 95 counties realized more than 30 percent of their total agricultural incomes from the sale of beef cattle. Also 75% of cow-calf producers sold their calves at weaning while the other 25% back grounded calves. According to the 1976-77 survey, 90% of all calves produced were sold at weekly auctions while 5% to 6% were marketed through organized feeder calf sales. (7)

The natural resources in Tennessee make for an ideal situation in which to produce beef cattle. The land, climate, geographical location, people, and economy all blend beautifully to make beef cattle a major farm enterprise in the State. About 5 million acres of Tennessee's 13 million acres devoted to farming are classified as pasture land. This is especially true in Middle and East Tennessee where the

land is predominantly rolling to steep. The exception is West Tennessee which contains a larger portion of land suited for intensive row cropping. (8)

The climate in Tennessee is mild for the most part, with extreme temperatures being rare and usually of short duration. The growing season ranges from 180 days in the higher elevations to around 230 days in the south western corner of the State. Rainfall averages almost 50 inches in most areas with good distribution throughout the growing season. Both the long growing season and adequate rainfall are very important in the production of pasture, hay, and corn silage which are the primary feedstuffs for beef cattle. (8)

A relatively large percentage of the State's people make their living from industry. They work 8 hours per day, 5 days per week in factories or in plants. Factory wages usually do not provide the standard of living desired, forcing them to look elsewhere for supplemental income. Unlike most other farming enterprises beef cattle production lends itself well to part-time farming. In 1977, 70 percent of Tennessee's 66,000 beef producers were part-time farmers. (8)

Beef cattle numbers grew steadily in Tennessee through the early seventies, peaking in 1975 when a record 1,381,000 beef cows was reported in Tennessee. Numbers steadily declined each year afterward to the 948,000 beef cows reported in Tennessee in 1980. (18) The economy appears to have played a larger role than any other single factor in the reduction of cow numbers in Tennessee. With the cost of producing a steak steadily increasing in recent years, many consumers have considered quality beef a luxury food and per capita consumption has

decreased. As demand has failed to keep pace with production, prices received by farmers have decreased. Only those farmers following recommended practices and doing an efficient job of management have been able to remain in production and make a profit. Whether or not the current economic trends continue, the Tennessee beef producer must learn to produce beef more efficiently and economically.

Under the provisions of the Smith-Lever Act of 1914, the Cooperative Extension Service was charged with the task of diffusing among the people of the United States useful and practical information on subjects relating to Agriculture and Home Economics. (16) In the past few years much research has been conducted on ways to produce and market feeder calves more economically. Growth stimulants, feed additives, internal and external parasite control, performance testing, and reproductive efficiency are some of the areas into which much research and work have gone. Hopefully, these efforts will provide farmers with information on how they can produce and sell more economically. Most of this research work conclusively shows that with excellent management and by following recommended practices, the beef cattle producer in Tennessee can still produce beef though at decreasing profits at current prices.

Extension Service has the challenge of selling beef producers on the critical importance of following researched, verified and recommended practices if they are to survive today's price-cost squeeze.

Extension, through use of survey instruments have systematically secured data based on the needs and problems of the beef cattle producers, can be identified and solved through educational programs.

II. NEED FOR THE STUDY

To conduct educational programs efficiently, it is important to first know what areas of a particular subject need to be improved. If areas of weakness can be pinpointed, then teaching can be concentrated toward that area.

This study will hopefully be used to find areas that need improving, with emphasis on those areas that have to do with reproductive efficiency. Ideally, this study will give direction and serve as a benchmark for planning and evaluating future beef educational programs in Extension.

III. PURPOSES OF STUDY

The purposes of this study were to characterize beef producers and their operation as to size, breeding and calving practices, forage and feeding practices, marketing practices, number of contacts with Extension and to determine the inter-relationships among selected variables.

The specific objectives were:

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

2. To determine the influence of the number of contacts beef producers had with Extension Agents upon the use of recommended beef production practices adopted by beef cattle producers.

3. To determine the influence of selected characteristics of beef cattle operations upon the length of calving season.

4. To determine the influence of selected factors (i.e., size of operation, breeding and calving management, forage and feeding management practices, marketing and estimated number of contacts with Extension during past 12 months) upon the percent of cows weaning calves.

5. To determine the influence of selected factors (i.e., size of operation, breeding and calving management, forage production and feeding management, general herd management practices, estimated number of contacts with County Extension Agent during past 12 months) upon the average weight of feeder calves sold at weaning.

IV. LIMITATIONS OF THE STUDY

This study was limited to data available in the 1981 University of Tennessee Agricultural Extension Service Beef Cow-Calf Producer Survey conducted in the fall of 1981. The data were obtained by Extension Agents who conducted personal interviews with 1799 different Beef Cow-Calf Producers. The number of producers interviewed varied from county to county, depending on the number of Beef Cow-Calf Producers in the county.

V. METHOD OF INVESTIGATION

The population of this study included only Cow-Calf Producers in Tennessee who had 25 or more breeding age cows. Only those counties having at least 15 Beef Cow-Calf Producers were surveyed.

County Extension Agents collected the data through personal interviews and returned the completed surveys to the Agricultural

Extension Education Office. The recommended sample size for each county was as follows:

1. Counties having 15 to 50 producers were to interview a total of 15 Cow-Calf Producers
2. Counties having 51 to 100 producers were to interview a total of 20 Cow-Calf Producers
3. Counties having 101 to 300 producers were to interview a total of 25 Cow-Calf Producers
4. Counties having over 300 producers were to interview a total of 30 Cow-Calf Producers.

County Extension Agents were urged to use an up-to-date listing of their Cow-Calf Beef Producers.

The "Nth" number technique was used to identify producers to be interviewed. Alternates were selected to replace those producers who for good reasons could not be interviewed. Producers with less than 25 breeding age cows were not included in the survey.

The survey instrument was developed by The University of Tennessee Agricultural Extension Specialist Staff in the Animal Science Beef and Extension Education sections.

The survey was conducted by agents in the participating counties through personal interviews. The completed surveys were then returned to the Agricultural Extension Education Office for 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 was used to determine probability levels

and strength of relationships between dependent and independent variables. The .05 probability level was accepted as being significant.

VI. DEFINITION OF TERMS

The following terms are defined as used throughout the remainder of the body 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 producer's 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.

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

Extension Contact. One of the various methods, such as a farm visit, by which Extension Agents provide agricultural information to producers in subject matter areas of interest to the producer.

CHAPTER II

REVIEW OF RELATED LITERATURE

Several studies related to beef production and management practices were found. This chapter contains findings from a review of studies related to the following headings:

(1) The influence of different characteristics of Beef Cattle Operations upon the length of calving season.

(2) The influence of different factors upon the average weight of feeder calves sold at weaning.

(3) The relationship between the number of contacts beef producers had with Extension Agents and the use of recommended beef production practices adopted by beef cattle producers.

I. THE INFLUENCE OF SELECTED CHARACTERISTICS OF BEEF CATTLE OPERATIONS UPON THE LENGTH OF CALVING SEASON

Hodge's (6) study in 1975 showed that change in body weight of cows during the early part of the breeding season, particularly, and also, during the entire breeding season significantly affected conception date. Each 0.1 lb. increase in average daily gain by cows indicated that a one day reduction in the interval from parturition to conception had occurred. Hodge's study also further showed that there

was a definite positive relation between feeding a higher level of TDN on the onset of postpartum estrus.

Lovely's (10) study in Campbell County in 1975 found that only 15.6% of beef producers were following a definite breeding or calving season as these producers were confining their herd bulls during the months of July through March.

Mohamad's (14) study of 955 Tennessee beef producers in 57 counties in 1979 revealed that large producers had an average breeding season length of 5.0 months and small producers had an average of 5.2 months. There was little difference although both exceeded the recommended 3 months.

Luck, (11) in a study of beef producers in Macon County in 1968, reported that more high producers had their cows calving at the proper time of year (Jan., Feb., March) than did low producers.

II. THE INFLUENCE OF SELECTED FACTORS UPON THE AVERAGE WEIGHT OF FEEDER CALVES SOLD AT WEANING

Ayers (4) found in a study of Warren County beef producers in 1965 that the differences in average weight of calves sold in feeder sales from registered and grade herds and between Angus and Hereford herds were not significant. A slight difference of 17 lbs. in favor of the grade herds was noted.

Hodges (6) and Ayers (4) each reported that the average daily gain of calves was significantly affected by year, sire, and sex of each calf. Extremes in weather from one year to the next affected

calves. In general, bull calves grew faster than steers and steers faster than heifers.

McLaren (12) found in his study in 1970 that variation in age at weaning accounted for a larger fraction of variation in weaning weights than did any other single variable.

Anderson (1) in 1975 reported in a thesis study that there was a definite positive relationship favoring the longer, taller growth in cattle or modern type vs. the smaller frame, compact type; on weaning weights.

Austin (3) reported that sex of calf had a significant effect on average daily gain of both non-creep and creep-fed calves. Non-creep fed bull calves gained .17 pounds more than heifers and .04 more than steer calves. In the creep-fed group, the estimates were .20, .15 and .05 for bull, steer and heifer calves, respectively. He also reported that August-born calves were inferior in performance to calves born in all other months of the year.

Rollins and Giulbert (19) found in their research that calves born January through March were heavier at weaning than those calves born in other months.

III. THE RELATIONSHIP BETWEEN THE NUMBER OF CONTACTS BEEF PRODUCERS HAD WITH EXTENSION AGENTS AND OTHER FACTORS WHICH INFLUENCE THE ADOPTION OF RECOMMENDED BEEF PRODUCTION PRACTICES BY BEEF CATTLE PRODUCERS

Mohamad (14) found that beef producers on the average had 19 total Extension contacts during the year. Broken down, this included six telephone calls, four visits to the Extension Office, five Extension meetings attended and four farm visits by the Extension Agent. She also found that 13 of 14 recommended beef production practices and 17 of 18 pasture practices were significantly related to one or more kinds of Extension contact.

Barnes (5) concluded that, with regard to sources of advice relative to beef production practices, the producer listed the County Extension Agent more frequently than any other source.

Perry's (15) study of swine producers in 1979 showed that 9 of the 18 recommended swine production practices were 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. Only two practices were not significantly related to at least one type of Extension contact.

Rogers (16) reported seven characteristics which influenced the adoption of farm practices. These were: (1) cost of practice (i.e., high cost practices are more slowly adopted) (2) complexity of practice (i.e., practices are more readily adopted if they are simple and easy to understand (3) visibility (i.e., new practices which are visible

and showy are generally adopted more rapidly) (4) divisibility (i.e., practices that can be tried on a small scale are adopted more quickly) (5) compatibility (i.e., attitudes and values toward a new idea may affect the rate of adoption) (6) utility (i.e., new practice must be viewed as an improvement over existing methods) and (7) group action (i.e., some new practices may require group adoption).

Arnett (2) found in his study conducted in 1973 that the number of office visits was significantly related to the educational level of the 203 farmers who visited the county Extension Office at least once over a three-year period. Farmers who had attended high school or college tended to have made more visits to the Extension Office than those completing fewer grades. Arnett's study also revealed that the number of visits and telephone calls to the Extension Office were significantly related to the number of Extension meetings attended. Those who attended a larger number of Extension meetings tended to have made more visits and more telephone calls to the Extension Office than those not attending Extension meetings.

Several authorities (16) reported the stages in the adoption process. They included the following: (1) awareness (2) interest (3) evaluation (4) trial (5) adoption. Research continues to show that as one proceeds from unawareness to adoption that initial mass contacts proceed to personal contacts as the practice approaches adoption. At the aware of and interested in stages, mass media sources, such as farm magazines, newspapers and radio, are most important. At the evaluation and trial stages, neighbors and friends are more important. When farmers move closer to adoption, personal contacts with

Agricultural Extension Agents are of greater importance, it is still questionable if the Extension Agent is as influential as neighbors and friends, though data regarding the measureable impact of the former is growing.

CHAPTER III

SURVEY FINDINGS

The findings of this study were organized into five 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. In Section II major findings are reported regarding the average number of contacts producers had with County Extension Agents during the past 12 months. In Section III major findings are reported regarding the relationship between selected variables and the percentage of calves, from the most recently weaned calf crop, born within 45 days. In Section IV major findings are reported regarding the relationship between selected variables and the average weight of feeder calves sold at weaning.

I. CHARACTERISTICS OF BEEF PRODUCERS AND THEIR FARM OPERATIONS

Section I presents findings about selected characteristics of the beef producers and their farm operations. Table I presents variables which characterize the beef producers. Numbers and percentage of producers are reported for each variable. Variable means are reported for the quantitative variables.

TABLE I

CHARACTERISTICS OF TENNESSEE BEEF PRODUCERS
AND THEIR FARM OPERATION

Characteristic	Number of Producers	Percent of Producers	Mean
General			
Type Beef Herd			
Purebred	292	16.4	
Commercial St. Bred	645	36.3	NA*
Commercial Cross Bred	839	47.3	
Total	1776	100.0	
Farming Status			
Full-time	885	51.0	
Part-time	705	40.6	
Retired	146	8.4	NA
Total	1736	100.0	
Size of Operation			
No. Females Breeding Age			
Under 25 cows	120	6.7	79
25-49 cows	960	53.4	
50-74 cows	353	19.6	
75-99 cows	159	8.8	
100 or more cows	207	11.5	
Total	1799	100.0	
No. Cows-Heifers Exposed to Bulls			
Under 50 cows	1148	63.8	61
50-99 cows	481	26.8	
100 or more cows	170	9.4	
Total	1799	100.0	
No. Calves Weaned			
Under 50 calves	1248	71.4	45
50-99 calves	407	22.6	
100 or more calves	108	6.0	
Total	1799	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
No. Bulls Used			
One bull	755	42.0	1.94
2 bulls	603	33.5	
3 or more bulls	441	24.5	
Total	1799	100.0	
Month First Calf Born			
Jan.	543	30.5	NA
Feb.	242	13.6	
Mar.	96	5.3	
April	26	1.5	
May	5	0.3	
June	5	0.3	
July	12	0.6	
Aug.	26	1.5	
Sept.	123	6.8	
Oct.	193	10.8	
Nov.	240	13.5	
Dec.	272	15.3	
Total	1783	100.0	
Month Last Calf Born			
Jan.	39	2.2	NA
Feb.	79	4.4	
Mar.	218	12.2	
April	372	20.8	
May	384	21.4	
June	278	15.5	
July	119	6.6	
Aug.	70	3.9	
Sept.	84	4.7	
Oct.	44	2.5	
Nov.	19	1.1	
Dec.	85	4.7	
Total	1791	100.0	
Percent Calves Born Within 45 Days			
Under 25%	161	9.3	53
25-49%	421	24.3	
50-74%	686	39.7	
75-100%	462	26.7	
Total	1730	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
No. Times Per Day Checked Cow During Calving Season			
None	38	2.1	1.65
One	810	45.0	
Two	752	41.8	
Three-over	199	11.1	
Total	1799	100.0	
Breeding Management			
Used Females and Bulls of Different Breed			
No	735	41.8	NA
Yes	1022	58.2	
Total	1757	100.0	
Have Crossbred Females			
No	1012	57.4	NA
Yes	752	42.6	
Total	1764	100.0	
Checked Bulls for Breeding Soundness			
No	1479	83.4	NA
Yes	294	16.6	
Total	1773	100.0	
Used Performanced Test Bulls			
No	1228	69.1	NA
Yes	549	30.9	
Total	1777	100.0	
Age Heifers Bred			
Under 15 months	140	7.8	20
15 to 19 months	1220	67.8	
20 months-over	439	24.4	
Total	1799	100.0	
Weight Heifers Bred			
Under 600 lbs.	195	10.8	599
600 to 700 lbs.	1028	57.2	
700 lbs.-over	576	32.0	
Total	1799	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Feeding Management			
Major Forage Used to Winter Cows			
Hay	1574	88.0	NA
Silage	64	3.6	
Combination	150	8.4	
Total	1799	100.0	
Fed Cows by Weight and Stage of Production			
No	1138	63.8	NA
Yes	646	36.2	
Total	1784	100.0	
Fed Poor Quality Forages to Dry Cows in Winter			
No	857	49.8	NA
Yes	864	50.2	
Total	1721	100.0	
Major Crop Residue Fed to Reduce Cost			
None	1080	60.6	NA
Corn	328	18.4	
Soybeans	79	4.4	
Both	198	11.2	
Other	96	5.4	
Total	1781	100.0	
Used Stockpiling			
No	567	31.7	NA
Yes	1222	68.3	
Total	1789	100.0	
Tested Forages			
No	1683	94.0	NA
Yes	107	6.0	
Total	1790	100.0	
Creep Fed Calves			
No	1141	63.7	NA
Yes	651	36.3	
Total	1792	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Fed Protein Supplement Daily			
No	432	24.1	NA
Yes	1358	75.9	
Total	1790	100.0	
General Herd Management			
Used Method to Identify Cows			
No	711	39.7	NA
Yes	1079	60.3	
Total	1799	100.0	
Age Calves When Dehorned			
Within 48 hours	58	3.2	NA
Before 2 months	210	11.7	
After 2 months	326	18.1	
DNA	1205	67.0	
Total	1799	100.0	
Age Male Calves Castrated			
Within 48 hours	307	18.2	NA
Before 2 months	729	43.1	
After 2 months	654	38.7	
Total	1690	100.0	
No. Times Feeder Calves Implanted			
None	1257	71.0	NA
Once	393	22.2	
Twice	119	6.7	
3 or more	2	0.1	
Total	1771	100.0	
Supplied Salt - Minerals			
No	93	5.2	NA
Yes	1700	94.8	
Total	1793	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Method Used to Provide Mag - Oxide			
None	480	27.0	NA
Block	614	34.5	
Loose	610	34.3	
In grain or silage	75	4.2	
Total	1777	100.0	
Season Brood Cows Dewormed			
Not dewormed	693	39.2	NA
Fall	654	37.0	
Fall and Spring	419	23.8	
Total	1766	100.0	
Calves Dewormed While Nursing			
No	990	55.5	NA
Yes	794	44.5	
Total	1784	100.0	
Fly Control Method Used			
None	147	8.2	NA
Backrubbers, Dustbags or Flaps	1402	77.9	
Oral Larvacides or Ear Tags	250	13.9	
Total	1799	100.0	
Began Fly Control April			
No	280	15.5	NA
Yes	965	53.8	
Later Date	468	26.1	
Did not treat	78	4.6	
Total	1791	100.0	
Vaccinated for Lepto			
No	974	54.4	NA
Yes	815	45.6	
Total	1789	100.0	
Treated for Grubs Before November			
No	806	45.1	NA
Yes	982	54.9	
Total	1788	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Lice Treatment Used			
Did Not Treat	485	27.1	NA
Treated Once	702	39.3	
Treated Nov. - Feb.	374	20.9	
Lice Were Evident	227	12.7	
Total	1788	100.0	
Cows Pregnancy Checked			
No	1565	87.8	NA
Yes	220	12.3	
Total	1785	100.0	
Herd Enrolled in TBCIP or Other Program			
No	1641	92.1	NA
Yes	140	7.9	
Total	1781	100.0	
Vaccinated Calves Twice			
No	932	52.2	NA
Yes	854	47.8	
Total	1786	100.0	
Heifers Vaccinated for Brucellosis			
No	1312	74.2	NA
Yes	456	25.8	
Total	1768	100.0	
Bulls Kept Separate from Cows			
No	718	40.3	NA
Yes	1062	59.7	
Total	1780	100.0	
Beef Cattle Marketing			
No. Feeder Calves Sold at Weaning			
Under 25 calves	893	49.6	85
25-49	579	32.2	
50-74	161	8.9	
75-99	45	2.5	
100 calves-over	121	6.7	
Total	1799	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Ave. Weight Calves Sold at Weaning			
Under 400 lbs.	101	6.6	482
400-499 lbs.	892	58.4	
500-599 lbs.	448	29.3	
600 lbs.- over	87	5.7	
Total	271	100.0	
No. Calves Sold as Short Yearling			
Not any sold	1220	67.8	40
Under 10 calves	200	11.1	
10-19 calves	174	9.7	
20-29 calves	88	4.9	
30 calves - over	117	6.5	
Total	1799	100.0	
No. Calves Sold as Long Yearlings			
Not any sold	1447	80.4	25
Under 10 calves	182	10.1	
10-19 calves	65	3.6	
20-34 calves	59	3.3	
35 calves and over	46	2.6	
Total	1799	100.0	
No. Finished Cattle Sold			
Not any sold	1528	84.9	40
Under 10 calves	170	9.4	
10-19 calves	43	2.4	
20 calves - over	58	3.3	
Total	1799	100.0	
No. Replacement Heifers Retained			
Not any retained	532	29.6	12
Under 10 heifers	793	44.1	
10-19 heifers	344	19.1	
20 heifers - over	130	7.2	
Total	1799	100.0	
Method Used to Market Feeder Calves			
Weekly Auction	845	51.5	NA
Feeder calf sale	554	33.8	
Trader	119	7.3	
Direct - Feeder	122	7.4	
Total	159	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Forage Production and Use			
Acres Improved Perm. Pasture			
Under 100	829	46.7	103
Over 100	945	53.3	
Total	1774	100.0	
Acres Temporary Pasture			
Under 15 acres	1352	75.2	31
15 acres - over	447	24.8	
Total	1799	100.0	
Percent Perm. Pasture with 30% Legume			
Under 50	777	43.2	44
Over 50	843	46.9	
Not any	179	9.9	
Total	1799	100.0	
No. Contacts with County Extension Agents During Past 12 Months			
Meetings Attended			
Not any	867	48.2	6.6
One or more	932	51.8	
Total	1799	100.0	
No. Telephone Calls to Extension Office			
Not any	458	25.5	3.6
One or more	1341	74.5	
Total	1799	100.0	
No. Visits to Extension Office			
Not any	639	35.5	3.2
One or more	1160	64.5	
Total	1799	100.0	
No. Farm Visits Received from Extension Agents			
Not any	358	19.9	4.6
One or more	1441	80.1	
Total	1799	100.0	

TABLE I (continued)

Characteristic	Number of Producers	Percent of Producers	Mean
Percent of Cows-Heifers Weaning Calves			
Under 90	608	33.8	90
Over 90	1191	66.2	
Total	1799	100.0	
No. of Cows-Heifers Bred Per Bull Used			
Under 25 cows	765	42.5	27
25 cows - over	1034	57.5	
Total	1799	100.0	
Percent Weaned Calves Sold			
None	275	15.3	107
1-74%	619	34.4	
75% or more	905	50.3	
Total	1799	100.0	
Total No. of Extension Contacts			
Not any	167	9.3	18
One or more	1632	90.7	
Total	1799	100.0	

* NA = Not applicable.

