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RELATIONSHIPS BETWEEN SELECTED CHARACTERISTICS OF TENNESSEE BEEF PRODUCERS AND THEIR USE OF HEALTH MANAGEMENT PRACTICES AND THE NUMBER AND TYPE OF EXTENSION CONTACTS

A Thesis

Presented for the

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ABSTRACT

The purpose of this study was to determine the relationships between selected farm characteristics, health management practices used, and the number and type of Extension contacts. Data were collected through personal interviews with 1,813 randomly selected beef producers in 85 Tennessee counties using the 1985 Beef Cow-Calf Interview Schedule. Producers interviewed had a minimum of 25 breeding age cows in their herd. The data were coded and processed for computer analysis and computations at the University of Tennessee Computing Center. The chi square test was used to determine the strength of relationship between the dependent and independent variables. Chi square values which achieved the .05 probability level were accepted as significant.

Major findings included the following:

1. About half of the 1,813 producers surveyed had 40 or less breeding age cows.

2. Over half of the producers were full-time operators and had beef as a major source of farm income.

3. Extension contacts made by producers ranged from a high of 74 percent receiving farm visits to a low of 58 percent attending Extension beef meetings.

4. Three of the 11 recommended health management practices were used by over 80 percent of the producers. These practices were: (1) calves vaccinated for blackleg, (2) cows dewormed, and (3) controlled flies.

5. Three health management practices were not used by over half of the producers. These were vaccinating cows for IBR, BVD, and PI3, vaccinating calves for IBR, BVD, and PI3, and vaccinating replacement heifers for brucellosis.

6. Large producers (41 and over breeding age cows) made significantly more Extension contacts than the smaller producers (40 or less breeding age cows).

7. Large operators (41 and over breeding age cows) were more likely to use the 11 recommended health management practices than the small operators (40 or less breeding age cows).

8. Producers who made one or more contacts to Extension were more likely than those who did not make any contacts to use the 11 recommended health management practices.

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CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

Beef cattle production has played a large part in the lives of many Tennessee farm families. All cattle and calves in Tennessee on January 1, 1987 totaled 2,400,000 head, a 4 percent decline from a year earlier and 5 percent less than in 1985. In 1985 Tennessee ranked fourteenth nationwide in terms of beef cattle numbers (15).*

Tennessee's 1986 calf crop totaled 1,140,000 head. The average value per head for all cattle and calves were $335. Gross income from all cattle and calves sold in Tennessee in 1986 was $444,054,000 (15). The land, climate, geographical location, and economy makes Tennessee an ideal state for beef cattle production.

The success of Tennessee agriculture, including beef cattle, has been aided by the Agricultural Extension Service. Tennessee Agricultural Extension Service over the years has focused heavily on increasing the use of beef cattle management practices to increase producer returns.

This study was concerned with the characteristics of beef producers and their farm operation, their use of recommended health management practices, and the number and type of the Extension contacts. It

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*Numbers in parenthesis refer to alphabetically numbered references in the Bibliography.

attempts to assess the quality of Tennessee beef cow-calf production system by analyzing the characteristics of the number and type of producers who were and those who were not using 11 health management practices.

II. NEED FOR THE STUDY

Under provisions of the Smith-Lever Act, the Cooperative Extension Service exists to diffuse among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same. Extension agents assist people to utilize more fully their own resources. Specific production practices have been recommended and if used by more producers would improve the efficiency of beef production in Tennessee.

The 1985 Cow-Calf Producer Survey data were analyzed to determine characteristics of beef producers and to determine to what extent the recommended beef production practices were being followed. There was a need to examine the relationship between producer characteristics, Extension contacts and the use of health management practices by beef producers in Tennessee. It was believed this information would help Extension increase its effectiveness through improved delivery of its beef cattle program.

III. PURPOSE OF THE STUDY

The Agricultural Extension Service is charged with providing a research based information to beef producers in Tennessee. The objective

of this study was to obtain information that would be useful in developing or restructuring programs for Tennessee beef producers.

The purpose of this study was to determine the relationship between selected farm characteristics, health management practices used, and the number and type of Extension contacts.

The specific objectives were:

1. To determine some of the characteristics of Tennessee beef cattle producers.

2. To determine the extent of contacts that beef producers had with Extension.

3. To determine what health management practices were being used by beef producers.

4. To determine the relationships between selected producer characteristics and Extension contacts.

5. To determine the relationships between the total number of Extension contacts and selected farm characteristics.

6. To determine the relationships between selected producer characteristics and the use of selected health management practices.

7. To determine the relationships between the total number of Extension contacts and the use of selected health management practices.

IV. LIMITATIONS OF THE STUDY

This study was limited to the analysis of the data available from the 