General Producer Characteristics

The characteristics of type of beef herd and farming status are shown in the first part of Table I.

Type of beef herd. Table I indicates that Commercial Crossbred herds made up the largest percent (47.3) of beef type herds. Over 36% of the producers were commercial straightbred while purebred breeds made up only 16.4 percent of the beef producers surveyed.

Farming status. Over half (885) of those surveyed indicated full-time farming status. Seven hundred and five (40.6%) were part-time farmers while 8.4% of the producers were farming while retired.

Size of Operation

The operation size characteristics are given in the second part of Table I. These characteristics reported are number of females breeding age in herd, number cows and heifers exposed to bull(s) and number calves weaned.

Number females breeding age presently in herd. Those producers having 25-49 breeding age females made up a significantly larger percent (53.4) than did all other categories combined. The second largest group with 19.6% were those having 50-74 breeding age females. The smallest reporting group surveyed was those in the under 25 female category. The 75-99 cows and 100 cows-over made up 8.8% and 11.5% respectively of those responding. The average number of breeding age females in surveyed herds was 79.

Number cows and heifers exposed to bull(s). One thousand one hundred and forty-eight beef producers reported that under 50 cows

were exposed to bulls during the current breeding season. Almost twenty-seven percent reported that 50-99 cows were exposed to bulls. Those surveyed in the 100 cows and over category totaled 170 or 9.4 percent. Sixty-one cows exposed to bulls was the average of those producers surveyed.

Number calves weaned. Again, those in the under 50 category, 1248 producers (71.4 percent) were the largest group. Producers in the 50-99 calves and 100 calves and over groups made up 22.6 percent and 6.0 percent respectively, of the beef producers surveyed. The average number of calves weaned from farmers responding was 45 calves.

Breeding Management

The characteristics of producers regarding breeding management are in the third part of Table I. These characteristics reported are number of bulls used, month first calf born, month last calf born, percent calves born within 45 days, number times per day checked cows during calving season, used females and bulls of different breed, those having crossbred females, checked bulls for breeding soundness, used performance tested bulls, age heifers bred and weight heifers bred.

Number bulls used. Of those producers surveyed 755 (42 percent) reported using only one bull. Six hundred and three producers used 2 bulls while 441 (24.5 percent) reported using 3 bulls or more. The average number of bulls used per surveyed producer was 1.94.

Month first calf born of most recently weaned calf crop. More producers began their calving season, 543 (30.5 percent) in January than any other single month. The second highest reported month was

December with 272 producers reporting their first calf born. Of those surveyed, a larger number began their calving season in the fall than did late winter or early spring. Very few (2.5 percent) went against recommended practices and began calving during the summer months.

Month last calf born of most recently weaned calf crop. May and April were the most frequently reported months, 384 and 372 producers respectively, as being the month their last calf was born. June 278 (15.5 percent) and March 218 (12.2 percent) were the next most commonly reported, last calf born months. The smallest number of last calves were born in November (19 producers) and October (44 producers). In comparing the first calf born and last calf born variables, one can see that many of those surveyed are not within the 90-day calving season guideline.

Percent of calves born within 45 days after 1st calf born. Six hundred eighty-six producers reported that 50-74 percent of their calves were born within 45 days. The second largest reporting were those having 75-100 percent of calves born within 45 days. This group consisted of 462 producers or 26.7 percent of those surveyed. The 25-49 percent and under 25% categories made up 24.3 percent and 9.3 percent respectively. The average percent of calves born within 45 days was 53.

Number of times per day cows were pregnancy checked during calving season. Of the 1799 producers responding to this question, 810 (45 percent) reported checking cows once a day. There were 752 respondents (41.8 percent) that checked their cows 2 times per day. Those checking cows three times and over and not checking their cows

were 199 and 38 producers, respectively. The average number of times the cows were checked daily was 1.65 times.

Used females and bulls of different breeds. One thousand twenty-two producers surveyed (58.2 percent) were using females and bulls of different breeds while 735 (41.8 percent) were using females and bulls of same breed.

Have crossbred females. Seven hundred thirty-five (41.8 percent) of the producers did use crossbred females, while 1012 (57.4 percent) did not use crossbred females to produce the most recently weaned calf crop.

Checked bulls for breeding soundness. Of the 1773 producers responding to this question, 294 (16.6 percent) indicated checking bulls for breeding soundness. One thousand four hundred seventy-nine (83.4 percent) did not check bulls for breeding soundness.

Used performance tested bulls. One thousand two hundred twenty-eight percent of those surveyed did not use performance tested bulls, while 549 (30.9 percent) did use performance tested bulls.

Age heifers bred. One hundred forty of those surveyed bred their heifers under 15 months of age. The majority of producers 1220 (67.8 percent) bred heifers when they were 15 to 19 months. The other 439 producers bred their heifers at 20 months and over. The average age at which heifers were bred was 20 months.

Weight heifers bred. One hundred ninety-five producers bred their heifers at under 600 pounds. The majority, 1028 producers (57.1 percent) bred at the 600 to 700 lb. range. Five hundred seventy-six

(32 percent) reported breeding their heifers at 700 lbs. or over. The average weight at which those surveyed bred heifers was 599 pounds.

Feeding Management

The characteristics of beef producers regarding feeding management are listed in part four of Table I. These characteristics reported are, major forage used to winter cows, fed cows by weight and stage production, fed poor quality forages to dry cows in winter, major crop residue fed to reduce cost, used stockpiling of fescue, creep fed calves and fed protein supplement daily.

Major forage used to winter cows. Of the 1799 respondents, 1574 (88 percent) fed hay as their main winter forage. Sixty producers (3.6 percent) used silage as their major forage while 150 (8.4 percent) used both hay and silage.

Fed cows by weight and stage of production. One thousand one hundred thirty-eight (63.8 percent) of those surveyed did not feed by weight and stage of production. Of those surveyed, 646 reported feeding cows by weight and stage of production.

Fed poor quality forages to dry cows in winter. Eight hundred fifty-seven producers reported not feeding poor quality forages while 864 (50.2 percent) reported feeding poor quality forages to dry cows in winter.

Major crop residue fed to reduce cost. A majority of those surveyed 1080 (60.6 percent) reported using no crop residue to lower feed cost. Three hundred twenty-eight (18.4 percent) of the producers used corn residue while 79 producers used soybean residue. One hundred

ninety-eight of those surveyed used both corn and soy beans, while 96 producers used other crop residues besides corn or soybean.

Stockpiled fescue. Five hundred sixty-seven of those surveyed did not stockpile fescue for winter use, while 1222 (68.3 percent) of those surveyed did report stockpiling fescue.

Tested forages. Of the 1790 respondents replying to this variable, 1683 (94 percent) did not test, while only 107 (6 percent) did test their forages.

Creep fed calves. One thousand one hundred forty-one producers did not creep feed calves, while 651 (36.3 percent) of those surveyed did report creep feeding of calves.

Fed protein supplement daily. Four hundred thirty-two producers reported that they did not feed protein supplement daily, while 1358 (75.9 percent) did feed protein supplement daily.

General Herd Management Practices

The characteristics of general herd management practices are listed in part five of Table I. The reported characteristics are: method used to identify cows; age calves when dehorned; age male calves when castrated; number times feeder calves implanted; supplied salt and minerals to cattle; method used to provide magnesium oxide; season brood cows dewormed; calves dewormed while nursing; fly control method used; began fly control in April; vaccinated for leptospirosis, treated for grubs before November; lice treatment used; cows pregnancy checked; herd enrolled in TBCIP or other improvement program; vaccinated calves twice; heifers vaccinated for brucellosis; and bulls kept separate from cows.

Used method to identify cows. Of the 1799 beef producers surveyed, 711 did not use any method for identifying cows. One thousand seventy-nine (60.3 percent) did use some means of cow identification.

Age cows when dehorned. A large number (1205) of respondents reported this practice did not apply to their operation. Of those producers which raised horned cattle, 326 dehorned calves at 2 months of age or older. Two hundred ten and 58 producers responded that they dehorned before 2 months and within 48 hours respectively.

Age male calves castrated. Seven hundred twenty-nine (43.1 percent) of the producers castrated bull calves before calves reached 2 months old. Six hundred fifty-four producers castrated bull calves after they were 2 months old, while 307 producers reported castrating bull calves before they reached 48 hours of age.

Number times feeder calves implanted. Most of the surveyed producers, 1257, did not implant feeder calves. This was 71 percent of the 1771 respondents to this question. Three hundred ninety-three (22.2 percent) of the producers reported implanting steers once. One hundred nineteen and two producers reported implanting calves twice and three or more times respectively.

Supplied salt - minerals. Only 93 (5.2 percent) of the producers did not supply salt and minerals to cattle. One thousand seven hundred (94.8 percent) of those surveyed supplied salt - minerals to their cattle.

Method used to provide megnesium oxide. Four hundred eighty producers reporting did not feed magnesium oxide. Of those feeding magnesium oxide slightly more, 614 producers to 610 producers, fed by

way of block vs. loose mix. Seventy-five producers reported feeding magnesium oxide in grain or on silage.

Season brood cows were dewormed. Six hundred ninety-three producers reported that they did not deworm their brood cows. Six hundred fifty-four (37 percent) reported deworming in the fall. The other 419 (23.8 percent) dewormed in the fall and spring both.

Calves dewormed while nursing. Of the 1784 producers responding to this question 990 (55.5 percent) did not deworm while nursing, while 794 reported deworming of calves while still nursing.

Fly control method used. Only 147 (8.2 percent) of producers surveyed did not use any type of fly control. The largest type of fly control used was backrubbers, dust bags, and flaps 1402 (77.9 percent). Two hundred fifty (13.9 percent) reported using either oral larvacides or ear tags.

Began fly control by 1st of April. A majority of the producers 965 (53.9 percent) reported that they did start fly control by April 1st. Two hundred eighty reported no, that they did not start fly control by April 1st, while 468 (26.1 percent) reported that they began at a later date. Seventy-eight (4.6 percent) indicated they did not treat.

Vaccinated cows and heifers for leptospirosis. Of the 1789 producers surveyed 974 (54.4 percent) of the producers did not vaccinate while 815 (45.6 percent) did vaccinate for leptospirosis.

Treated for grubs before November 1st. Eight hundred six producers surveyed did not treat for grubs while 982 (54.9 percent) did treat cattle for grubs prior to November 1st.

Lice treatment used. Four hundred eighty-five (27.1 percent) reported not treating cattle for lice. Seven hundred two treated cattle once for lice, while 374 treated their cattle in November and February. Two hundred twenty-seven producers indicated lice were evident on their cattle.

Cows pregnancy checked. Most beef producers which responded to the survey did not pregnancy check their cows. Only 220 (12.3 percent) of 1785 producers reported that they pregnancy checked their cows.

Herd enrolled in TBCIP or other program. Of the 1781 producers surveyed 1641 were not enrolled in the TBCIP or other similar program. One hundred forty (7.9 percent) were enrolled in a beef herd improvement program.

Vaccinated calves twice for black leg, malignant edema and black's disease. Nine hundred thirty-two producers did not vaccinate twice for black leg, malignant edema, and black's disease. Eight hundred fifty-four (47.8 percent) of those surveyed indicated they vaccinated calves twice for black leg, malignant edema, and black's disease.

Heifers vaccinated for brucellosis. Of the 1768 producers responding, 1312 did not vaccinate, while 456 (25.8 percent) did vaccinate heifers for brucellosis.

Bulls kept separate from cows. A majority of producers, 1062 (59.7 percent) indicated that cows were kept separate from bull during the off-breeding season. Seven hundred eighteen producers did not separate bulls from cows.

Beef Cattle Marketing

The characteristics pertaining to beef cattle marketing are listed in part six of Table I. The reported characteristics are: number feeder calves sold at weaning; average weight calves sold at weaning; number calves sold as short yearlings; number calves sold as long yearlings; number replacement heifers retained; and method used to market feeder calves.

Number feeder calves sold at weaning. Those producers selling less than 25 calves at weaning, 893 (49.6 percent) made up the largest group. Those selling 25-49 calves totaled 579 (32.2 percent). Those surveyed, selling 50-74 calves, 75-99 calves and 100 calves over made up 8.9 percent, 2.5 percent and 6.7 percent respectively. The average number of calves sold at weaning by those surveyed was 85.

Average weight calves sold at weaning. Beef producers were divided into groups according to the weight of calves sold at weaning. Producers reported the following weights of calves sold at weaning: 101 producers (6.6 percent) calves weighed under 400 lbs.; 892 (58.4 percent) calves weighed 400-499 lbs. at weaning; 448 (29.3 percent) calves weighed 500-599 lbs. at weaning; 87 producers (5.7 percent) reported their calves weighed 600 lbs. and over at weaning. The average weight of calves sold at weaning by producers surveyed was 482 lbs.

Number calves sold as short yearlings. Producers were divided into groups as to number calves sold as short yearlings. One thousand two hundred twenty (67.8 percent) producers did not sell any calves as short yearlings. Those selling under 10 calves and 10-19 calves were 200 and 174 producers respectively. Those selling 20-29 calves and

30 calves and over were 88 and 117 producers respectively. Those surveyed sold an average of 40 calves as short yearlings.

Number calves sold as long yearlings. Producers were divided into 5 groups as to the number calves they sold as long yearlings. Those producers 1447 not selling any long yearlings constituted by far the largest category. One hundred eighty-two producers reported selling under 10 calves. Sixty-five producers, fifty-nine producers and 46 producers reported selling 10-19 calves, 20-34 calves and 35 calves and over respectively. Twenty-five was the average number of long yearlings sold by beef producers surveyed.

Number finished cattle sold. Producers were divided into 4 groups as to the number of finished cattle sold. One thousand five hundred twenty-eight (84.9 percent) producers did not sell any finished cattle. One hundred seventy (9.4 percent) reported selling less than 10 calves. Those selling 10-19 calves and 20 calves and over were 43 and 58 producers respectively. The average number of finished cattle sold by producers surveyed was 40.

Number replacement heifers retained. Producers were divided into 4 groups as to the number of replacement heifers retained from current weaned calf crop. Five hundred thirty-two (29.6 percent) producers indicated that they kept all of their heifers for replacement. Seven hundred ninety-three producers (44.1 percent) indicated kept less than 10 heifers for replacement. Those producers kept 10-19 heifers and 20 heifers-over were 344 and 130 respectively. The average number heifers kept for replacement from most recently weaned calf crop was 12.

Method used to market feeder calves. Producers were divided into 4 groups as to method of marketing feeder calves. Those selling at weekly auctions 845 (51.5 percent) made up the largest group. Five hundred fifty-four (33.8 percent) reported selling by way of organized feeder calf sales. One hundred nineteen and 122 producers surveyed sold to traders and directly to feeders respectively.

Forage Production and Use

The characteristics of forage production and its use are listed in part seven of Table I. These characteristics reported are acres improved permanent pasture, acres temporary pasture, and percent permanent pasture with 30% or more legume.

Acres improved permanent pasture. Eight hundred twenty-nine producers (46.7 percent) reported less than 100 acres of improved permanent pasture. Nine hundred forty-five producers (53.3 percent) reported 100 acres or over of improved permanent pasture. Of those surveyed 103 acres was the average of acres improved permanent pasture.

Acres temporary pasture. A large majority of those surveyed 1352 (75.2 percent) reported under 15 acres of temporary pasture. Four hundred forty-seven (24.8 percent) producers reported 15 acres and over of temporary pasture. The average amount of acres of temporary pasture for those surveyed was 31.

Percent permanent pasture with 30 percent legume. Seven hundred seventy-seven producers (43.2 percent) reported less than half of their pasture contained 30 percent legume. Eight hundred forty-three (46.9 percent) of those surveyed reported over 50 percent of the pasture

contained 30% legume. One hundred seventy-nine producers reported their having no pasture with 30 percent legume. The average percent of pasture with 30 percent legume was 44.

Number Contacts with County Extension Agents During Past 12 Months

The characteristics dealing with the number of contact with County Extension Agents during the past 12 months are shown in part eight of Table I. These characteristics reported below are: number Extension beef meetings attended; number telephone calls to Extension Office; number visits to Extension Office; and number farm visits received from Extension Agents.

Number Extension beef meetings attended. Of those surveyed, 867 reported attending not any Extension beef meetings. Nine hundred thirty-two (51.8 percent) producers reported one or more Extension beef meetings attended. Of those 1799 beef producers surveyed, 6.6 was the average number of beef meetings attended during the past 12 months.

Number telephone calls to Extension Office. Four hundred fifty-eight (25.5 percent) of the producers reported not any phone calls to Extension Office. One thousand three hundred forty-one (74.5 percent) reported one or more telephone calls to Extension Office. The average number telephone calls to Extension Office by those surveyed was 3.6.

Number visits to Extension Office. Of the 1799 beef producers surveyed 639 (35.5 percent) had no visits to the Extension Office. One thousand one hundred sixty reported one or more visits to the Extension Office. The average number of visits to Extension Office during the past 12 months by those surveyed was 3.2.

Number farm visits received from Extension Agents. Three hundred fifty-eight (19.9 percent) beef producers reported receiving no visits from Extension Agents during the past 12 months. One visit or more to farm was reported by 1441 producers (80.1 percent). The average number of visits to farm of the 1799 producers surveyed was 4.6.

Percent cows-heifers weaning calves. Six hundred eight (33.8 percent) of the producers reported less than 90 percent of their cows-heifers weaning calves during the past 12 months. One thousand one hundred ninety-one (66.2 percent) of those surveyed reported 90 percent or more of their cows-heifers weaning calves. The average number cows-heifers weaning calves during past 12 months, of those beef producers surveyed, was 90.

Number cows-heifers bred per bull used. Of the 1799 beef producers surveyed, 765 reported under 25 cows bred per bull while 1034 (57.5 percent) reported 25 or more cows or heifers bred per bull. The average cows-heifers bred per bull was 27.

Total number Extension contacts. One hundred sixty-seven producers reported not any Extension contacts during the past 12 months. One thousand six hundred thirty-two producers (90.7 percent) reported one or more Extension contacts. The average number of contacts beef producers surveyed had with Extension during past 12 months was 18.

II. AVERAGE NUMBER CONTACTS WITH COUNTY EXTENSION AGENTS DURING PREVIOUS 12 MONTHS

Section II presents data regarding the relationship between selected characteristics of beef producers and their farms and the number of contacts producers had with County Extension Agents during past 12 months. The mean is given for each variable. Differences were tested by the one way analysis of variance test. F values which achieved the .05 level were considered significant.

General Producer Characteristics

The characteristics of type of beef herd and farming status as they relate to the number of contacts producers had with County Extension Agents during the past 12 months are shown in the first part of Table II.

Type of beef herd. Two hundred seventy-nine producers had purebred herds, 587 producers surveyed had commercial straight bred herds, and 749 producers had commercial crossbred herds. Purebred breeders reported an average of 13 contacts with Extension Agents per year. Commercial straightbred and crossbred producers reported an average of 8 contacts with Extension. When tested by the analysis of F variance test there was a significant relationship between type of herd and the number of contacts producers had with County Agents. Purebred breeders had a significantly larger number of contacts than the straightbred or crossbred producers.

TABLE II

AVERAGE NUMBER OF CONTACTS TENNESSEE BEEF PRODUCERS HAD WITH COUNTY EXTENSION AGENTS DURING PREVIOUS 12 MONTHS

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
General					
Type Herd					
Purebred	279	13			
Commercial St. Bred	587	8			
Commercial Cross Bred	749	8			
Total	1615	9	17	2	.0000
Farming Status					
Full-time	837	13			
Part-time	680	14			
Retired	156	27			
Total	1673	15	16	2	.0000
Size of Operation					
Number Females Breeding Age in Herd					
Under 25 cows	116	18			
25-49 cows	920	13			
50-75 cows	348	14			
75-99 cows	150	14			
100 or more cows	265	47			
Total	1799	18	57	4	.0000
Number Cows-Heifers Exposed to Bulls					
Under 50 cows	1168	19			
50-99 cows	442	10			
100 or more cows	189	37			
Total	1799	18	43	2	.0000

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Number Calves Weaned					
Under 50 calves	1313	20			
50-99 calves	376	12			
100 or more calves	110	26			
Total	1799	18	9.0	2	.0001
Number Bulls Used					
One	680	7			
Two	554	9			
Three or more bulls	565	41			
Total	1799	18	210	2	.0000
Month First Calf Born					
Jan.	519	15			
Feb.	231	11			
Mar.	91	8			
April	25	11			
May	10	54			
June	2	2			
July	9	9			
Aug.	23	5			
Sept.	111	7			
Oct.	181	9			
Nov.	222	9			
Dec.	239	8			
Total	1663	11	7	11	.0000
Month Last Calf Born					
Jan.	64	57			
Feb.	98	45			
Mar.	200	13			
April	339	10			
May	352	8			
June	261	8			
July	107	7			
Aug.	66	5			
Sept.	165	68			
Oct.	39	5			
Nov.	17	17			
Dec.	80	10			
Total	1788	18	74	11	.0000

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Calves Born Within 45 Days after First Calf					
Under 25%	153	7			
25-49%	385	8			
50-74%	642	8			
75-98%	398	10			
Total	1578	8	3.38	3	.0177
Number Times Per Day Checked Cows During Calving Season					
None	79	64			
One	758	7			
Two	679	13			
Three-over	283	50			
Total	1799	18	198	3	.0000
Breeding Management					
Used Females & Bulls of Different Breeds					
No	671	8			
Yes	921	8			
Total	1592	8	.013	1	.9105
Had Crossbred Females					
No	932	9			
Yes	673	8			
Total	1605	9	.64	1	.4239
Checked Bulls for Breeding Soundness					
No	1358	9			
Yes	287	18			
Total	1645	11	41	1	.0000
Used Performance Test Bulls					
No	1119	7			
Yes	495	12			
Total	1614	8	51	1	.0000

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Age Heifers Bred					
Under 15 months	137	20			
15 to 19 months	1115	9			
20 months-over	547	37			
Total	1799	18	131	2	.0000
Weight Heifers Bred					
Under 600 lbs.	338	62			
600 to 700 lbs.	921	8			
700 lbs.-over	540	9			
Total	1799	18	477	2	.0000
Feeding Management					
Major Winter Forage Used					
Hay	1452	10			
Silage	92	48			
Combination	152	23			
Total	1696	13	115	2	.0000
Fed Cows by Weight & Stage Production					
No	1047	7			
Yes	571	10			
Total	1618	8	20	1	.0000
Fed Poor Quality Forages to Dry Cows					
No	809	11			
Yes	808	14			
Total	1617	12	4.5	1	.0336
Major Crop Residue Fed to Reduce Feed Cost					
None	1011	9			
Corn	293	10			
Soybeans	71	7			
Both	168	10			
Other	80	7			
Total	1623	9	1	4	.3026

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Used Stockpiling					
No	537	12			
Yes	1152	13			
Total	1689	13	.19	1	.6609
Tested Forages					
No	1527	8			
Yes	94	12			
Total	1621	9	30	2	.0000
Creep Fed Calves					
No	1070	7			
Yes	554	10			
Total	1624	8	14	1	.0002
Fed Protein Supplement Daily					
No	396	7			
Yes	1226	9			
Total	1622	8	9	1	.0000
General Herd Management					
Method Used to Identify Cows					
No	651	7			
Yes	970	9			
Total	1621	8	21	1	.0000
Age Calves When Dehorned					
Within 48 hrs.	58	10			
Before 2 months	198	8			
After 2 months	297	8			
Total	553	8	.80	2	.4600
Age Male Calves Castrated					
Within 48 hrs.	286	8			
Before 2 months	644	8			
After 2 months	606	8			
Total	1536	8	.026	2	.9742

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Number Times Feeder Calves Implanted					
None	1130	7			
Once	361	10			
Twice	308	69			
Total	1799	18	663	2	.0000
Method Used to Supply Salt-Minerals					
No	86	6			
Yes	1538	8			
Total	1624	8	27	1	.1007
Method Used to Provide Magnesium Oxide					
None	441	7			
Block	548	8			
Loose	566	9			
In grain or silage	63	12			
Total	1618	8	7	3	.0002
Season Brood Cows Dewormed					
Not dewormed	625	6			
Fall	606	8			
Fall & Spring	369	11			
Total	1600	8	18	2	.0000
Calves Dewormed While Nursing					
No	902	7			
Yes	713	10			
Total	1615	8	30	1	.0000
Fly Control Method Used on Cows					
None	140	5			
Back rubbers, dustbags, flaps	1254	8			
Oral larvacides, eartags	405	54			
Total	1799	18	381	2	.0000

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Began Fly Control April					
No	269	7			
Yes	875	9			
Later date	406	8			
Did not treat	74	4			
Total	1624	8	6.6	3	.0002
Vaccinated for Lepto-spirosis					
No	888	7			
Yes	733	10			
Total	1621	8	37	1	.0000
Treated for Grubs before November					
No	709	7			
Yes	910	9			
Total	1619	8	20	1	.0000
Lice Treatment Used					
Did not treat	426	6			
Treated once	649	9			
Treated Nov.-Feb.	342	10			
Lice were evident	202	6			
Total	1619	8	9	3	.0000
Cows Pregnancy Checked					
No	1414	8			
Yes	204	13			
Total	1618	8	33	1	.0000
Herd Enrolled in TBCIP or Other Important Programs					
No	1477	8			
Yes	135	14			
Total	1612	8	38	1	.0000
Calves Vaccinated Twice					
No	840	7			
Yes	777	9			
Total	1617	8	8	1	.0041

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Heifers Vaccinated for Brucellosis					
No	1173	7			
Yes	428	11			
Total	1601	8	27	1	.0000
Bulls Kept Separate From Cows					
No	654	10			
Yes	958	6			
Total	1612	8	33	1	.0000
Beef Cattle Marketing					
Number Feeder Calves Sold at Weaning					
Under 25 calves	815	8			
25-49 calves	529	7			
50-74 calves	139	8			
75-99 calves	41	10			
100-over calves	275	76			
Total	1799	18	418	4	.0000
Ave. Weight Calves Sold at Weaning					
470 pounds-under	1022	20			
471 pounds-over	771	16			
Total	1799	18	7	1	.0076
Number Calves Sold as Short Yearlings					
Not any sold	1112	9			
Under 10 calves	191	10			
10-19 calves	157	10			
20-29 calves	79	8			
30 calves-over	260	74			
Total	1799	18	330	4	.0000

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Number Calves Sold as Long Yearlings					
Not any sold	1320	8			
Under 10 calves	208	31			
10-19 calves	62	15			
20-34 calves	51	12			
35 calves-over	158	94			
Total	1799	18	408	4	.0000
Number Finished Cattle Sold					
Not any sold	1384	8			
Under 10 calves	190	30			
10-19 calves	41	11			
20 calves-over	184	89			
Total	1799	18	591	3	.0000
Number Replacement Heifers Retained					
Not any retained	484	7			
Under 10 heifers	722	8			
10-19 heifers	368	24			
20 heifers-over	225	68			
Total	1799	18	269	3	.0000
Method Used to Market Feeder Calves					
Weekly auction	794	8			
Feeder calf sale	489	14			
Trader	136	26			
Direct Feeder	153	37			
Total	1572	14	57	3	.0000
Forage Production & Use					
Acres Improved Permanent Pasture					
Under 100	756	8			
100 acres-over	1022	27			
Total	1778	19	137	1	.0000

TABLE II (continued)

Characteristic	Number of Producers	Mean No. of Contacts	F Value	df	Sig.
Acres Temporary Pasture					
Under 15 acres	1258	7			
15 acres-over	541	45			
Total	1799	18	559	1	.0000
Percent Permanent Pasture with 30 Percent Legume					
Under 50	861	29			
50-100	767	8			
Total	1628	19	145	1	.0000
Created Variables					
Percent Cows-Heifers Weaning Calves					
Under 90	495	8			
Over 90	1304	26			
Total	1799	18	64	1	.0000
Number Cows-Heifers Bred Per Bull Used					
Under 25 cows	868	29			
25 cows-over	931	9			
Total	1799	18	166	1	.0000
Percent Calves Lost at Birth					
None	432	20			
1-5%	1359	18			
Over 5%	8	109			
Total	1799	18	28	2	.0000

Farming status. Eight hundred thirty-seven producers responded as being full-time farmers, 680 producers were part-time, while 156 producers were retired. Full-time producers averaged 13 contacts with Extension, part-time farmers averaged 14 and retired farmers averaged 27 contacts. When tested by the F test there was a significant relationship between farming status and the number of contacts producers had with County Extension Agents. Beef producers who were retired farmers had about twice as many contacts per year with Extension Agents as did the full-time and part-time farmers.

Size of operation. The average number contacts producers had during a 12-month period with County Extension Agents as this relates to size of operation are reported in the second part of Table II. Characteristics considered were number females of breeding age in herd, number cows-heifers exposed to bulls, number calves weaned, number bulls used, month first calf born, month last calf born, percent of calves born within 45 days, and number times per day cows checked during calving season.

Number females breeding age in herd. One hundred sixteen producers had under 25 cows, 920 producers had 25-49 cows, 348 producers reported 50-74 cows, 150 producers had 75-99 cows while 265 producers had 100 cows or more. Producers with under 25 cows had an average of 18 Extension contacts, producers 25-49 cows averaged 13 contacts, producers with 50-74 cows had 14 contacts, producers with 75-99 cows had 14 contacts while producers with 100 cows or more averaged 47 contacts with Extension during the past 12 months. When tested with the F test there was a significant relationship between number females breeding

age in herd and average number contacts beef producers had with County Agents. Producers with 100 cows or more had over two and one-half as many Extension contacts as any of the producers with smaller size herds.

Number cows-heifers exposed to bulls. One thousand one hundred sixty-eight producers had under 50 cows exposed to a bull, 442 producers had 50-99 cows exposed, 189 producers had 100 cows or more exposed to bulls, producers with under 50 females exposed had average of 19 Extension contacts during past 12 months, those with 50-99 cows had an average of 10 Extension contacts while producers with 100 cows-over had an average of 37 Extension contacts. When tested by variance F test there was a significant relationship between number cows-heifers exposed to bull and average number contacts per year with County Extension Agents. Producers with 100 cows-over had average Extension contacts which were twice as many as the next closest category.

Number calves weaned. One thousand three hundred thirteen producers weaned under 50 calves, 376 producers weaned 50-99 calves and 110 producers surveyed weaned 100 calves or more. Producers weaning less than 50 calves had an average of 20 Extension contacts, those weaning 50-99 calves averaged 12 Extension contacts, producers with 100 calves or over had an average of 26 Extension contacts. There was a significant relationship between number calves weaned and average number contacts with County Agent, when tested by the F test. Producers weaning more calves also reported significantly more Extension contacts.

Number bulls used. Six hundred eighty producers used one bull, 554 producers used two bulls, while 565 producers used three bulls or more. Those using one bull averaged 7 Extension contacts, producers

with 2 bulls averaged 9 Extension contacts, while those with three bulls or more had an average of 41 Extension contacts. When tested with the F test there was a significant relationship between number bulls used and average number Extension contacts. Producers with larger numbers of bulls had significantly more Extension contacts than those with fewer bulls.

Month first calf born. Five hundred nineteen producers reported first calves born in January, 231 producers had first calf in February, 91 producers in March, 25 producers in April, 10 producers in May, 2 producers in June, 9 producers in July, 23 producers in August, 111 producers in September, 181 producers in October, 222 producers in November and 239 producers reported first calves born in December. Producers reported the following number contacts, with first calves born in January - 15 contacts, February - 11 contacts, March - 8 contacts, April - 11 contacts, May - 54 contacts, June - 2 contacts, July - 9 contacts, August - 5 contacts, September - 7 contacts, October - 9 contacts, November - 9 contacts and December - 8 contacts. When tested by the F test differences were great enough for significant relationship between month first calf born and average number Extension contacts. There were a significantly large number of contacts from producers having first calves in May; January was also above average in Extension contacts.

Month last calf born. Sixty-four producers indicated their last calf, of most current calf crop was born in January, 98 producers indicated last calf was born in February, 200 indicated March, 339 indicated April, 352 indicated May, 261 indicated June, 107 indicated

July, 66 indicated August, 165 indicated September, 39 indicated October, 17 indicated November and 80 indicated last calf was born in December. The average number of Extension contacts for producers with last calf born in January was - 57, February - 45, March - 13, April - 10, May - 8, June - 8, July - 7, August - 5, September - 68, October - 5, November - 17, and December - 10. When tested with F test there was a significant relationship between month last calf born and average number of Extension contacts. Producers calving last calf in the months of January, February and September had a significantly larger number of Extension contacts.

Calves born within 45 days after first calf. One hundred fifty-three producers reported less than 25 percent calves born within a 45 day period, 385 producers had 25-49 percent calves born within 45 days, 642 reported 50-74 percent born within 45 days, and 398 producers reported 75-98 percent born within 45 days. Producers with less than 25 percent born within 45 days had an average of 7 Extension contacts, those with 25-49 percent born within 45 days had 8 Extension contacts, those with 50-74 percent had an average of 8 contacts and those with 75-98 percent had an average of 10 Extension contacts. When tested by the F test there was a significant relationship between percent calves born within 45 days and number of Extension contacts during past 12 months. Producers with a higher percentage calves born within 45 days also had more Extension contacts.

Number times per day checked cows during calving season. Seventy-nine producers reported not checking cows during calving season, 758 producers checked cows once daily, 679 producers checked cows twice

daily and 283 producers checked cows three times or more. Producers not checking cows had an average of 64 Extension contacts, producers checking once had an average of seven Extension contacts, producers checking cows twice had an average of 13 Extension contacts, producers checking cows three times or more during calving season had an average of 50 Extension contacts during past 12 months. There was a significant relationship between number times per day cows checked and number Extension contacts when tested by the F test. Producers checking cows none and those checking three times or more had a significantly larger number of Extension contacts.

Breeding management. The average number contacts with County Extension Agents during past 12 months as it relates to breeding management practices are reported in the third part of Table II. Variables reported are used females and bulls of different breeds, have crossbred females, checked bulls for breeding soundness, used performance tested bulls, age heifers bred, weight heifers bred.

Used females and bulls of different breeds. Six hundred seventy-one producers did not use females and bulls of different breeds while 921 producers did use females and bulls of different breeds. Each group reported an average of eight Extension contacts. When tested with the F test there was no significant relationship between using females and bulls of different breeds and the average number Extension contacts during the last 12 months.

Have crossbred females. Nine hundred thirty-two producers surveyed had crossbred females while 673 did not have crossbred females. Producers with crossbred females averaged eight Extension contacts

while those without crossbred females averaged 9 Extension contacts during the past 12 months. When tested by the analysis of variance F test there was no significant relationship between having or not having crossbred females and the average number of contacts with Extension during the past 12 months.

Checked bulls for breeding soundness. One thousand three hundred fifty-eight producers did not check for breeding soundness, while 287 producers did check for breeding soundness. Producers not checking for soundness had an average of 9 Extension contacts while those checking had an average of 18 Extension contacts. When tested by the F test there was a significant relationship between checking bulls for breeding soundness and the average number of Extension contacts during the past 12 months.

Used performance tested bulls. One thousand one hundred nineteen producers did not use performance tested bulls. Four hundred ninety-five producers did use performance tested bulls. Those not using performance tested bulls had an average of 9 Extension contacts while those using performance tested bulls had an average of 18 Extension contacts. When tested by the F test there was a positive significant relationship between using performance tested bulls and average number Extension contacts. Producers using performance tested bulls had significantly more Extension contacts than those not using performance tested bulls.

Age heifers bred. One hundred thirty-seven producers bred heifers at under 15 months of age, 115 bred heifers at 15 to 19 months of age while those breeding heifers at 20 months and over totaled 547

producers. Producers surveyed breeding heifers at under 15 months had an average of 20 Extension contacts. Those breeding heifers at 15 to 19 months had an average of 9 Extension contacts. Producers breeding heifers at 20 months and over had an average of 37 Extension contacts during the past 12 months. When tested by the F test there was a significant relationship between age heifers bred and average number Extension contacts during past 12 months. Producers breeding heifers at a younger age than recommended and those breeding at an age older than recommended had a higher number of Extension contacts during the past 12 months.

Weight heifers bred. Three hundred thirty-eight producers bred heifers that weighed less than 600 pounds, 921 producers bred heifers at 600 to 700 pounds while 540 producers bred heifers at 700 pounds and over. Those surveyed and breeding heifers at under 600 pounds had an average of 62 Extension contacts, while those breeding at 600 to 700 pounds had an average of 8 Extension contacts. Producers breeding at 700 pounds and over had an average of 9 Extension contacts. When tested by the analysis of variance F test there was a significant relationship between weight heifers bred and average number Extension contacts. Producers breeding heifers at under 600 pounds reported a significantly larger number of Extension contacts.

Feeding management. The average number Extension contacts during the past 12 months as it relates to feeding management practices are reported in part four of Table II. Variables reported are: major winter forage used, fed cows by weight and stage production, fed poor quality forages to dry cows, major crop residue fed to reduce feed

cost, used stockpiling, tested forages, creep fed calves and fed protein supplement daily.

Major winter forage used. One thousand four hundred fifty-two producers report hay as their major forage used. Ninety-two producers reported silage, while 152 said they fed a combination of the two. Those feeding hay as their major forage had an average of 10 Extension contacts, those feeding silage had an average of 48 Extension contacts while those feeding a combination had an average of 23 Extension contacts during the past 12 months. When tested by the F test there was a significant relationship between major winter forage used and average number Extension contacts during the past 12 months. Producers feeding silage as their major winter forage had significantly more Extension contacts than did those feeding hay or a combination of hay and silage. Producers feeding a combination also had more contacts than those feeding only hay.

Fed cows by weight and stage of production. One thousand forty-seven producers reported not feeding by weight and stage of production, while 571 producers did feed by weight and stage of production. Producers not feeding by weight and stage of production had an average of seven Extension contacts while those feeding by weight and stage of production had an average of 10 Extension contacts. When tested by the analysis of variance F test there was a significant relationship between producers feeding by weight and stage of production and average number Extension contacts. Producers feeding by weight and stage production had more Extension contacts.

Fed poor quality forages to dry cows. Eight hundred and nine producers did not feed poor quality forages to dry cows, 808 producers did feed poor quality forages to dry cows. Those not feeding had an average of 11 Extension contacts while those feeding poor quality forages had an average of 14 Extension contacts. When tested by the F test there was a significant relationship between feeding poor quality forages and average Extension contacts. Those producers feeding poor quality forages to dry cows had a significantly higher number of Extension contacts.

Major crop residue fed to reduce feed cost. One thousand and eleven producers fed no crop residue to reduce feed cost. Two hundred ninety-three producers fed corn residue, 71 fed soybean residue, 168 fed both corn and soybean while 80 producers fed another residue to reduce feed cost. Producers not feeding a residue had an average of 9 Extension contacts, those feeding corn residue averaged 10 contacts, those feeding soybeans averaged 7 contacts, those feeding both averaged 10 contacts, while those feeding other crop residue averaged 7 Extension contacts. When tested by the F test differences were not great enough to be significantly related.

Used stockpiling. Five hundred thirty-seven producers did not stockpile fescue while 1152 did use stockpiling. Those stockpiling averaged 13 Extension contacts while those not stockpiling averaged 12 Extension contacts. When tested by the F test differences were not great enough to show significant relationship.

Tested forages. One thousand five hundred twenty-seven producers did not test forages, while 94 producers did test forages.

Those not testing averaged 8 Extension contacts while those testing averaged 12 Extension contacts. When tested by the F test there was a significant relationship between testing forages and average number Extension contacts. Producers who had their forages tested had significantly more Extension contacts.

Creep fed calves. One thousand seventy producers did not creep feed calves, 554 producers did creep feed their calves. Those producers creep feeding had an average of 10 Extension contacts during the past 12 months. Those not creep feeding calves had an average of 7 Extension contacts. When tested by the F test there was a significant relationship between creep feeding and number of Extension contacts. Those creep feeding had significantly more Extension contacts.

Fed protein supplement daily. Three hundred ninety-six producers did not feed protein supplement, 1226 producers did feed protein supplement daily. Those feeding protein supplement daily had an average of 7 Extension contacts during the past 12 months. When tested by the F test there was a significant relationship between feeding protein supplement daily and the average number of Extension contacts. Those feeding protein supplement daily had significantly more Extension contacts during the past 12 months.

General Herd Management Practices

The average number contacts with County Extension Agents during the past 12 months as it relates to general herd management practices are characterized in part five of Table II. This data is reported under the following headings: method used to identify cows, age calves

when dehorned, age male calves castrated, number times feeder calves implanted, method used to supply salt-minerals, method used to provide magnesium oxide, season brood cows dewormed, calves dewormed while nursing, fly control method used on cows, began fly control by April 1st, vaccinated for leptospirosis, treated for grubs before November 1st, lice treatment used, cows pregnancy checked, herd enrolled in TBCIP or other improvement program, calves vaccinated twice, heifers vaccinated for brucellosis, and bulls kept separate from cows.

Method used to identify cows. Six hundred fifty-one producers reported no method was used to identify cows, 970 producers used some method of cow identification, producers identifying cows had an average of 9 Extension contacts during the past 12 months, those not identifying cows had an average of 7 Extension contacts during the past 12 months. When tested by the F test there was a significant relationship between cattle identification and number of Extension contacts. Those using a method of identifying cows had significantly more contacts per year with Extension.

Age calves when dehorned. Fifty-eight producers reported calves were dehorned within 48 hours, 198 producers dehorned within 2 months, while 297 dehorned after 2 months. Those dehorning within 48 hours had an average of 10 Extension contacts during the past 12 months, those dehorning before 2 months had an average of 8 contacts, as did those dehorning calves after 2 months of age. When tested by the F test differences were not large enough to show a significant relationship.

Age male calves castrated. Two hundred eighty-six producers castrated calves within 48 hours of birth, 644 castrated before 2

months of age. Each of three categories or groups reported 8 Extension contacts during the past 12 months. When tested by the F test there were no differences, therefore they were not significantly related.

Number times feeder calves implanted. One thousand one hundred and thirty producers reported that they implanted no feeder calves, 361 implanted calves once, while 308 implanted calves twice. Those not implanting calves had an average of 7 Extension contacts, those implanting calves once averaged 10 contacts with Extension, while those implanting twice had an average of 69 Extension contacts. When tested by the F test there was a significant relationship between implanting calves and Extension contacts. Those implanting calves twice had a significantly larger number of contacts with Extension.

Method used to supply salt-minerals. Eighty-six producers did not supply salt and minerals to cattle, while 1538 producers did supply salt and minerals. Those supplying salt-minerals had an average of 8 contacts while those not supplying minerals had an average of 6 Extension contacts. When tested with the F test there was a positive but not significant relationship between supplying salt-minerals and the average number contacts with County Agents during past 12 months.

Method used to provide magnesium oxide. Four hundred forty-one producers did not feed magnesium oxide, 548 producers fed mag-oxide in block form, 566 producers fed it loose, while 63 producers fed mag-oxide in grain or silage. Those surveyed reporting not feeding mag-oxide had an average of 7 Extension contacts, those feeding mag-oxide in the block had an average of 8 Extension contacts while those feeding it loose reported 9 contacts with Extension. Producers feeding

mag-oxide in grain or silage reported an average of 12 Extension contacts during the past 12 months. When tested by the F test there was a significant relationship between method used to feed mag-oxide and average number Extension contacts during past 12 months. Producers feeding mag-oxide had more Extension contacts and those producers feeding mag-oxide in grain or silage had more contacts than those feeding by other methods.

Season brood cows dewormed. Six hundred twenty-five producers reported not deworming brood cows, 606 producers dewormed in the fall while 369 dewormed both in the fall and spring. Those not deworming average 6 Extension contacts, those deworming in the fall had 8 contacts while producers deworming in fall and spring averaged 11 Extension contacts. When tested by the F test, differences were great enough to show a significant relationship between season brood cows dewormed and average number of Extension contacts during past 12 months. Those deworming cows in the fall and spring showed more Extension contacts than either of the two other categories.

Calves dewormed while nursing. Nine hundred and two producers did not deworm calves while 713 beef producers did deworm calves while calves were still nursing. Those deworming had an average of 10 contacts, while those not deworming had an average of 7 Extension contacts. When tested by the analysis of variance F test there was a significant relationship between deworming calves while nursing and average number of Extension contacts. Those deworming calves during nursing had significantly more Extension contacts than those not deworming while nursing.

Fly control method used on cows. One hundred forty producers did not use any method of fly control while 1254 producers used backrubbers, dustbags or flaps, 405 producers reported using oral larvacide or eartags. Producers using no fly control method averaged 5 Extension contacts during the past 12 months, those using backrubbers, dust bags and flaps averaged 8 contacts while those using oral larvacides and eartags averaged 54 Extension contacts. When tested by the F test there was a significant relationship between fly control method and number of Extension contacts. Producers using oral larvacides and eartags had a significantly larger number of Extension contacts compared to producers using the other two methods.

Began fly control April. Two hundred sixty-nine producers did not begin fly control in April, while 875 reported yes, that they did begin fly control in April. Four hundred and six started at a later date while 74 producers did not treat for flies. Producers not beginning fly control in April averaged seven Extension contacts, those beginning fly control in April averaged 9 contacts, those beginning at a later date averaged 8 Extension contacts while those that did not treat averaged 4 Extension contacts. When tested by the F test there was a significant relationship between beginning fly control by April 1st and average number of Extension contacts. Those beginning fly control by April 1st as recommended averaged more Extension contacts.

Vaccinated for Leptospirosis. Eight hundred eightly eight producers did not vaccinate for Lepto while 733 producers did vaccinate for Leptospirosis. Those producers vaccinating reported an average of 10 Extension contacts, while those not vaccinating had an average of 7

Extension contacts. When tested by the F test there was a significant relationship between vaccinating for Lepto and average number Extension contacts. Producers vaccinating had significantly more Extension contacts.

Treated for grubs before November. Seven hundred and nine producers did not treat for grubs before November, 910 producers did treat for grubs before November. Those producers treating for grubs averaged nine Extension contacts during the past 12 months while those not treating for grubs before November averaged 7 contacts with Extension during the past 12 months. When tested with the F test differences were great enough to prove significant relationship. Producers treating for grubs as recommended had significantly more Extension contacts.

Lice treatment used. Four hundred twenty-six producers did not treat for lice, 649 producers treated once, 342 producers treated November and February, while 202 producers said lice were evident. Producers not treating averaged 6 Extension contacts, producers treating once had 9 Extension contacts, producers treating twice had 10 Extension contacts while those reporting lice were evident, averaged 6 Extension contacts during the past 12 months. When tested by the analysis of variance F test, there was a significant relationship between lice treatment used and average Extension contacts during the past 12 months. Those treating for lice twice had the most Extension contacts, while those treating once had the second largest number of Extension contacts.

Cows pregnancy checked. One thousand four hundred fourteen producers did not pregnancy check cows, 204 producers did pregnancy check

cows. Producers pregnancy checking reported an average of 13 Extension contacts while those not pregnancy checking had an average of 8 Extension contacts during the past 12 months. When tested by the F test there was a significant relationship between pregnancy checking and average number Extension contacts. Producers who did pregnancy check their cows had significantly more contacts with Extension.

Herd enrolled in TBCIP or other improvement program. One thousand four hundred seventy-seven producers were not enrolled in a herd improvement program, 135 producers were participating in an improvement program. Producers not participating averaged 8 Extension contacts while those participating in improvement programs had an average of 14 Extension contacts during the past 12 months. When tested by the analysis of variance F test there was a significant relationship between herds enrolled in TBCIP or other improvement programs and number of Extension contacts. Producers enrolling beef herds in improvement programs had significantly more Extension contacts than those not enrolled.

Calves vaccinated twice. Eight hundred forty producers did not vaccinate calves twice, while 777 producers did vaccinate calves twice. Those vaccinating calves twice averaged 9 Extension contacts while those not vaccinating had only 7 contacts with Extension. These differences were significant. Producers who vaccinated twice as recommended, had significantly more contacts with Extension Agents.

Heifers vaccinated for Brucellosis. One thousand one hundred seventy-three producers did not vaccinate for Brucellosis while 428 producers did vaccinate for Brucellosis. Those vaccinating averaged seven contacts with Extension, while those not vaccinating averaged 11

Extension contacts. When tested by the F test differences were great enough for significant relationship. Producers vaccinating for Brucellosis had significantly more Extension contacts than those not vaccinating.

Bulls kept separate from cows. Six hundred fifty-four producers did not separate cows and bulls while 958 did separate bulls and cows during the off breeding season. Producers separating bulls from cows averaged 6 Extension contacts while those not separating had 10 Extension contacts. When tested by the F test there was a significant relationsip between separating bulls and cows and average number Extension contacts. This relationship was not positive though, as producers not separating cows and bulls had significantly more Extension contacts.

Beef cattle marketing. The average number contacts with County Extension Agents during the past 12 months as it relates to beef cattle marketing are reported in part six of Table II. This data is reported under the following headings: number feeder calves sold at weaning, average weight calves sold at weaning, number cattle sold as short yearlings, number calves sold as long yearlings, number finished cattle sold, number replacement heifers retained and method used to market feeder calves.

Number feeder calves sold at weaning. Eight hundred fifteen producers sold less than 25 feeder calves at weaning, 529 producers sold 25-49 calves, 139 producers sold 50-74 calves, 41 producers sold 75-99 calves while 275 producers sold 100 calves or more. Producers selling less than 25 feeder calves at weaning had 8 Extension contacts during past 12 months, those selling 25-49 calves had 7 Extension

contacts, those selling 50-74 calves averaged 8 Extension contacts, those selling 75-99 calves averaged 10 Extension contacts, those selling over 100 calves averaged 76 Extension contacts during the past 12 months. When tested by the F test, there was a significant relationship between number feeder calves sold at weaning and average number Extension contacts. Producers selling 100 calves and over had a larger number of Extension contacts than those with smaller herds.

Average weight calves sold at weaning. One thousand and twenty-two producers reported calves weighing under 470 pounds at weaning, 771 producers reported their calves weighing over 471 pounds at weaning. Producers with calves sold at weaning and weighing 470 pounds and under averaged 20 Extension contacts, while those producers that reported calves weighing over 470 pounds when sold at weaning had an average of 16 Extension contacts. When tested by the F test there was a significant relationship between average weight calves sold at weaning and average number Extension contacts. Producers with fewer calves sold at weaning, also made fewer contacts with Extension than did those selling a larger number of calves.

Number calves sold as short yearlings. One thousand one hundred and twelve producers reported selling not any calves as short yearlings, 191 producers sold under 10 calves, 157 producers sold 10-19 calves, seventy-nine producers sold 20-29 calves while 260 producers sold 30 calves or more. Producers not selling any calves had an average of 9 Extension contacts, those selling under 10 calves and 10-19 calves each

averaged 10 Extension contacts, those selling 20-29 calves had 8 contacts while those selling 30 calves and over had an average of 74 Extension contacts during the past 12 months. When tested by the F test differences showed a significant relationship. Producers selling 30 calves and over had a very large number of Extension contacts during the past 12 months.

Number calves sold as long yearlings. One thousand three hundred and twenty producers reported not selling any calves, 208 producers sold under 10 calves, 62 producers sold 10-19 calves, 51 producers sold 20-34 calves while 158 producers sold 35 calves or over. Producers selling not any calves averaged 8 Extension contacts, those selling under 10 calves averaged 31 Extension contacts, those selling 10-19 calves averaged 15 contacts, those selling 20-34 calves averaged 12 contacts, while those selling 35 calves and over had an average of 94 Extension contacts. When tested by the F test there was a significant relationship between number calves sold as long yearlings and average Extension contacts during past 12 months. Producers selling 35 calves and over had a very high number of Extension contacts during the past 12 months.

Number finished cattle sold. One thousand three hundred eighty-four producers did not sell any finished cattle, 190 producers sold under 10 calves, 41 producers sold 10-19 calves, 184 producers sold 20 calves and over. Those selling no calves averaged 8 contacts, producers selling under 10 calves averaged 30 contacts, those selling 10-19 calves

averaged 11 Extension contacts, while those selling 20 calves-over averaged 89 Extension contacts. When tested by the F test there was a significant relationship between number finished cattle sold and average number Extension contacts. Producers selling more finished cattle had a higher number of Extension contacts.

Number replacement heifers retained. Four hundred eighty-four producers reported not selling any replacement heifers, 722 producers sold under 10 heifers, 368 producers sold 10-19 heifers while 225 producers sold 20 heifers or over. Producers not selling any calves averaged 7 Extension contacts, those selling under 10 heifers had 8 Extension contacts, producers selling 10-19 heifers had 24 contacts, producers selling 20 heifers or over averaged 68 Extension contacts. When tested by the analysis of variance F test there was a significant relationship between replacement heifers retained and average number Extension contacts. Producers retaining 20 heifers or over had considerably more Extension contacts.

Method used to market feeder calves. Seven hundred ninety-four producers sold calves through weekly auctions, 489 producers sold at feeder calf sales, 136 sold to traders while 153 producers sold directly to feeders. Producers marketing calves through weekly auction averaged 8 Extension contacts, those selling at feeder calf sales averaged 14 contacts, those selling to traders averaged 26 Extension contacts, while those selling directly to feeders averaged 37 Extension contacts. When tested by the F test there was a significant relationship between

method used to market feeder calves and number of Extension contacts. Producers selling directly to feeders and those selling to traders had a higher number of contacts with Extension.

Forage production and use. The average number contacts with County Extension Agents during the past 12 months as it relates to forage production and its use are reported in part seven of Table II. This data is reported under the following headings: acres improved permanent pasture, acres temporary pasture and percent permanent pasture with 30 percent legume.

Acres improved permanent pasture. Seven hundred fifty-six producers reported having under 100 acres while 1022 producers reported having 100 acres or over. Producers with less than 100 acres averaged 8 Extension contacts while producers with 100 acres or over averaged 27 Extension contacts during past 12 months. When tested with the F test there was a significant relationship between acres improved permanent pasture and average number of Extension contacts. Producers with larger acreage of permanent pasture also had more Extension contacts.

Acres temporary pasture. One thousand two hundred fifty-eight producers reported under 15 acres while 541 reported 15 acres or over. Producers with less than 15 acres averaged 7 Extension contacts while those with 15 acres or over averaged 27 Extension contacts. When tested by the F test there was a significant relationship between acres temporary pasture and average number Extension contacts. Producers

with more temporary pasture also reported more Extension contacts during past 12 months.

Percent permanent pasture with 30 percent legume. Eight hundred sixty-one producers had less than 50 percent of pasture with 30 percent legume, 767 producers had 50-100 percent of pasture with 30 percent legume. Producers with less than 50 percent averaged 29 Extension contacts while those with 50 to 100 percent averaged 8 Extension contacts. When tested by the F test differences were great enough to show significant relationship. The relationship was negative as producers with a lower percentage of legumes in pasture had more Extension contacts.

Created variables. The average number contacts with County Extension Agents during the past 12 months as it relates to three created variables is reported in part eight of Table II. This data is reported under the following headings: Percent cows - heifers weaning calves, Number cows - heifers bred per bull used and the percent of calves lost at birth.

Percent cows-heifers weaning calves. Four hundred ninety-five producers reported under 90 percent of cows-heifers weaning calves while 1304 producers reported over 90 percent cows-heifers weaning calves. When tested by the F test there was a positive significant relationship between cows-heifers weaning calves and average number contacts with Extension. Producers with more Extension contacts also showed a higher percentage of cows-heifers weaning calves.

Number cows-heifers bred per bull used. Eight hundred sixty-eight producers had under 25 cows-heifers bred per bull while 931 producers reported 25 cows-heifers or over bred per bull used. Producers breeding 25 or under had 29 Extension contacts while those breeding 25 cows or over averaged only 9 Extension contacts. When tested by the F test there was a significant relationship between number cows-heifers bred per bull and number of Extension contacts. Those breeding under 25 cows averaged significantly more Extension contacts.

Percent calves lost at birth. Four hundred thirty-two producers lost no calves at birth, 1359 reported losing 1-5 percent of calves, while 8 producers reported losing over 5 percent. Producers losing no calves averaged 20 Extension contacts, those losing one-five percent averaged 18 contacts while those losing over 5 percent averaged 109 Extension contacts during past 12 months. When tested by the F test there was a significant relationship between percent calves lost at birth and average number Extension contacts. The small number of producers losing over 5 percent showed a very large number of Extension contacts, while those losing no calves also showed significantly more contacts with Extension.

III. PERCENTAGE OF CALVES, FROM MOST RECENTLY WEANED CALF CROP, BORN WITHIN 45 DAYS

Section III presents data regarding the relationship between selected variables and the percentage of calves, from the most recently weaned calf crop, born within 45 days. The mean is given for each variable. Differences were tested by the one way analysis of variance test F. Values which achieved the .05 level were considered significant.

General Producer Characteristics

The characteristics of type of beef herd and farming status are shown in the first part of Table III.

Type of beef herd. Two hundred seventy-two producers were pure bred producers. Six hundred twenty-one producers reported their type herd as being straight bred. These producers each had an average of 54 percent of their calves born within 45 days. Seven hundred fifty-six crossbred producers averaged slightly less than 53 percent of calves born within a 45 day period. When tested by the analysis of F variance test there were no significant relationships between the type of beef herd and percentage of calves born within a 45 day period.

Farming status. Of those responding to survey 828 were full-time farmers, 653 were part-time farmers. These respondents reported an average of 54 and 53 percent calves born within 45 days, respectively. Those which were retired report slightly less, 52 percent of calves born within a 45 day period. When tested by the F test there

TABLE III

PERCENTAGE CALVES BORN WITHIN 45 DAYS

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
General					
Type Herd					
Purebred	272	54			
Straightbred	621	54			
Crossbred	756	53			
Total	1649	54	0.719	2	.5404
Farming Status					
Full-time	828	54			
Part-time	653	53			
Retired	135	52			
Total	1616	53	1.38	2	.2524
Size of Operation					
No. Females Breeding Age in Herd					
Under 25 cows	100	58			
25-49 cows	902	54			
50-74 cows	333	54			
75-99 cows	147	53			
100 or more cows	188	49			
Total	1670	53	2.82	4	.0241
No. Cows-Heifers Exposed to Bulls					
Under 50 cows	1067	54			
50-99 cows	445	53			
100 or more cows	158	49			
Total	1670	53	3.24	2	.0393
No. Calves Weaned					
Under 50 calves	1194	54			
50-99 calves	375	52			
100 or more calves	101	50			
Total	1670	53	2.40	2	.0913

TABLE III (continued)

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
No. Bulls Used					
One bull	702	54			
Two bulls	563	53			
Three or more bulls	405	52			
Total	1670	53	1.15	2	.3178
Month First Calf Born					
Jan.	506	54			
Feb.	225	57			
March	90	64			
April	23	63			
May	6	43			
June	4	53			
July	3	28			
Aug.	26	37			
Sept.	115	40			
Oct.	185	48			
Nov.	227	53			
Dec.	257	58			
Total	1677	53	10.99	11	.0000
Last Calf Born					
Jan.	32	68			
Feb.	65	65			
March	197	61			
April	354	57			
May	374	51			
June	265	49			
July	113	50			
Aug.	66	46			
Sept.	68	48			
Oct.	41	55			
Nov.	17	42			
Dec.	74	42			
Total	1666	53	12.20	11	.0000

TABLE III (continued)

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
Breeding Management					
Used Females & Bulls of Different Breeds					
No	694	53			
Yes	937	54			
Total	1631	54	.049	1	.8256
Had Crossbred Females					
No	961	54			
Yes	677	53			
Total	1638	54	.62	1	.4314
Checked Bulls for Breeding Soundness					
No	1390	52			
Yes	261	59			
Total	1651	53	19.64	1	.0000
Used Performance Tested Bulls					
No	1141	52			
Yes	515	57			
Total	1656	54	23.	1	.0000
Age Heifers Bred					
Under 15 months	122	52			
15-19 months	1146	54			
20 months - over	402	53			
Total	1670	53	.561	2	.5706
Weight Heifers Bred					
Under 600 lbs.	169	44			
600-700 lbs.	967	54			
700 lbs. - over	534	54			
Total	1670	53	15.60	2	.0000

TABLE III (continued)

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
Feeding Management					
Major Forage Used to Winter Cows					
Hay	1458	53			
Silage	61	58			
Combination	141	54			
Total	1660	53	1.40	2	.2481
Fed Cows by Wt. & Stage Production					
No	1069	52			
Yes	589	57			
Total	1658	53	20.99	1	.0000
Tested Forages					
No	1563	53			
Yes	100	54			
Total	1663	53	3.57	2	.0283
Fed Protein Supplement Daily					
No	392	54			
Yes	1271	53			
Total	1663	53	3.95	2	.0194
General Herd Management					
Method Used to Identify Cows					
No	667	52			
Yes	995	54			
Total	1662	53	2.44	1	.1185
Minerals & Salt Supplied					
No	88	53			
Yes	1577	53			
Total	1655	53	.013	1	.9094

TABLE III (continued)

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
Method Used to Provide Mag - Oxide					
None	439	50			
Block	574	54			
Loose	572	55			
In Grain-or-Silage	68	56			
Total	1653	54	5.73	3	.0007
Season Brood Cows Dewormed					
Not dewormed	650	50			
Fall	616	55			
Fall & Spring	378	57			
Total	1644	54	12.23	2	.0000
Fly Control Method Used on Cows					
None	140	50			
Backrubbers, dustbags, flaps	1298	54			
Oral larvacide, eartags	232	54			
Total	1670	53	1.92	2	.1475
Began Fly Control - April					
No	263	49			
Yes	895	56			
Later date	435	51			
Did not treat	72	50			
Total	1665	53	10.13	3	.0000
Vaccinated for Lepto					
No	904	52			
Yes	760	55			
Total	1664	53	6.77	1	.0094
Treated for Grubs Before November					
No	728	51			
Yes	932	56			
Total	1660	53	18.05	1	.0000

TABLE III (continued)

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
Lice Treatment Used					
Did not treat	437	48			
Treated once	667	55			
Treated Nov.-Feb.	348	57			
Lice were evident	208	51			
Total	1660	53	12.77	3	.0000
Cows Pregnancy Checked					
No	1456	53			
Yes	204	56			
Total	1660	53	3.19	1	.0741
Herd Enrolled in TBCIP or Other Program					
No	1526	53			
Yes	129	55			
Total	1655	53	1.21	1	.2720
Heifers Vaccinated for Brucellosis					
No	1216	53			
Yes	428	54			
Total	1644	53	.055	1	.8153
Kept Bulls Separate from Cows					
No	659	45			
Yes	996	59			
Total	1655	53	166	1	.0000
Beef Cattle Marketing					
Ave. Weight Calves Sold at Weaning					
470 lbs. - under	924	49			
470 lbs. - over	746	58			
Total	1670	53	67	1	.0000

TABLE III (continued)

Characteristic	Number Producers	Percent Calves Born	F	df	Sig.
Forage & Prod. Use					
Acres Improved Permanent Pasture					
Under 100	762	54			
100 acres - over	887	53			
Total	1649	53	.29	1	.5915
Acres Temporary Pasture					
Under 15 acres	1270	53			
15 acres - over	400	54			
Total	1670	53	.024	1	.8772
Percent Perm. Pasture with 30 Percent Legume					
Under 50%	715	48			
50-100%	791	59			
Total	1506	54	89	1	.0000
Created Variables					
Percent Cows-Heifers Weaning Calves					
Under 90	512	49			
90 - over	1158	55			
Total	1670	53	28	1	.0000
No. Cows-Heifers Bred Per Bull Used					
Under 25 cows	698	55			
25 cows - over	972	52			
Total	1670	53	4.59	1	.0322
Percent Calves Lost at Birth					
None	391	56			
1-5%	713	53			
Over 5%	565	52			
Total	1669	53	2.78	2	.0397

were no significant relationships between producers' farming status and percentage of calves born within a 45 day period.

Size of Operation

The percentage of calves from most recently weaned calf crop, born within 45 days as this variable related to size of operation is reported in the second part of Table III. Those characteristics considered were number females breeding age in herd, number cows-heifers exposed to bulls, number calves weaned, number bulls used, month first calf born and month last calf born.

Number females in breeding age in herd. The 100 producers with herds of under 25 females had the largest percentage of calves born within 45 days than any other group. Producers in the 25-49 cow group and 50-74 cows group each showed an average of 54 percent of their calves being born within 45 days. There was a definite trend as herds got larger for a smaller number of calves to be born within the 45 day period. This was evident by the fact that the 100 cows and over group only reported 49 percent of calves born within a 45 day period, compared to an average of 53 percent for the 1670 producers responding. There was a positive significant inverse or negative relationship between herd sizes and length of calving season, when tested with the variance F test. Producers with larger herds reported a smaller percentage of their calves born within 45 days.

Number cows-heifers exposed to bulls. One thousand sixty-seven producers reported exposing 49 cows or less to bulls in the immediate past calving season, this group reported 54 percent of their calves

were born within a 45 day period. Once again the 100 cows and over category showed 49 percent of calves born within a 45 day period. The 50-99 cows group reported 53 percent calves born within a 45 day period. Fifty-three percent was also the average for the 1670 producers responding to this question. When tested by the analysis of variance F test there was a significant negative relationship between the size of herds and the percentage of calves born within the 45 day period.

Number calves weaned. Of those surveyed 1194 reported weaning under 50 calves. These producers reported 54 percent of calves born within a 45 day period. The 50-99 and 100 calves and over categories showed 52 and 50 percent of calves born within a 45 day period. Although the larger herds according to calves weaned, have a smaller percentage of calves born within 45 days, no significant relationship was shown when the variance F test was used.

Number bulls used. The 702 producers using one bull had 54 percent of their calves born within a 45 day period. Those with two bulls and three bulls reported 53 and 52 percent of their calves born within a 45 day period.

Month first calf born. There was a large range, in percent of calves born within 45 days, as to which month the first calf was born from recently weaned calf crop. The high month was March with 64 percent while the low month was July with only 28 percent calves born within 45 days. The trend was definitely for a higher percentage of calves born within 45 days from recommended calving months and a lower percentage of calves born within 45 days from summer months which are not recommended for calving in Tennessee. When tested by the F test

there was a significant relationship between the percentage of calves born within 45 days and the month first calves were born.

Month last calf born. Producers having last calf born in winter and spring months tend to have a larger percentage of calves born within a 45 day period. Those reporting 68, 65, 61 and 57 percent had their last calves born in January, February, March and April respectively. The analysis of variance F test indicated a significant relationship between the month in which producers' last calf was born and the percentage of calves born within a 45 day period of time. Producers whose last calf was born in January, February or March tended to have a higher percentage of their calves born within a 45 day time period as compared to those having lost calves born during other months.

Breeding management. The percentage of calves born within a 45 day period as it related to breeding management practices are characterized in part three of Table III. Variables reported are used females and bulls of different breeds, have crossbred females, checked bulls for breeding soundness, used performance tested bulls, age heifers bred, weight heifer bred.

Used females and bulls of different breeds. Six hundred ninety-four producers reported that they did not use females and bulls of different breeds. These respondents calved 53 percent of cows within a 45 day period while the 937 producers which did use bull and females of different breeds had 54 percent of calves born within a 45 day period. When tested by the analysis of variance F test, no significant relationship was shown between percent of calves born within 45 day period of those cross breeding and those straight breeding.

Have crossbred females. The 961 producers not having crossbred females had 54 percent of calf crop born within 45 days while the 677 producers having crossbred females had only 53 percent of calves born within a 45 day period. There were no significant relationships between having or not having crossbred females and percentage of calves born within 45 days when analyzed by the F test.

Checked bulls for breeding soundness. One thousand three hundred ninety producers surveyed indicated no checking of bull for breeding soundness prior to breeding season. Those respondents had 52 percent of their calves born within a 45 day period. On the other hand, the 261 producers checking for breeding soundness had 59 percent of calves born within a 45 day period. When tested by the analysis of variance F test a significant positive relationship was shown between those checking bulls for breeding soundness and those having a higher percentage of calves born within a 45 day period.

Age heifers bred. Data indicated that those 122 producers breeding heifers under 15 months of age had 52 percent of calves born within a 45 day period. Producers breeding heifers at 15-19 months and 20 months and over reported 54 and 53 percent of calves born within a 45 day period. Although those breeding heifers at older ages showed a slight advantage in percentage of calves born within a 45 day period, when analyzed by the F test no significant relationship was shown to exist.

Weight heifers bred. One hundred sixty-nine producers reported breeding heifers at weights of less than 600 lbs. Those producers also had only 44 percent of calves born within a 45 day period. The heavier

weight at which heifers were bred 600 to 700 lbs. and 700 lbs. and over, data revealed 54 percent of calves born within a 45 day period for each. When tested by the analysis of variance F test there was a significant positive relationship between the weight heifers bred and the percentage of calves born within a 45 day period.

Feeding management practices. The percentage of calves born within a 45 day period as it relates to feeding management practices are reported in part four of Table III. Those variables reported are major forage used to winter cows, feed cows by weight and stage production, used forage testing and fed protein supplement daily.

Major forage used to winter cows. Most producers, 1458 reported hay as the major forage used to winter cows, those same producers also reported 53 percent of calves born within a 45 day period. Of the 61 producers feeding mainly silage 58 percent of their calf crop was born within 45 days. Those 141 using a combination of the two forages showed 54 percent of calves born within a 45 day period. Although differences did occur when tested by the analysis of variance F test, these differences were not significant at the .05 level. Therefore, there was not a significant relationship between major forage used and the percentage of calves born within 45 days.

Fed cows by weight and stage of production. Of the 1658 producers responding to this variable 1069 reported not feeding by weight and stage of production. This group reporting "no" had 52 percent of calves born within a 45 day period. Five hundred eighty-nine producers which did feed by weight and stage of production reported 57 percent calves born within a 45 day period. When tested by the analysis of

variance F test there was a significant relationship between percent of calves born within a 45 day period and whether or not cows were fed by weight and stage of production. Producers feeding by weight and stage of production had a higher percentage of calves born within a 45 day period.

Tested forages. Of those surveyed 1563 producers reported not testing forages. These producers reported 53 percent of calves born within a 45 day period. One hundred producers reporting "yes" to testing forages had 54 percent of calves born within a 45 day period. When the F test was used there was a positive relationship between testing forages and the percentage of calves born within 45 days. Producers who did test forages had a significantly higher percentage of their calves born within 45 days.

Fed protein supplement daily. Only 392 producers of the 1663 responding to this question, did not feed protein supplement daily. Those not feeding protein supplement indicated 54 percent calves born within a 45 day period. Those feeding protein supplement indicated 53 percent of calves born within a 45 day period. When tested by the analysis of variance F test there was a significant relationship between the feeding of protein supplement and percentage of calves born within a 45 day period. Those not feeding supplemental protein had a larger percentage of calves born within 45 days from first calf.

General Herd Management Practices

The percentage of calves born within a 45 day period as it relates to General Herd Management Practices are characterized in part five of Table III. This data is reported under the following headings: method used to identify cows, minerals and salt supplied, method used to provide mag-oxide, season brood cows dewormed, fly control method used on cows, began fly control by April, vaccinated for Leptospirosis, treated for grubs before November, lice treatment used, cows pregnancy checked, herd enrolled in TBCIP or other improvement program, heifers vaccinated for Brucellosis and kept bulls separate from cows.

Method used to identify cows. Of the 1662 producers surveyed 667 reported no method used to identify cows. Nine hundred ninety-five producers did use some method of identification for cows. Those using no method had 52 percent calves born within a 45 day period while those using a method to identify cows had 54 percent calves born within 45 days. When tested by the analysis of variance F test there was no significant relationship shown between percentage of calves born within a 45 day period and whether or not producers use some method to identify cows.

Minerals and salt supplied. Eighty-eight producers did not supply salt or minerals while 1577 producers did keep their cattle supplied with salt and minerals. Each of the two groups reported 53 percent of calves born within a 45 day period. When tested by the analysis of variance F test there was no significant relationship be-

tween those answering "yes" or "no" as to salt supplied and the percentage of calves born within a 45 day period.

Method used to provide magnesium-oxide. One thousand six hundred fifty-three producers responded to this variable with 439 indicating no mag-oxide being provided, this group reported only 50 percent of calves born within a 45 day period. Those feeding magnesium oxide in blocks, loose or grain silage reported 54, 55, and 56 percent of calves born within a 45 day period. The F test indicated a significant positive relationship between the feeding of magnesium and the percentage of calves born within a 45 day period. Producers who fed magnesium oxide had a significantly higher percentage of their calves born within a 45 day time period.

Season brood cows dewormed. Of those responding to this variable, 650 producers indicated no deworming of cattle during the year. The same group also reported 50 percent of calves born within a 45 day period. Six hundred sixteen reported deworming in the fall while 378 reported fall and spring deworming. Those deworming in the fall reported 55 percent calf crop born in a 45 day period while those deworming fall and spring reported a 57 percent of calves born within 45 days. These differences were found to be positively and significantly related when analyzed by the variance F test. Producers deworming cattle twice had a higher percentage of calves born within 45 days than those de-

worming once or not at all. Those deworming once also had a higher percentage of calves born within 45 days than those not deworming.

Fly control method used on cows. One hundred forty producers used no fly control method whatsoever. These producers had 50 percent of calves born within a 45 day period. Those using backrubbers, dust bags, flaps, oral larvacide and ear tags had 54 percent of calves born within a 45 day period. When tested by the analysis of variance F test there was a positive relationship but no significant relationship for those using some means of fly control to have a higher percentage of calves born within a 45 day period.

Began fly control by 1st of April. Of the 1665 producers responding to this variable 263 indicated they did not begin fly control by April 1st. Eight hundred ninety-five producers did begin fly control program by April 1st while 435 started a fly control program sometime later. Seventy-two indicated they did not treat at any time for flies. Those that did not begin fly control by April 1st had only 49 percent of calves born within a 45 day period while those starting fly control by April 1st had 56 percent calves born within 45 days. Those that started later and those that did not treat had 51 and 50 percent of calves born within 45 days respectively. When tested by the analysis of variance F test there was a positive and significant relationship for those beginning fly control by April 1st as recommended and the percentage of calves born within a 45 day period.

Treated for grubs before November 1st. Seven hundred twenty-eight producers that did not treat for grubs by November 1st, these producers had 51 percent of calves born within a 45 day period, while the 932 producers treating for grubs before November 1st had 56 percent of calves born within a 45 day period. When tested by the F test there was a significant relationship with treating grubs by recommended date and the percentage of calves born within a 45 day period.

Lice treatment used. Four hundred thirty-seven producers indicated not treating cattle for lice, they also reported 48 percent of calves born within a 45 day period. Six hundred sixty-seven producers treated cattle once while 348 producers treated cattle in November and February, these two groups reported 55 percent and 57 percent of calves born within a 45 day period respectively. When tested by the F test there was a significant and positive relationship between treating cattle for lice and the percentage of calves born within 45 days.

Cows pregnancy checked. Of the 1660 producers responding to this variable 1456 answered "no" while 204 answered "yes." Those producers which did not pregnancy check reported 53 percent calves born within 45 days while those which did pregnancy check reported 56 percent calves born within 45 days. When tested by the analysis of variance F test there was a positive, but not significant, relationship with those producers having a higher percentage of calves born within 45 days, reporting pregnancy checking cows.

Herd enrolled in TBCIP or other beef herd improvement program. One thousand five hundred twenty-six producers were not enrolled in any type of beef herd improvement program, these producers reported 53 percent of calves born within a 45 day period. Of the 129 producers enrolled in TBCIP or another improvement program 55 percent of their calves were born within a 45 day period. When tested by the F test there was not a significant relationship between those enrolled in beef herd improvement program and those having a larger number of calves born within a 45 day period.

Heifers vaccinated for Brucellosis. One thousand two hundred sixteen producers did not vaccinate for Brucellosis while 428 producers did vaccinate. Those not vaccinating reported 53 percent of calves born within 45 days while those vaccinating reported 54 percent of calves born within 45 days. When tested with the F test no significant relationship between vaccinating for Brucellosis and percent of calves born within 45 days was found.

Kept bulls separate from cows during off-breeding season. Of those surveyed, 659 reported letting cows and bulls run together year around while 996 separated bulls from cows during off-breeding season. Those producers not separating bulls and cows reported 45 percent calves born within a 45 day period while those separating bulls from cows during off-season reported 59 percent calves born within 45 day period. When analyzed by the F test there was a positive and significant relationship between separating bulls from cows and the percentage of calves born within a 45 day period.

Marketing. The percent of calves born within a 45 day period as it relates to marketing is reported in part six of Table III. This data is reported under the following heading: Average Weight of Calves Sold at Weaning.

Average weight calves sold at weaning. This variable was broken down into two categories, 470 lbs. - under, and over 470 lbs. Nine hundred twenty-four producers reported selling their weaned calves at weights under 470 lbs. while 746 producers' calves averaged over 470 lbs. Those under 470 calved 49 percent of their calf crop within 45 days while those reporting over 470 had 58 percent calves born within a 45 day period. When tested by the analysis of variance F test there was a significant relationship between the weaning weights and the percent of calves being born within a 45 day period.

Forage production and use. The percent of calves born within a 45 day period as it related to forage production and uses is reported in part seven of Table III. This data is reported under the following headings: Acres improved permanent pasture, Acres temporary pasture, and Percent permanent pasture with 30 percent or more legume.

Acres improved permanent pasture. The two categories pertaining to acres improved permanent pasture revealed 762 producers with under 100 acres and 887 producers with 100 acres or more. These producers calved 54 and 53 percent of calf crop within a 45 day period. When analyzed by the F test there was not a significant relationship between the characteristic and percent of calves born within a 45 day period.

Acres temporary pasture. Acres of temporary pasture was broken down into two categories, those producers with less than 15 acres and those with 15 acres and over. The 1270 producers with less than 15 acres reported 53 percent of calves born within 45 days and the 400 producers reporting 15 acres and over had 54 percent of calves born within 45 days. The F test revealed no significant relationship between acres of temporary pasture and percent of calves born within 45 days.

Percent permanent pasture with 30 percent or more legume. Seven hundred fifteen producers reported under 50 percent of pasture with 30 percent or more legume while 791 producers reported 50 to 100 percent of pasture with at least 30 percent legume. Producers with less than 50 percent had 48 percent calves born within 45 days while those in the 50-100 percent category had 59 percent calves born within 45 days. When tested by the analysis of variance F test there was a significant positive relationsip between the percent of pasture with legume and the percent of calves born within 45 days.

Percent cows and heifers weaning calves. Response by producers to this variable were divided into two categories, under 90 percent and 90 percent and over. Five hundred twelve producers weaned less than a 90 percent calf crop and 1158 producers reported 90 percent or over of cows and heifers weaning calves. Those weaning under 90 percent had 49 percent of calves born within 45 days and those weaning over 90 percent of calves reported 55 percent of calves born within a 45 day period. When tested by the analysis of variance F test there

was a significant positive relationship with those weaning a higher percentage of calves born within a 45 day period.

Created variables. The percent of calves born within a 45 day period as it relates to three created variables is reported in part eight of Table III. This data is reported under the following headings: Number cows-heifers bred per bull used, Percent cows and heifers weaning calves and Percent calves lost at birth.

Number cows-heifers bred per bull used. This variable was broken down into two categories. Six hundred ninety-eight producers indicated under 25 cows per bull while 972 producers had 25 cows or more per bull used. Those reporting under 25 cows per bull used had 55 percent of calves born within 45 days, while producers with over 25 cows per bull had 52 percent of calves born within a 45 day period. When tested by the F test there was a positive relationship, but not significant, between fewer cows per bull and percentage of calves born within 45 day period.

Percent calves lost at birth. Response to this variable was broken into three categories and reported as: None, 391 producers; 1-5 percent, 713 producers; over 5 percent, 565 producers. Producers in the "none" group had 56 percent calves born within 45 days, those in the 1-5 percent and over 5 percent had 53 and 52 percent of calves born within a 45 day period. When tested by the F test there was a positive but not significant relationship between the number calves lost at birth and the percentage of calves born within a 45 day period.

IV. AVERAGE WEIGHT FEEDER CALVES SOLD AT WEANING

Section IV presents data regarding the relationship between selected variables and the average weight of feeder calves sold at weaning. The mean is given for each variable presented. Differences were tested by the one way analysis of variance test. F values which achieved the .05 level were considered significant.

General Producer Characteristics

The characteristics of type of beef herd and farming status, as they relate to average weight feeder calves sold at weaning, are shown in the first part of Table IV.

Type of beef herd. Two hundred twenty-four producers reported weaning weights averaging 518 pounds. Five hundred seventy-nine straightbred producers reported average weights of 479 pounds, while 685 crossbred producers reported 481 pounds as their average weight at which feeder calves were sold at weaning. When tested by the analysis of variance F test there was a significant relationship between average weight calves sold at weaning and type of beef herd. Purebred breeders showed substantially higher weaning weight than the other two herd types.

Farming status. Seven hundred forty-four producers indicated full-time farming status, while 145 indicated they were retired. Full-time farmers reported average weaning weights of 490 pounds, part-time producers had average weights of 481 pounds, while retired producers' calves weighed 483 pounds at weaning. When tested by the F test there

TABLE IV

AVERAGE WEIGHT OF FEEDER CALVES SOLD AT WEANING

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
General					
Type Herd					
Purebred	224	518			
Straightbred	579	479			
Crossbred	685	481			
Total	1488	484	10.80	2	.0000
Farming Status					
Full-time	744	490			
Part-time	605	481			
Retired	145	483			
Total	1494	486	1.14	2	.3196
Size of Operation					
No. Females Breeding Age in Herd					
Under 25 cows	88	482			
25-49 cows	840	474			
50-74 cows	305	504			
75-99 cows	138	486			
100 or more cows	192	493			
Total	1563	484	4.45	4	.0014
No. Cows-Heifers Exposed to Bulls					
Under 50 cows	1003	478			
50-99 cows	407	495			
100 or more cows	153	496			
Total	1563	484	4.57	2	.0105
No. Calves Weaned					
Under 50 calves	1131	479			
50-99 calves	339	497			
100 or more calves	93	500			
Total	1563	484	4.35	2	.0130

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
No. Bulls Used					
One bull	639	470			
Two bulls	500	492			
Three or more bulls	424	495			
Total	1563	484	8.24	2	.0003
Month First Calf Born					
Jan.	458	485			
Feb.	207	481			
March	74	470			
April	22	470			
May	8	440			
June	4	475			
July	10	456			
Aug.	22	462			
Sept.	98	501			
Oct.	156	485			
Nov.	221	490			
Dec.	235	482			
Total	1515	484	.76	11	.6775
Month Last Calf Born					
Jan.	38	494			
Feb.	65	471			
March	185	499			
April	324	497			
May	340	473			
June	238	475			
July	100	459			
Aug.	58	499			
Sept.	100	478			
Oct.	35	524			
Nov.	14	479			
Dec.	61	491			
Total	1558	484	2.29	11	.0090

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Percent Calves Born within 45 Days					
Under 25	138	454			
25-49	367	469			
50-74	588	492			
75-98	367	497			
Total	1460	484	9.75	3	.0000
No. Times Per Day Checked Cows During Calving Season					
None	45	457			
One	686	472			
Two	632	490			
Three-over	200	510			
Total	1563	484	8.16	3	.0000
Breeding Management					
Used Females and Bulls of Different Breeds					
No	615	492			
Yes	857	479			
Total	1472	485	5.58	1	.0183
Had Crossbred Females					
No	862	488			
Yes	619	480			
Total	1481	485	2.05	1	.1528
Checked Bulls for Breeding Soundness					
No	1268	479			
Yes	238	514			
Total	1506	484	20.87	1	.0000
Used Performance Tested Bulls					
No	1036	477			
Yes	460	505			
Total	1496	485	22.43	1	.0000

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Age Heifers Bred					
Under 15 months	122	470			
15 to 19 months	1033	491			
20 months-over	408	470			
Total	1563	484	5.97	2	.0026
Weight Heifers Bred					
Under 600 lbs.	209	442			
600 to 700 lbs.	880	483			
700 lbs.-over	474	504			
Total	1563	484	22.69	2	.0000
Feeding Management					
Major Forage Used to Winter Cows					
Hay	1349	482			
Silage	55	514			
Combination	115	512			
Total	1519	485	5.95	2	.0027
Fed Cows by Weight & Stage of Production					
No	993	473			
Yes	501	512			
Total	1494	486	46.00	1	.0000
Used Stockpiling					
No	480	470			
Yes	1038	492			
Total	1518	485	13.00	1	.0003
Tested Forages					
No	1421	486			
Yes	80	489			
Total	1501	484	6.27	1	.0019
Creep Fed Calves					
No	983	476			
Yes	520	504			
Total	1503	486	23.00	1	.0000

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Fed Protein Supplement Daily					
No	360	474			
Yes	1141	490			
Total	1501	484	8.30	1	.0003
General Herd Management					
Method Used to Identify Cows					
No	608	465			
Yes	895	500			
Total	1503	486	39.00	1	.0000
Age Calves When Dehorned					
Within 48 hours	52	488			
Before 2 months	189	497			
After 2 months	277	488			
Total	518	491	.33	2	.7220
Age Male Calves Castrated					
Within 48 hours	259	485			
Before 2 months	628	487			
After 2 months	546	482			
Total	1433	485	.31	2	.7339
No. Times Feeder Calves Implanted					
None	1061	475			
Once	332	499			
Twice	170	510			
Total	1563	484	11.00	2	.0000
Method Used to Supply Salt Minerals					
No	85	492			
Yes	1418	486			
Total	1503	486	.25	1	.6204

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Method Used to Supply Mag-Oxide					
None	411	471			
Block	509	479			
Loose	516	504			
In grain or silage	56	491			
Total	1492	486	8.45	3	.0000
Season Brood Cows Dewormed					
Not dewormed	610	468			
Fall	549	492			
Fall & Spring	324	507			
Total	1483	485	16.52	2	.0000
Calves Dewormed While Nursing					
No	829	472			
Yes	668	501			
Total	1497	485	29.00	1	.0000
Fly Control Method Used on Cows					
None	128	470			
Backrubbers, Dustbags, Flaps	1187	486			
Oral Larvacides, eartags	248	481			
Total	1563	484	1.31	2	.2712
Began Fly Control - April					
No	240	468			
Yes	797	495			
Later date	400	479			
Did not treat	66	481			
Total	1503	486	4.89	3	.0022
Vaccinated for Lepto					
No	815	476			
Yes	685	498			
Total	1500	485	15.75	1	.0001

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Treated for Grubs Before November					
No	661	469			
Yes	842	500			
Total	1503	486	31.00	1	.0000
Lice Treatment Used					
Did not treat	396	462			
Treated once	598	491			
Treated Nov.-Feb.	315	512			
Lice were evident	194	478			
Total	1503	486	14.06	3	.0000
Cows Pregnancy Checked					
No	1334	481			
Yes	168	522			
Total	1502	486	23.00	1	.0000
Herd Enrolled in TBCIP or Other Programs					
No	1387	482			
Yes	111	529			
Total	1498	486	20.00	1	.0000
Calves Vaccinated Twice					
No	807	469			
Yes	695	505			
Total	1502	486	42.00	1	.0000
Heifers Vaccinated for Brucellosis					
No	1106	476			
Yes	381	512			
Total	1487	486	33.00	1	.0000
Bulls Kept Separate from Cows					
No	599	467			
Yes	899	498			
Total	1498	485	30.00	1	.0000

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Beef Cattle Marketing					
No. Feeder Calves Sold at Weaning					
Under 25 calves	652	494			
25-49 calves	550	469			
50-74 calves	150	480			
75-99 calves	42	476			
100 or more calves	169	502			
Total	1563	484	5.07	4	.0005
No. Replacement Heifers Retained					
Not any retained	435	475			
Under 10 heifers	693	481			
10-19 heifers	311	502			
20 heifers-over	124	490			
Total	1563	484	3.96	3	.0080
Method Used to Market Feeder Calves					
Weekly Auction	716	473			
Feeder Calf Sale	518	485			
Trader	104	481			
Direct-Feeder	93	518			
Total	1431	481	6.83	3	.0001
Forage Production & Use					
Acres Improved Permanent Pasture					
Under 100	702	478			
100 acres - over	845	489			
Total	1547	484	4.40	1	.0361
Acres Temporary Pasture					
Under 15 acres	1163	485			
Over 15 acres	400	482			
Total	1563	484	.22	1	.6374

TABLE IV (continued)

Characteristic	Number Producers	Mean Wt./Calf in lbs.	F	df	Sig.
Percent Permanent Pasture with 30 Percent Legumes					
Under 50	709	474			
Over 50	696	496			
Total	1405	485	15.00	1	.0001
Created Variables					
No. Cows Bred Per Bull Used					
Under 25	679	486			
25 cows - over	884	483			
Total	1563	484	.34	1	.5581
Percent Calves Lost at Birth					
None	370	493			
1-5%	639	488			
Over 5%	553	474			
Total	1563	484	2.52	2	.0564

was no significant relationship between farming status and average weight of feeder calves sold at weaning.

Size of Operation

The average weight of feeder calves sold at weaning as this variable relates to size of operation is reported in part two of Table IV. Characteristics considered were number females breeding age in herd, number cows-heifers exposed to bulls, number calves weaned, number bulls used, month first calf born, month last calf born, and number times per day cows were checked during calving season.

Number females breeding age in herd. Size of operation according to number females breeding age in herd, were broken into five groups. Eighty-eight producers reported having under 25 breeding age females, 840 producers reported having 25-49 breeding age females, 305 producers reported having 50-74 breeding age females, 138 producers reported having 75-99 breeding age females and 192 producers reporting have 100 or more breeding age females. Producers with under 25 cows reported weaning weights of 482 pounds, producers with 25-49 cows had weaning weights of 474 pounds, producers with 50-74 cows had weaning weights of 486 pounds, beef producers with 100 cows and over had weaning weights of 493 pounds. When tested by the F test there was a significant relationship between number females breeding age in herd and average weight of feeder calves sold at weaning. Producers with 50-74 cows had highest weaning weights while those in the 100 cows-over group were second highest and those with 75-99 cows were third highest as to weights of feeder calves sold at weaning.

Number cows-heifers exposed to bulls. One thousand three producers surveyed had under 50 cows exposed to bulls, 407 producers had 50-99 cows, while 153 producers had 100 cows-over exposed to bulls. Those with less than 50 cows had weaning weights of 478 pounds, those with 50-99 calves had weaning weights of 495 pounds while the 100 calves-over producers had weaning weights averaging 496 pounds. When tested by the F test there was a significant relationship with producers having more cows-heifers exposed to bulls, also having a higher weaning weight for feeders sold at weaning.

Number calves sold at weaning. Producers reporting less than 50 calves weaned numbered 1131. There were 339 producers weaning 50-99 calves and 93 producers weaning 100 calves or more. Producers with 50 calves or less had weaning weights which averaged 479 pounds. Those surveyed in the 50-99 calves weaned group, had average weights of 497 pounds while the largest group, 100 calves and over, had weaning weights of 500 pounds. When tested by the F test there was a significant relationship between number of calves weaned and average weight calves sold at weaning. Once again producers weaning more calves reported heavier weaning weights.

Number bulls used. Of the 1563 producers responding to this variable, 639 used 1 bull, 500 used 2 bulls and 424 producers used 3 bulls or more. Producers using only 1 bull reported weaning weights which averaged 470 pounds. Producers using 2 bulls produced calves which averaged 492 pounds when sold at weaning, producers using 3 bulls or more had calves that averaged 495 pounds when sold at weaning. When tested by the F test there was a significant relationship between

number of bulls and average weight of calves sold at weaning. Producers with 3 bulls had heavier weaning weights than those with 2 bulls and producers with 2 bulls had heavier weaning weights than those with 1 bull.

Month first calf born. Producers with first calves born in January, February, March, and April numbered 458, 207, 74, and 22 producers respectively. Producers indicating first calves born in May, June, July, and August numbered 8, 4, 10, and 22 producers respectively. Respondents indicating first calf born in September, October, November, and December totaled 98, 156, 221, and 235 respectively. First calves born in January, February, March, and April had average weights of 485, 481, 470, and 470 pounds respectively, when sold at weaning. Producers with first calves born in May, June, July, and August had average weaning weights of 440, 475, 456, and 462 pounds respectively. Producers with first calves born in September, October, November, and December had average weaning weights of 501, 485, 490, and 482 pounds respectively. When tested by the analysis of variance F test there was no significant relationship between month first calf born and average weight of calves sold at weaning.

Month last calf born. Month and number of producers with last calf born in that month are as follows: Jan. - 38 producers, Feb. - 65 producers, March - 185 producers, April - 324 producers, May - 340 producers, June - 238 producers, July - 100 producers, Aug. - 58 producers, Sept. - 100 producers, Oct. - 35 producers, Nov. - 14 producers and Dec. - 61 producers. The average weights of calves sold at weaning with corresponding months, as to month last calf born is Jan. - 494

pounds, Feb. - 471 pounds, March - 499 pounds, April - 497 pounds, May - 473 pounds, June - 475 pounds, July - 459 pounds, Aug. - 499 pounds, Sept. - 478 pounds, Oct. - 524 pounds, Nov. - 479 pounds and Dec. - 491 pounds. When tested by the F test there was a significant relationship between month last calf born and average weight calves sold at weaning. Producers with last calves born in October, August, March, and April had heavier weaning weights, while last calves born in July, February, May, and June were considerably lighter.

Percentage calves born within 45 days. Producers responding to this variable were divided into four categories: under 25 percent, 25-49 percent, 50-74 percent and 75-98 percent. One hundred thirty-eight producers reported under 25 percent, 367 producers had 25-49 percent born within 45 days, 588 producers had 50-74 percent and 367 reported 75-98 percent born within a 45 day period. The average weights of calves sold at weaning for each category were: under 25 percent 454 pounds, 25-49 percent 469 pounds, 50-74 percent 492 pounds, and 75-98 percent 497 pounds. When tested by the F test there was a significant relationship between percent of calves born within 45 days and average weight calves sold at weaning. The higher the percentage of calves born within 45 days, the higher the average weights of calves sold at weaning.

Number times per day checked cows during calving season. Forty-five producers indicated checking cows no times per day, 686 producers checked cows once, 632 producers checked cows twice per day, 200 producers reported checking cows three times or more per day during calving season. Producers checking cattle no times per day had average

weights of 457 pounds, those checking cows once had average weights of 472 pounds, those checking cows twice had weights of 490 pounds, those checking cows three-time and over had average weights of 510 pounds. When tested by the F test there was a significant relationship between number times cows checked per day and average weight of calves sold at weaning. There was a substantial increase in weights of feeder calves sold at weaning among those that checked cows more times per day during calving season.

Breeding Management

The average weight of feeder calves sold at weaning as it relates to breeding management practices is reported in part three of Table IV. Variables reported are used females and bulls of different breeds, have crossbred females, checked bulls for breeding soundness, used performance tested bulls, age heifers bred, and weight heifers bred.

Used females and bulls of different breeds. One thousand four hundred seventy-two producers responded to this variable, 615 answered "No," while 857 answered "Yes." Producers reporting "No" had an average weight of feeder calves sold weaning of 492 pounds, while those which did use females and bulls of different breeds reported weights of 479 pounds. When tested by the F test there was a significant relationship between using females and bulls of different breeds and the average weight of feeder calves sold at weaning. Straight bred producers had a slight advantage in average weights of feeder calves sold at weaning.

Have crossbred females. Eight hundred sixty-two producers reported not having crossbred females, while 619 did have crossbred females. Producers with crossbred females had weaning weights of 480 pounds while those without crossbred females had an average weaning weight of 488 pounds for feeder calves sold at weaning. When tested by the analysis of variance F test there was no significant relationship between having or not having crossbred females and the average weight of feeder calves sold at weaning.

Checked bulls for breeding soundness. One thousand two hundred sixty-eight producers did not check bulls for breeding soundness, while 238 did check bulls for breeding soundness. Producers surveyed reported an average weight of 514 pounds for calves sold at weaning, while producers not checking had weights of 479 pounds. When tested by the F test there was a significant relationship between checking bulls for breeding soundness and average weight of calves sold at weaning.

Used performance tested bulls. One thousand thirty-six producers surveyed did not use performance tested bulls while 460 producers did use performance tested bulls. Producers using performance tested bulls had an average weaning weight of 505 pounds while those not using performance tested bulls had an average weight of 477 pounds. When tested by the F test there was a positive significant relationship between producers using performance tested bulls and average weight of feeder calves sold at weaning.

Age heifers bred. One hundred twenty-two producers reported breeding females at under 15 months of age, 1033 producers bred

females at 15 to 19 months while 408 producers bred heifers at 20 months or older. Producers breeding females at under 15 months had average weights of feeder calves sold at weaning of 470 pounds, those breeding at 15 to 19 months had average weights of 491 pounds and those breeding at 20 months or over had an average weight of calves sold at weaning of 470 pounds. When tested by the F test there was a positive significant relationship between age heifer bred and average weight of feeder calves sold at weaning. Those following the recommended practice of breeding heifers at 15 to 19 months had higher weights than those breeding at a younger or an older age.

Weight heifers bred. Two hundred nine producers reported breeding heifers at weights under 600 pounds, 880 producers bred heifers at 600 to 700 pounds and 474 producers bred heifers at 700 pounds or over. Producers breeding heifers at under 600 pounds had an average weight of feeder calves sold at weaning of 442 pounds, those breeding at 600 to 700 pounds had average weights of 483 pounds, producers breeding heifers at 700 pounds and over had weaning weights of 504 pounds. When tested by the F test there was a significant relationship between weight heifers bred and average weaning weight of feeder calves sold at weaning. There was a positive relationship as weight heifers bred increased. The average weight of feeder calves sold at weaning also increased.

Feeding Management

The average weight of feeder calves sold at weaning as it relates to feeding management practices are reported in part four of Table IV. Variables reported are major forage used to winter cows,

fed cows by weight and stage production, used stockpiling, used forage testing and fed protein supplement daily.

Major forage used to winter cows. One thousand three hundred forty-nine producers fed hay as their main winter forage, 55 fed silage and 115 fed a combination of hay and silage in the winter. Producers feeding only hay reported an average weight of feeder calves sold at weaning of 482 pounds, while producers feeding only silage had average weights of 514 pounds, producers feeding a combination of the two had an average weight of 512 pounds for calves sold at weaning when tested by the F test. There was a significant relationship between major forage used to winter cows and the average weight of feeder calves sold at weaning. Producers feeding silage or silage and hay combination had a considerably higher weight for calves sold at weaning than did those feeding only hay.

Fed cows by weight and stage of production. Nine hundred ninety-three producers reported "No," while 501 producers said "Yes," that they fed cows by weight and stage of production. Producers feeding by weight and stage of production reported average weaning weights of feeder calves sold at weaning of 512 pounds, producers not feeding by weight and stage of production had average weights of 473 pounds. When tested by the analysis of variance F test there was a significant relationship between feeding cows by weight and stage of production and average weight of feeders sold at weaning. Cows fed by weight and stage of production had a higher weight than those not fed by weight and stage of production.

Used stockpiling. Four hundred eighty producers did not stockpile fescue, while 1038 did. Producers stockpiling had average weights of 492 pounds for feeder calves sold at weaning, while those not stockpiling had average weights of 470 pounds per calf. When tested by the F test there was a significant relationship between stockpiling and average weight feeder calves sold at weaning. Producers stockpiling had higher weaning weights than those not using stockpiling.

Tested forages. One thousand four hundred twenty-one producers did not test forages while 80 producers did test forages. Those testing had average weights of 489 pounds for calves sold at weaning while those not testing forages had average weights of 486 pounds. When tested by F test there was a significant relationship between testing forages and average weight of feeder calves sold at weaning. Those testing forages had higher weaning weights than those not testing forages.

Creep fed calves. Nine hundred eighty-three producers reported not creep feeding calves while 520 producers did creep feed their calves. Producers creep feeding had an average weight of 504 pounds for calves sold at weaning while those not creep feeding had weights of 476 pounds. When tested by the F test there was a significant relationship between creep feeding calves and average weight of calves sold at weaning. Creep fed calves had higher weaning weights than those not creep fed.

Fed protein supplement daily. Three hundred sixty producers did not feed protein supplement daily while 1141 producers did feed protein supplement daily. Those feeding protein supplement had calf

weaning weights that averaged 504 pounds while those not feeding protein supplement had an average weight of 474 pounds for calves sold at weaning. When tested by the F test there was a significant relationship between feeding protein supplement daily and average weight of feeder calves sold at weaning. Producers who fed protein supplement daily had a higher average weight for feeder calves sold at weaning.

General Herd Management

The average weight of feeder calves sold at weaning and its relationship to general herd management practices are reported in part five of Table IV. These findings are reported under the following headings: method used to identify cows, age calves when dehorned, age male calves castrated, number times feeder calves implanted, method used to supply salt-minerals, method used to supply magnesium-oxide, season brood cows dewormed, calves dewormed while weaning, fly control method used on cows, began fly control - April, vaccinated for Lepto, treated for grubs before November, lice treatment used, cows pregnancy checked, herd enrolled in TBCIP or other programs, calves vaccinated twice, heifers vaccinated for Brucellosis, and bulls kept separate from cows.

Method used to identify cows. Six hundred eight producers used no method to identify cows, while 895 producers did use a method to identify cows. Producers using an identification method had an average weight of 500 pounds for feeder calves sold at weaning while those not using identification method had an average of 486 pounds for feeder calves sold at weaning. When tested by the F test the differences were

found to be significant. Therefore, there was a significant relationship between producers identifying cows and producers having higher weights for feeder calves sold at weaning.

Age calves when dehorned. Fifty-two producers dehorned calves within 48 hours of birth, 189 producers dehorned calves before 2 months and 277 producers dehorned after 2 months. Those surveyed who dehorned within 48 hours had an average weight of 488 pounds for feeder calves sold at weaning, those dehorning before 2 months had an average weight of 497 pounds and those dehorning after 2 months had an average weight of 488 pounds. When tested by the F test the differences were found not to be significant.

Age male calves castrated. Two hundred fifty-nine producers castrated males within 48 hours, 628 producers castrated before 2 months of age, 546 producers castrated after 2 months of age. Those castrating before 48 hours of age had an average weight of 486 pounds, those castrating after 2 months had an average weight of 482 pounds for feeder calves sold at weaning. When tested by the F test the differences were not great enough for significant relationship between age males castrated and average weight feeders sold at weaning.

Number times feeder calves implanted. One thousand sixty-one producers did not implant their calves, 332 implanted calves once, and 170 implanted calves twice. Producers not implanting feeder calves had an average weight of 475 pounds for feeder calves sold at weaning, producers implanting calves once had an average weight of 499 pounds for feeder calves sold at weaning, those implanting twice reported an average weight of 510 pounds for feeder calves sold at weaning. When

tested by the analysis of variance F test there was a significant relationship between implanting calves and the average weight of feeder calves sold at weaning. Producers implanting once had higher weaning weights than those not implanting and those implanting twice had a higher average weaning weight than those implanting once.

Method used to supply salt-minerals. Eighty-five producers did not supply salt or minerals, while 1418 producers did supply salt and minerals. Those supplying salt and minerals had an average weight of 486 pounds for feeder calves sold at weaning, while those not supplying salt or minerals had an average weight of 492 pounds for feeder calves sold at weaning. When tested by the F test differences were not great enough to show a significant relationship between average weight feeder calves sold at weaning and whether or not salt and minerals were supplied to cattle.

Method used to supply Mag-Oxide. Four hundred eleven producers reported not feeding magnesium oxide, 509 producers fed it in the block, while 516 producers fed it loose, 56 producers fed mag-oxide by way of grain or silage. Producers not feeding mag-oxide had an average weight of 471 pounds for feeder calves sold at weaning, producers feeding mag-oxide in block form had an average weight of 479 pounds for feeder calves sold at weaning. Producers feeding mag-oxide in the block had an average weight of 504 pounds and those feeding magnesium oxide in grain or silage had an average weight of 491 pounds for feeder calves sold at weaning. When tested by the F test there was a significant relationship between method used to supply mag-oxide and the average weight feeder calves sold at weaning. Producers

providing magnesium-oxide in the loose form or in grain or silage had higher average weights for feeder calves sold at weaning.

Season brood cows dewormed. Six hundred ten producers reported not deworming cows, 549 dewormed in the fall and 324 dewormed in fall and spring. Producers not deworming cows had an average weight of 468 pounds for feeder calves sold at weaning, producers deworming in the fall had an average weight of 492 pounds for calves sold at weaning, producers deworming in the fall and spring weighed an average of 507 pounds when sold at weaning. When tested by the analysis of variance F test there was a significant relationship between deworming and average weight of feeder sold at weaning. Cows dewormed twice produced heavier calves at weaning than those dewormed once and those dewormed once had heavier weights than those not dewormed.

Calves dewormed while nursing. Eight hundred twenty-nine producers reported not deworming calves while nursing, 668 producers did deworm calves while they were still nursing. Those producers deworming while nursing reported an average weaning weight of 501 pounds for calves sold at weaning. Producers not deworming had an average weight of 472 pounds for feeder calves sold at weaning. When tested by the F test there was a positive significant relationship between calves dewormed while nursing and average weight of feeder calves sold at weaning. Those calves dewormed had significantly higher weaning weights.

Fly control method used on cows. One hundred twenty-eight producers reported not using any method of fly control, 1187 producers used backrubbers, dustbags or flaps, 248 producers used oral larvacides or eartags. Those using no control method had an average weight of

470 pounds for calves sold at weaning, producers using backrubbers, dustbags, or flaps had an average weight of 486 pounds for calves sold at weaning and producers using oral larvacides or eartags had an average weight of 481 pounds for feeders sold at weaning. When tested by the F test there was not a significant relationship between fly control method used on cows and the average weight of feeder calves sold at weaning.

Began fly control - April. Two hundred forty producers reported "no," 797 answered "yes," 400 reported they began fly control at a later date and 66 producers indicated that they did not treat. Those answering "no" had an average weight of 468 for calves sold at weaning, those answering "yes" had an average weight of 495 pounds for feeder calves sold at weaning, those treating at a later date had an average weight of 479 pounds and those that did not treat had an average weight of 481 pounds for calves sold at weaning. When tested by the F test there was a significant relationship between fly control and average weight of feeder calves sold at weaning. Those producers beginning treatment by April 1st as recommended had a decided advantage in average weight of calves sold at weaning.

Vaccinated for Leptospirosis. Eight hundred fifteen producers did not vaccinate for Lepto, 685 producers did vaccinate for Lepto. Producers vaccinating had an average weight of 498 pounds for calves sold at weaning. Those not vaccinating had an average weight of 476 pounds for calves sold at weaning. When tested by the F test there was a significant relationship between vaccinating for Leptospirosis and average weight of calves sold at weaning. Producers vaccinating

reported an average weight for calves sold at weaning significantly larger than those not vaccinating.

Treated for grubs before November. Six hundred sixty-one producers did treat for grubs prior to November 1st, 842 producers did not treat for grubs by November 1st as recommended. Those treating for grubs by November 1st had an average weight of 500 pounds for calves sold at weaning. Producers not treating before November 1st had an average weight of 469 pounds for calves sold at weaning. When tested by the F test there was a significant relationship between treating for grubs before November 1st and average weight of calves sold at weaning. Those beef producers surveyed who treated for grubs before November 1st had heavier calves sold at weaning than did those not treating.

Lice treatment used. Three hundred ninety-six producers did not treat, 598 treated once, 315 producers treated November and February and 194 producers indicated lice were evident. Producers not treating had an average weight of 462 pounds for calves sold at weaning, producers treating once had an average weight of 491 pounds for feeder calves sold at weaning, those treating November, February had an average weight of 512 pounds and those indicating lice were evident had an average weight of 478 pounds. When tested by the analysis of variance F test there was a significant relationship between treating for lice and the average weight of calves sold at weaning. Those producers treating twice had the highest average weights and those treating once had the second highest average weights for feeder calves sold at weaning.

Cows pregnancy checked. One thousand three hundred thirty-four producers did not pregnancy check cows while 168 did pregnancy check cows. Those not pregnancy checking had an average weight of 481 pounds for calves sold as feeders, while those pregnancy checking had an average weight of 522 pounds for calves sold at weaning. When tested by the F test there was a significant relationship between producers pregnancy checking and the average weight of feeders sold at weaning. Those pregnancy checking had weights significantly higher.

Herd enrolled in the TBCIP or other programs. One thousand three hundred eighty-seven producers were not enrolled in herd improvement programs while 111 producers were enrolled. Those enrolled had an average weight of 529 pounds for calves sold at weaning while those not enrolled reported weights of only 482 pounds. When tested by the F test there was a significant relationship between herds enrolled in TBCIP or other improvement programs and the average weight of feeder calves sold at weaning. Producers enrolled reported heavier weights for calves sold at weaning.

Calves vaccinated twice. Eight hundred seven producers reported "yes." Those indicating "no" had an average weight of 469 pounds for feeder calves sold at weaning while those indicating "yes" had an average weight of 505 pounds for calves sold at weaning. When tested by the F test there was a significant relationship between calves vaccinated twice and the average weight of feeder calves sold at weaning. Those producers vaccinating twice also reported significantly higher average weights for feeder calves sold at weaning.

Heifers vaccinated for Brucellosis. One thousand one hundred and six producers reported not vaccinating for Brucellosis while 381 producers did vaccinate for Brucellosis. Producers not vaccinating had an average weight of 476 pounds for feeder calves sold at weaning. Producers vaccinating had an average weight of 512 pounds for feeder calves sold at weaning. When tested by the F test there was a significant relationship between vaccinating for Brucellosis and average weight of feeder calves sold at weaning. Producers vaccinating calves reported significantly higher weights for calves sold.

Bulls kept separate from cows. Five hundred ninety-nine producers did not keep bulls separate from cows during off-season, while 899 producers did keep bulls separate from cows. Those separating cows and bulls during off-season had an average weight of 498 pounds for feeder calves sold at weaning. Producers not separating bulls from cows reported an average weight of 467 pounds for feeder calves sold at weaning. When tested by the F test there was a significant relationship between bulls kept from cows and average weights for feeder calves sold at weaning. Those calves from producers keeping bulls and cows separate, reported slightly higher weights.

Beef Cattle Marketing

The average weight of feeder calves sold at weaning as it relates to beef cattle marketing practices is reported in part six of Table IV. These findings are reported under the following headings: Number feeder calves sold at weaning, Number calves sold as short yearlings, Number calves sold as long yearlings, Number finished cattle

sold, Number replacement heifers retained, and Method used to market feeder calves.

Number feeder calves sold at weaning. Producers reported this information under five categories: under 25 calves, 25-49 calves, 50-74 calves, 75-99 calves, and 100 or over calves. Six hundred fifty-two producers selling less than 25 calves reported an average weight of 494 pounds for calves sold at weaning. Five hundred fifty producers sold 25-49 calves at weaning, these calves averaged 469 pounds. One hundred fifty producers sold 50-74 calves, these calves averaged 480 pounds. Forty-two producers sold 75-99 calves, these calves averaged 476 pounds. One hundred sixty-nine producers sold 100 calves or more, these calves averaged 502 pounds. When tested by the F test there was a significant relationship between number feeder calves sold at weaning and average weight of feeder calves sold at weaning. Producers selling the smallest number and those selling the largest number of calves had the highest average weights for feeder calves sold at weaning.

Number replacement heifers retained. Four hundred thirty-five producers reported not selling any heifers, 693 producers retained less than 10 heifers, 311 producers retained 10-19 heifers and 124 producers retained 20 heifers and over. Producers not selling any calves had an average weight of 475 pounds for feeder calves sold at weaning. Producers keeping 10 heifers or less had an average weight of 481 pounds for feeder calves sold, those retaining 10-19 heifers had an average weight of 502 pounds, producers retaining 20 heifers or more had an average weight of 490 pounds. When tested by the F test there was a

significant relationship between number of replacement heifers retained and average weight of feeder calves sold at weaning. Producers retaining 10 heifers or more had higher average weight for calves sold than did those retaining less than 10 calves.

Method used to market feeder calves. Seven hundred sixteen producers marketed by weekly auctions, 518 producers sold through feeder calf sales, 104 producers sold to traders, and 93 producers sold directly to feeders. Producers selling by auctions reported an average weight of 473 pounds for feeder calves sold at weaning, those selling through feeder calf sales had an average calf weight of 485 pounds, those selling to a trader had an average calf weight of 481 pounds and those selling directly to a feeder had an average calf weight of 518 pounds for feeder calves sold at weaning. When tested by the analysis of variance F test there was a significant relationship between method used to market feeder calves and the average weight of feeder calves sold at weaning. Producers selling direct to feeders and through feeder calf sales had the highest average calf weights.

Forage Production and Use

The average weight of feeder calves sold at weaning as it relates to forage production is reported in part seven of Table IV. These findings are reported under the following headings: Acres improved permanent pasture, Acres temporary pasture, Percent permanent pasture with 30 percent legume.

Acres improved permanent pasture. Seven hundred and two producers reported less than 100 acres permanent pasture, while 845 producers

had 100 acres or more improved permanent pasture. Producers with less than 100 acres had an average of 478 pounds for feeder calves sold at weaning while those with over 100 acres had an average weight of 489 pounds for feeder calves sold at weaning. When tested by the F test there was a significant relationship between acres improved permanent pasture and average weight feeder calves sold at weaning. Producers with larger acreage of pasture showed heavier weights for calves sold at weaning.

Acres temporary pasture. One thousand one hundred sixty-three producers surveyed had under 15 acres, 400 producers reported 15 acres or more. Producers with under 15 acres had an average weight of feeder calves sold at weaning of 485 pounds, while producers with 15 acres or more had an average weight of 482 pounds for feeder calves sold at weaning. When tested by the F test there was no significant relationship between acres temporary pasture and the average weight of feeder calves sold at weaning.

Percent permanent pasture with 30 percent legume. Seven hundred and nine producers reported less than 50 percent of pasture with 30 percent legume, 696 producers reported over 50 percent of pasture with 30 percent legume. Producers under 50 percent of pasture with 30 percent of legume had an average weight of 474 pounds for feeder calves sold at weaning, while those over 50 percent had an average weight of 496 pounds for feeder calves sold at weaning. When tested by the F test there was a significant relationship between percent permanent pasture with 30 percent legume and average weight feeder calves sold at weaning.

Those producers having more permanent pasture with 30 percent legume also had heavier weights for feeder calves sold at weaning.

Created Variables

The average weight of feeder calves sold at weaning as it relates to created variables is reported in part eight of Table IV. These findings are reported under the following headings: Number cows bred per bull used and percent calves lost at birth.

Number cows bred per bull used. Six hundred seventy-nine producers reported under 25 cows bred per bull, 884 had 25 cows or more bred per bull used. Those under 25 cows per bull had an average weight of 486 pounds for feeder calves sold at weaning while those with 25 cows or more per bull had an average weight of 483 pounds per feeder calf sold at weaning. When tested by the F test there was not a significant relationship between number cows bred per bull used and average weight of calves sold at weaning.

Percent calves lost at birth. Three hundred seventy producers had no calves lost at birth while 639 producers reported 1-5 percent lost at birth. Five hundred fifty-three producers reported losing over 5 percent calves at birth. Producers losing no calves had an average weight of 493 pounds for feeder calves sold at weaning, those losing 1-5 percent had an average weight of 488 while those losing over 5 percent had an average weight of 484 pounds. When tested by the F test there was a significant relationship between percent calves lost at birth and average weight of calves sold at weaning. The fewer calves lost the higher the average weights were for calves sold at weaning.

CHAPTER IV

SUMMARY OF MAJOR FINDINGS

I. PURPOSE AND SPECIFIC OBJECTIVES

Purposes

The purposes of this study were to characterize beef producers and their farm operation as to size, breeding and calving practices, forage and feeding practices, marketing practices, number of Extension contacts, and to determine the interrelationships between selected variables.

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 influence of selected characteristics of beef cattle operations upon the length of calving season

(3) To determine the influence of selected factors (e.g., size of operation, breeding and calving management, forage production and feeding management, general herd management practices, estimated number of contacts with Extension during the prior 12 months) upon the average weight of feeder calves sold at weaning

(4) To determine the influence of the number of contacts beef producers had with Extension Agents upon the use of selected variables relating to breeding and calving management, forage production and

feeding management, general herd management practices, and marketing practices.

II. METHOD OF INVESTIGATION

The population of this study included all cow-calf producers in Tennessee who had 25 or more breeding age cows. Counties having at least 15 beef cow-calf producers were surveyed. A total of 1799 Tennessee beef producers was randomly selected in approximately 70 beef producing counties.

The 1981 Tennessee Beef Cow-Calf Producers' Survey was used to collect data from the beef producers. County Extension Agents collected data through personal interviews, selecting producers to be surveyed by "Nth" number technique. The recommended sample size for each county was as follows:

1. Counties having 15 to 50 producers were to interview a total of 15 cow-calf producers
2. Counties having 51 to 100 producers were to interview a total of 20 cow-calf producers
3. Counties having 101 to 300 producers were to interview a total of 25 cow-calf producers
4. Counties having over 300 producers were to interview a total of 30 cow-calf producers

County Extension Agents were urged to use an up-to-date listing. Alternates were selected to replace those producers who for good reason could not be interviewed.

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

III. MAJOR FINDINGS

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

Characteristics of Beef Producers and Their Farm Operations in 1981

Beef producer characteristics and characteristics pertaining to their farm operations will be presented in this section.

General producer characteristics:

1. Findings revealed that 47 percent of the beef producers had commercial crossbred cattle
2. Fifty-one percent of the beef producers were full-time farmers.

Size of operation:

1. Fifty-three percent of those surveyed reported cow herd sizes in the 25-49 cows range. The average herd size was 79 cows

2. Sixty-four percent of the beef producers reported exposing fewer than 50 cows-heifers to bulls
3. Seventy-one percent of the producers reported weaning fewer than 50 calves during the prior 12 months. The average number of calves weaned was 45
4. Forty-two percent of all producers surveyed used only one bull. The average number of bulls used for all producers surveyed was nearly two
5. Thirty-one percent of those surveyed reported the first calf of the most recent calving season was born in the month of January. May and June were the least frequently reported months for calves to be born
6. Twenty-one percent of beef producers reported last calves born in May. One percent reported last calf of most recently weaned calf crop was born in November
7. Forty percent of those surveyed reported 50-74 percent of all calves born within a 45 day period. Producers reported an average of 53 percent of calves born within a 45 day period
8. Forty-five percent of producers checked cows once a day during the calving season. Producers checked cows an average of 1.65 times per day during the calving season.

Breeding management:

1. Fifty-eight percent of those surveyed reported using females and bulls of different breeds

2. Fifty-seven percent said they did not have crossbred females in their herd
3. Only 17 percent of those surveyed reported checking bulls for soundness before breeding season
4. It was found that 69 percent of the beef producers did not use performance tested bulls
5. Sixty-eight percent of the producers bred heifers at the age of 15 to 19 months. The average age at which producers bred heifers was 20 months
6. Fifty-seven percent of those surveyed bred heifers at weights between 600 and 700 pounds. The average weight at which all heifers were bred was 599 pounds.

Feeding management:

1. Eighty-eight percent of those surveyed reported using hay as their major winter forage
2. Only 36 percent reported feeding cows by weight and stage of production
3. Fifty percent of the producers fed poor quality forages to dry cows in winter
4. Sixty-one percent of those surveyed reported using no major crop residue to help reduce feed cost
5. It was found that 68 percent of producers did use fescue stockpiling
6. Only 6 percent of those surveyed tested forages
7. Sixty-four percent of beef producers surveyed creep fed calves

8. Seventy-six percent of those surveyed fed protein supplement daily.

General herd management practices:

1. Sixty percent of those surveyed did use a method to identify cows
2. Only 33 percent of those surveyed had horned cattle. Eighteen percent of those dehorning did so after calves were two months old
3. Forty-three percent of those surveyed reported castrating males before they were two months of age
4. Seventy-one percent of those surveyed did not implant feeder calves
5. Ninety-five percent of those surveyed reported supplying salt-minerals in one form or another to cattle
6. Thirty-five percent reported feeding magnesium-oxide in block form while 34 percent fed it loose
7. Thirty-nine percent of those surveyed did not deworm cows
8. Only 45 percent of beef producers reported deworming calves while calves were still nursing cows
9. Seventy-eight percent of those surveyed used backrubbers, dustbags or flaps for fly control
10. Fifty-four percent of those surveyed began fly control by April 1st. Only five percent did not treat for flies
11. Fifty-four percent did not vaccinate females for Leptospirosis

12. Fifty-five percent of those surveyed reported treating for grubs before November 1st
13. Thirty-nine percent of those surveyed reported treating cattle once during the year for lice
14. Eighty-eight percent of beef producers did not pregnancy check cows
15. Ninety-two percent of those surveyed were not enrolled in the TBCIP or other cattle improvement program
16. Fifty-two percent of those producers surveyed did not vaccinate calves twice
17. It was found that 74 percent of the beef producers did not vaccinate heifers for Brucellosis
18. Sixty percent of those surveyed reported keeping bulls separate from cows during off-breeding season.

Beef cattle marketing:

1. It was found that 50 percent of beef producers sold under 25 calves at weaning. The average number of calves sold at weaning was 85
2. Fifty-eight percent of those surveyed reported calves weighing 400-499 pounds when sold at weaning. The average weight of calves sold at weaning was 482 pounds
3. Sixty-eight percent reported selling no calves as short yearlings. Of those surveyed 40 calves was the average number of calves sold as short yearlings

4. Eighty percent of those surveyed reported selling no calves as long yearlings. The average number calves sold as long yearlings was 25
5. Eighty-five percent of beef producers did not sell any finished cattle. The average number of finished cattle sold by those surveyed was 40
6. Forty-four percent surveyed reported keeping fewer than 10 replacement heifers. It was also found that an average of 12 replacement heifers was kept for breeding purposes
7. Fifty-two percent of those surveyed marketed their calves by way of weekly cattle auctions.

Forage production and use:

1. Fifty-three percent of those surveyed reported having over 100 acres of improved permanent pasture. One hundred and three was the average number of acres of permanent pasture
2. Seventy-five percent of those surveyed had less than 15 acres of temporary pasture. The average per farm was 31 acres
3. Ten percent of those surveyed had no permanent pasture with 30 percent or more legume. The average for each producer was 44 acres of permanent pasture with 30 percent or more legume.

Number of contacts with County Extension Agents during the previous 12 months:

1. Fifty-two percent of those surveyed reported attending one or more Extension meetings. The average number of meetings attended for all surveyed was 6.6
2. Twenty-six percent of those surveyed reported making no telephone calls to Extension. The average number of calls for those surveyed was 3.6
3. Thirty-six percent of those surveyed had no visits to the Extension Office during the prior 12 months. The average number of visits for each producer surveyed was 3.2
4. Twenty percent of the producers received no visits from Extension Agents during the previous 12 months. The average number of visits by Extension Agents to farms was 4.6 visits.

Created variables:

1. Sixty-six percent of those surveyed reported weaning 90 percent or more of the most recently weaned calf crop. The average percent of calf crop weaned for all surveyed was 90 percent
2. Fifty-eight percent of those surveyed bred 25 cows or more per bull. The average number of cows bred per bull was 27

3. Nine percent of those surveyed reported no Extension contacts during the previous 12 months. The average total number of Extension contacts for those surveyed was 18.

Relationships Between Selected Variables and the Number of Extension Contacts During the Previous 12 Months

Variables in this section will be listed under the following headings: general producer characteristics, breeding management, feeding management, general herd management, beef cattle marketing, forage production and use and created variables.

General producer characteristics:

1. Purebred breeders averaged more total Extension contacts than other producers
2. Retired producers reported more contacts with Extension than either full-time or part-time farmers
3. Producers with larger herds tended to have larger numbers of Extension contacts
4. Producers with first calf born in May averaged 54 Extension contacts, while those with first calf born in June averaged only two Extension contacts
5. Producers with last calf born in September averaged 68 total Extension contacts while those reporting last calves born in October averaged only five contacts with Extension

6. Producers with 75-98 percent of calves born within 45 days of each other averaged 10 contacts with Extension.

Breeding management:

1. There was no significant relationship between using females and males of different breeds and number of Extension contacts. Both groups averaged eight Extension contacts
2. The using or not using of crossbred females was not significantly related to number of Extension contacts
3. Producers checking bulls for breeding soundness had twice as many Extension contacts as those not checking them
4. Producers using performance tested bulls averaged more Extension contacts than those not using them.

Forage and feeding management:

1. Producers feeding silage as major winter forage had significantly more contacts with Extension than those feeding other forage
2. Those feeding cows by weight and stage of production had slightly more contacts with Extension than those not using this practice
3. Producers feeding poor quality forages to dry cows, for economy's sake, averaged more Extension contacts than those not using this practice

4. There was no significant relationship between major crop residue fed and average number of Extension contacts
5. There was no significant relationship between fescue stockpiling and number of Extension contacts
6. Producers testing forages averaged significantly more contacts with Extension than those not testing them
7. Producers creep feeding calves averaged significantly more Extension contacts than those not creep feeding
8. Those feeding protein supplement daily averaged significantly more contacts with Extension than others.

General herd management:

1. Producers using some identification method on cows had significantly more Extension contacts
2. Age of calves when dehorned was not significantly related to the number of Extension contacts
3. Age at which male calves were castrated was not significantly related to number of contacts with Extension
4. Those implanting calves twice had significantly more contacts with Extension than did those not using this practice
5. Producers feeding salt-minerals had only slightly more contacts with Extension than those not feeding salt-minerals

6. Producers force-feeding magnesium oxide in grain or silage had significantly more Extension contacts than those feeding free choice or not feeding
7. Producers deworming brood cows fall and spring as recommended had significantly more Extension contacts than those not following this practice
8. Those deworming nursing calves reported significantly more total Extension contacts than those not deworming
9. Producers using oral larvacides and eartags had significantly more contacts with Extension than those not using any fly control
10. Producers vaccinating for Leptospirosis reported significantly more Extension contacts than those not vaccinating
11. Producers treating cattle for grubs before November 1st as recommended had significantly more contacts with Extension than those not using this practice
12. Producers treating for lice November and February had significantly more contacts with Extension than those not following this practice
13. Those pregnancy checking cows had significantly more Extension contacts than those not pregnancy checking
14. Producers enrolling herds in TBCIP or other improvement programs had significantly more Extension contacts than those not on the improvement programs

15. Those vaccinating calves twice, as recommended, reported significantly more Extension contacts than producers not vaccinating twice
16. Producers vaccinating heifers for Brucellosis reported significantly more Extension contacts than those not vaccinating
17. Producers not separating bulls from cows during the off-breeding season reported 10 Extension contacts while those separating as recommended only had an average of six contacts with Extension.

Beef cattle marketing:

1. Producers selling 100 calves or more had by far the largest numbers of Extension contacts. Smaller producers tended to contact Extension fewer times
2. Producers selling calves at weaning which weighed 470 pounds or less averaged 20 Extension contacts while the producers with heavier calves had only 16 contacts. Weight at which calves were sold was inversely related to the number of contacts producers had with Extension
3. Producers who reported selling 35 or more calves as long yearlings reported significantly more contacts with Extension than those not selling any calves as long yearlings

4. Producers selling calves directly to feeders averaged 37 contacts with Extension while those selling at weekly auctions had only eight Extension contacts. These differences were significant at the .05 level.

Forage production and use:

1. Producers reporting more acres of improved permenent pasture had significantly more Extension contacts than those with fewer acres
2. Beef producers with more acres of temporary pasture had more Extension contacts than those with fewer acres
3. Producers having more acres of pasture with 30 percent legume had more Extension contacts than those with fewer acres.

Created variables:

1. Producers weaning over 90 percent of calf crop averaged 26 Extension contacts, while those weaning under 90 percent had only eight Extension contacts. These differences were significant at the .05 level.

Relationship Between Selected Variables and Percentage of Calves from Most Recently Weaned Calf Crop, Born Within 45 Days

Variables will be reported under the following headings: general producer characteristics, size of operation, breeding management, feeding management, general herd management, beef cattle marketing, forage production and use and created variables.

General producer characteristics:

There were no significant relationships found in type of herds and farm status as they related to percent of calves born within 45 days.

Size of operation:

1. Producers with the smallest cow herds, under 25 cows, reported a higher percentage of calves born within 45 days. The differences were significant
2. Beef producers with fewer than 50 cows had 54 percent of these calves born within 45 days of each other while the 100 cows and over had only 49 percent, a significant difference
3. Producers with fewer than 50 cows exposed to bulls had 54 percent of their calves born within 45 days, while the 100 or more cows herds reported only 49 percent of their calves born within 45 days, a significant difference
4. Those weaning fewer than 50 calves had 54 percent of their calves born within 45 days, while herds with 100 or more cows reported 50 percent born within 45 days
5. Little difference was shown between number of bulls used and percent of calves born within 45 days
6. Producers with first calf born in March had 64 percent of calves born within 45 days while producers having first calf born in July reported only 28 percent calves

born within 45 days. These differences were significant at the .05 level

7. Producers with last calf born in January reported 68 percent of their calves born within 45 days while November and December were the months for lowest percentage of calves born within 45 days with only 42 percent.

Breeding management:

1. Beef producers using females and bulls of different breeds reported practically no differences as to percantage calves born within 45 days
2. Beef producers checking for breeding soundness had a significantly higher percentage of calves born within 45 days, 59 percent versus 52 percent for those not checking
3. Producers using performance tested bulls had a higher percentage calves born within 45 days, 57 percent versus 52 percent for those not using performance tested bulls.

Feeding Management:

1. Beef producers wintering cows mainly on silage reported 58 percent of their calves born within 45 days. The average for all producers was 53 percent of calves born within 45 days

2. Producers feeding cows by weight and stage of production reported a significantly larger percentage of calves born within 45 days. The differences were 57 percent compared to 52 percent for those not feeding by weight and stage of production
3. Producers not feeding protein supplement daily reported a slightly higher (1 percent) percentage of calves born within 45 days.

General herd management:

1. Producers using a method of identification for cows had 54 percent of calves born within 45 days. The average for those not identifying cows was 52 percent of calves born within 45 days
2. Producers force-feeding magnesium-oxide by way of grain or silage reported the highest percentage of calves born within 45 days. Those not feeding magnesium-oxide had the lowest, at 50 percent of calves born within 45 days
3. Beef producers deworming cow herd twice as recommended, reported 57 percent of calves born within 45 days versus a low of 50 percent for producers not deworming
4. Beef producers beginning fly control method by April 1st reported 56 percent of calves born within 45 days,

while those not beginning fly control by April 1st reported only 49 percent of calves born within 45 days

5. Producers vaccinating for Leptospirosis had 55 percent of calves born within 45 days while those not vaccinating reported only 52 percent
6. Producers treating for lice in November and February reported a higher percentage of calves (57 percent) born within 45 days than those not treating. The non-treated group had only 48 percent of calves born during this time period
7. Producers pregnancy checking cows averaged 56 percent calves born within 45 days while those not checking reported 53 percent
8. There was a slight advantage, 55 percent to 53 percent, for producers enrolled in TBCIP or other programs as to percentage of calves born within 45 days
9. Only a very slight 1 percent edge was evident with producers vaccinating heifers for Brucellosis compared to those not vaccinating
10. Producers separating cows and bulls during off season reported 59 percent of calves born within 45 days compared to only 45 percent for producers not separating bulls from cows.

Beef cattle marketing:

1. Producers having heavier calves sold at weaning also reported a larger percentage of calves born within 45 days. This margin was 58 percent for calves over 470 pounds and 49 percent for calves sold at weaning under 470 pounds.

Forage production and use:

1. There was only a small advantage (1 percent) for smaller producers, those with under 100 acres of improved permanent pasture, as to percentage of calves born within 45 days
2. Beef producers reporting 50 to 100 percent of pasture with 30 percent legume had a large advantage, 59 percent to 48 percent calves born within 45 days, over producers with less than 50 percent pasture with legume.

Created variables:

1. Producers with females weaning over 90 percent calf crop reported 55 percent of their calves born within 45 days. Producers weaning less than 90 percent had 49 percent calves born within 45 days
2. Beef producers using one bull for less than 25 cows reported 55 percent calves born within 45 days. Producers using one bull for 25 cows and over, had only 52 percent calves born within 45 days

3. Producers having no calves lost at birth also had the highest percentage (56 percent) of calves born within 45 days. Those losing over 5 percent at birth had the lowest percentage calves born within 45 days.

Relationship Between Selected Variables and the Average Weight of Feeder Calves Sold at Weaning

Variables will be reported under the following headings: general producer characteristics, size of operation, breeding management, feeding management, general herd management, beef cattle marketing, forage production and use, and created variables.

General producer characteristics:

1. Purebred breeders reported the highest weaning weight of calves sold, 518 pounds, while commercial straightbred had the lowest, 479 pounds
2. Producers identifying themselves as "full-time" reported average weights of almost 10 pounds more than the lowest group which were "part-time" farmers.

Size of operation:

1. Producers with 50-74 cows of breeding age reported the highest average weight of calves sold at weaning, 504 pounds. The next lower bracket (25-49 cows) had the lowest weight average, 474 pounds

2. Beef producers exposing 100 or more cows reported weights of 496 pounds, while producers exposing under 50 cows reported weights of only 478 for feeder calves sold at weaning
3. Producers weaning 100 or more calves reported the heaviest weights, while those weaning fewer than 50 calves reported the lightest average weights for calves sold at weaning
4. Producers using three bulls or more reported the heaviest average weights while smaller herds with only one bull had the lightest average weight
5. Beef producers having first calf born in fall and winter months reported heavier weights, while those having first calf born in spring and summer months reported lighter weight calves
6. Beef producers having last calf born in August through April reported heavier weights (except for February), while producers having last calf born in May, June, July had the lightest feeder calves sold at weaning
7. Producers checking calves three times or more during calving season reported average weights, for feeder calves sold at weaning, of 53 pounds greater than producers that did not check cows during the day in calving season.

Breeding management:

1. Producers using females and bulls of the same breeds had heavier weights than those using females and males of different breeds
2. Those producers not having crossbred females reported a slight advantage in weaning weights over those having crossbred females
3. Beef producers checking bulls for breeding soundness prior to breeding season had significantly heavier average weights for feeder calves sold at weaning
4. Producers using performance tested bulls reported significantly heavier weaning weight than did those not using performance tested bulls
5. Beef producers reportedly breeding heifers at 15 to 19 months of age had heavier average weaning weights by about 20 pounds than those breeding lighter and heavier weight heifers
6. Producers breeding heifers at 700 pounds and over had a decided advantage over heifers bred at a lighter weight as to average weight of feeder calves sold at weaning.

Feeding management:

1. Producers feeding silage or silage combination had heavier weights for feeder calves sold at weaning. Producers feeding only hay reported the lightest weight calves

2. Producers feeding by weight and stage of production had weights considerably heavier for feeder calves sold at weaning than those producers not feeding by weight and stage of production
3. Producers stockpiling grass reported weights heavier than those not stockpiling
4. Data revealed only a slight advantage in weaning weights by producers testing forages compared to producers not testing
5. Producers feeding protein supplement daily had a decided advantage in weaning weights for calves sold as feeders over those producers not feeding protein supplement daily.

General herd management:

1. Producers using a method of identification of cows had a 35 pound advantage in weights of calves sold at weaning over producers not using some method to identify cows
2. Data revealed that producers dehorning calves before two months of age had heavier weights than those dehorning after two months of age
3. Beef producers castrating calves earlier had a slight advantage in feeder weights over producers waiting two months or longer to castrate bull calves

4. Data revealed that producers implanting feeder calves had a significant positive difference as to weight of feeders sold at weaning
5. Producers supplying salt-minerals reported lighter weight feeder calves sold at weaning than did those producers supplying salt and minerals
6. Beef producers supplying magnesium-oxide reported weights heavier than did those producers providing no magnesium-oxide
7. Data revealed that producers deworming cows had heavier feeder calves than those not deworming cows. Producers deworming cows twice revealed heavier calves than those deworming only once
8. Producers deworming calves during the nursing stage showed a large difference in weights of feeder calves sold at weaning. Calves dewormed while nursing averaged weighing 29 pounds heavier
9. Data revealed that producers using fly control methods had heavier weights for calves sold at weaning than did those not using a fly control measure
10. Producers beginning fly control by April 1st had heavier weights for calves than did those producers not treating or treating at a later date
11. Beef producers vaccinating cows and heifers for Leptospirosis had heavier feeder calves than did producers not vaccinating

12. Data revealed that producers treating for grubs before November 1st had a 31 pound advantage in calf weights over those not treating for grubs by November 1st
13. Producers treating cattle for lice twice during the year had feeder calves 50 pounds heavier when sold at weaning than did those producers that did not treat
14. Data revealed that producers pregnancy checking cows, had calves averaging 40 pounds more when sold at weaning than did those producers not pregnancy checking
15. Beef producers with herds enrolled in TBCIP or other improvement programs had feeder calves weighing 47 pounds more when sold at weaning than did those producers not enrolled in a herd improvement program
16. Producers vaccinating calves twice had weights heavier than did producers not vaccinating twice
17. Data revealed that producers vaccinating for Brucellosis had average weights 36 pounds heavier than producers not vaccinating
18. Findings indicated that producers separating bulls from cows during the off-season sold feeder calves at weaning 31 pounds heavier than those not separating bulls and females.

Beef cattle marketing:

1. Data revealed that the smallest herds (under 25 calves sold at weaning) and the largest herds (100 or more

calves sold at weaning) did the best job as for weight of calves sold at weaning

2. Beef producers retaining 10-19 heifers had the heaviest average weight of feeder calves sold at weaning
3. Producers selling directly to feeders sold feeder calves at weaning averaging 518 pounds. On the light end, producers selling by way of weekly auctions averaged only 473 pounds.

Forage production and use:

1. Findings revealed that producers with over 100 acres of improved permanent pasture had heavier feeder calves when sold at weaning than did those producers with less amount of permanent pasture
2. Very little difference was found in calf weights as to those with under 15 acres of temporary pasture or over 15 acres of temporary pasture
3. Producers with 50 percent or over permanent pasture with 30 percent legume had calves averaging 22 pounds heavier when sold at weaning than producers with less than 50 percent of pasture having 30 percent legume.

Created variables:

1. Very little difference was found in weights of calves sold at weaning as to number of cows bred per bull
2. Producers losing no calves at birth had calf weights 19 pounds heavier than producers losing over 5 percent of calves at birth.

IV. IMPLICATIONS AND RECOMMENDATIONS

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

1. The majority of beef producers surveyed were full-time farmers, the single largest type of beef herd was commercial crossbred, the average number of females exposed to bulls for each producer surveyed was 61. Producers seemed to realize the advantages of some practices such as crossbreeding but failed to realize the value of using such practices as checking bulls for breeding soundness, using performance tested bulls, testing forages, implanting calves, pregnancy checking cows, enrolling herd in improvement program and vaccinating for Brucellosis. Fewer than 1 out of 3 producers surveyed were using these listed practices. It is implied that Extension still has a lot of teaching to do, if beef producers are to realize the optimum profit from their beef cattle operation.

2. Since 1799 producers surveyed had an average of 18 contacts with Extension during the previous 12 months via meetings, telephone calls, office visits or farm visit, producers with larger herds had two to three times as many Extension contacts as smaller producers, and those following recommended practices had more Extension contacts, perhaps the secret of convincing producers to use research verified practices is the continual presentation of these recommended practices to the producers by means of different methods.

3. Since smaller producers and those following recommended practices did the best job of shortening calving season length, it

seems that when a producer did a good job in one area, he tended to do an above average performance in other areas of production as well.

4. Since purebred and full-time farms led the way for producing heavier feeder calves sold at weaning, larger producers also had heavier weights for feeder calves sold at weaning, and producers implanting twice, creep feeding, vaccinating calves twice and generally following recommended practices reported heavier weights by 20 to 40 pounds over those not following recommended practices, Agents should consider the facts and strive to convince beef producers regarding the economics of following these researched practices.

V. RECOMMENDATIONS FOR FURTHER STUDY

1. It would appear that beef production will long continue to be a major agricultural enterprise in Tennessee. Studies pertaining to beef production should continue to be made periodically to gauge the direction and progress of producers

2. If used appropriately these studies should be very beneficial to specialists, district personnel and County Agents to improve learning situations for beef cattle producers

3. A continual effort to improve surveys used in collecting data should be made. Producers or Agents seemed to have problems discerning or grasping the applicable variable in some questions.

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APPENDIX



THE AGRICULTURAL EXTENSION SERVICE
UNIVERSITY OF TENNESSEE
KNOXVILLE, TENNESSEE



1981 TENNESSEE BEEF COW-CALF
PRODUCER SURVEY

(Interview producers with herds of 25 or more breeding age cows)
(See Instructions on Last Page)

1 (1) Card Number (leave blank)

(2) (3) (4) County Number (TEMIS code number)

(5) (6) Respondent Number (leave blank)

A. General Information about Respondent and His Farm Situation

(7) Type of beef cattle herd (1 = Purebred; 2 = Commercial Straightbred; 3 = Commercial Crossbred)

(8) Farming status (1 = Full-time; 2 = Part-time; 3 = Retired)

B. Size of Beef Cattle Operation

(9) (10) (11) Number of females of breeding age presently in the herd. (Number of females that are 15 months of age and older).

(12) (13) (14) Number of cows and heifers exposed to the bull(s) to produce the most recently weaned calf crop.

(15) (16) Number of calves that were lost at birth or died within 2 days following birth from females that produced the most recently weaned calf crop. (Record number of calves lost from females in Question 10).

(17) (18) (19) Number of calves weaned in the most recently weaned calf crop. (Record the number of calves weaned from cows and heifers in Question 10).

(20) (21) Number of herd bull (s) used to produce the most recently weaned calf crop (Record the number of bull(s) used to breed the females in Question 10).

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*Coding Instruction:
1. All entries are right justified
2. A zero (0) = none or not any
3. A nine (9) in each column = does not apply or don't know

TAEE 416J1a
Revised 6/81

C. Calving Management

(22) (23) In what month was the first calf of the most recently weaned calf crop born? (01 = Jan., 02 = Feb., etc.)

(24) (25) In what month was the last calf of the most recently weaned calf crop born? (01 = Jan., 02 = Feb., etc.)

(26) (27) Approximate percent of the most recently weaned calf crop born within 45 days after the birth of the first calf?

(28) How many times per day were cows checked during the calving season?

D. Breeding Management

(29) Females and bull(s) used to produce most recently weaned calf crop were of different breeds. (1 = No; 2 = Yes; 9 = DNA*)

(30) Were females used to produce most recently weaned calf crop crossbred? (1 = No; 2 = Yes; 9 = DNA).

(31) Gave bull(s) a breeding soundness evaluation 30 to 45 days before the beginning of the breeding season (1 = No; 2 = Yes; 9 = DNA).

(32) Used performance tested bull(s). (1 = No; 2 = Yes; 9 = DNA).

(33) (34) Age of replacement heifers when bred. (Record age in months).

(35) (36) (37) Weight of replacement heifers when bred.

E. Feeding Management

(38) Major harvested forages used to winter beef cows (1 = Hay; 2 = Silage; 3= Combination of the two; 9 = DNA).

(39) Was herd grouped and fed according to age and stage of production during the winter? (1 = No; 2 = Yes; 9 = DNA).

(40) Were either poorer quality forages or crop residues fed to dry, pregnant cows early in the wintering period? (1 = No; 2 = Yes, 9 = DNA).

(41) Major crop residue fed to beef cows to reduce winter feed cost (1 = None; 2 = Corn; 3 = Soybean; 4 = Both Corn and Soybean; 5 = Other).

(42) Was fescue stockpiled for use as late fall and early winter-grazing? (1 = No; 2 = Yes).

*DNA = Does not apply

(43) Were either hay or silage "forage tested" before winter feeding? (1 = No; 2 = Yes).

(44) Were calves creep fed? (1 = No; 2 = Yes).

(45) Supplemental protein provided daily during the wintering period. (1 = No; 2 = Cottonseed or Soybean Meal; 3 = Block or Cubes; 4 = Liquid).

F. General Herd Management Practices

(46) What type of method was used to provide permanent identification of cattle? (1 = None; 2 = Ear Tag; 3 = Neck Chain; 4 = Hot Brand; 5 = Freeze Brand).

(47) Age when most horned calves are dehorned. (1 = Within 48 hours after birth; 2 = Before two months of age; 3 = After two months of age; 9 = DNA).

(48) Age when most male calves are castrated. (1 = Within 48 hours after birth; 2 = Before two months of age; 3 = After two months of age; 9 = DNA).

(49) How many times were feeder calves implanted between birth and marketing (1 = None; 2 = Once; 3 = Twice; 4 = 3 or more times)

(50) Method most commonly used to supply salt and/or minerals to the herd. (1 = None provided free choice; 2 = Block; 3 = Loose).

(51) Method used to provide magnesium oxide to herd (1 = none provided; 2 = Block; 3 = Loose; 4 = Mixed in grain or with silage)

(52) Brood cows were dewormed (1 = Not dewormed; 2 = Fall; 3 = Both Fall and Spring).

(53) Were calves in most recently weaned calf crop dewormed while nursing their dams? (1 = No; 2 = Yes).

(54) Major method used to control horn and face flies (1 = None used; 2 = Backrubbers and/or oilers; 3 = Dustbags; 4 = Backrubbers with flips; 5 = Oral larvacides; 6 = Ear Tags).

(55) Began treatment for horn and face flies by the first of April. (1 = No; 2 = Yes; 3 = A later date; 4 = Did not treat).

(56) Vaccinated brood cows and replacement heifers for leptospirosis (1 = No; 2 = Yes).

(57) Treated cattle for grub control before November 1. (1 = No; 2 = Yes).

(58) Treated cattle for lice. (1 = Did not treat; 2 = Only treated by November 1; 3 = Treated by November 1 and again in February; 4 = Did not treat until lice "build up" was evident).

(59) Pregnancy checked all cows exposed to the bull(s) during the breeding season. (1 = No; 2 = Yes).

(60) Herd enrolled in the TBCIP or a similar breed performance testing program. (1 = No; 2 = Yes).

(61) Vaccinated calves twice for blackleg, malignant edema and black's disease (1 = No; 2 = Yes).

(62) Vaccinated replacement heifers for brucellosis. (1 = No; 2 = Yes).

(63) Kept bull(s) separated from cows during the off-breeding season (1 = No; 2 = Yes).

(1) Card Number TWO

(2) (3) (4) County Number (TEMIS code number)

(5) (6) Respondent Number (leave blank)

G. Beef Cattle Marketing

(This section is in reference to the most recently marketed calf crop)

(7) (8) (9) Number of feeder calves sold at weaning.

(10) (11) (12) Average weight of feeder calves sold at weaning.

(13) (14) (15) Number of calves sold in the Spring as backgrounded, short yearlings.

(16) (17) (18) Number of calves sold in the Summer or Fall as backgrounded long yearlings.

(19) (20) (21) Number of finished cattle sold during the most recent 12-months.

(22) (23) (24) Number of replacement heifers retained from the most recently weaned calf crop.

(25) Method used to market the majority of the most recently sold feeder calf crop (1 = Weekly Auction; 2 = Organized feeder calf sale; 3 = Local trader; 4 = Direct to backgrounder or feeder).

H. Forage Production and Use

(26) (27) (28) (29) Acres of improved permanent pasture land.

(30) (31) (32) Acres of temporary winter and/or summer pasture.

(33) (34) Estimated percent of permanent pasture land that had 30 percent or more legume in 1981.

I. Estimated Number of Contacts with County Extension Agents During the Past 12 Months

(35) (36) Number of Extension beef cattle meetings attended

(37) (38) Number of telephone calls to the Extension Office to seek information on beef cattle.

(39) (40) Number of visits made to the County Extension Office to seek information on beef cattle.

(41) (42) Total number of farm visits received from County Extension Agents

General Survey Instructions

Date Due: November 1, 1981

Disposition: Mail completed survey forms to your Associate District Supervisor, Agricultural Programs, for forwarding to Agricultural Extension Education.

Population to be Surveyed: Beef Cow-Calf producers who have 25 or more breeding age cows.

Counties to be Surveyed: All counties having at least 15 beef cow-calf producers who have 25 or more breeding age cows.

Number of Producers to be Surveyed:

a. Counties having 15 to 50 producers survey 15
b. Counties having 51 to 100 producers survey 20
c. Counties having 101 to 300 producers survey 25
d. Counties having over 300 producers survey 30

Sampling Procedures:

a. Use an up-to-date listing.
b. Apply the Nth number technique to identify producers to be interviewed. Select a few alternates to replace those who for good reasons cannot be interviewed

VITA

Alfred Dean Headrick was born in Morgan County, Tennessee on a 400-acre hillside farm on March 31, 1952. He is the son of William F. and Ruth Headrick. He attended public schools in Morgan County and was graduated from Oakdale High School in May of 1970.

After graduation, he attended Tennessee Technological University in Cookeville, majoring in Animal Science. In the Spring of 1974, he received a Bachelor of Science Degree in Agriculture. On August 1, 1974 he accepted the position of Assistant Extension Agent for the Agricultural Extension Service in Cumberland County.

He is a member of Gamma Sigma Delta, the National Honorary Agriculture Society; Epsilon Sigma Phi, National Honorary Extension Fraternity; Delta Tau Alpha, Honorary Agricultural Society; the Tennessee Association of Agricultural Agents; the National Association of Extension 4-H Agents, and The University of Tennessee Century Club.

He is married to the former Deborah Lynn Jeffers of Sunbright, Tennessee, and they have one daughter, Lindsey Beth, age 2 years.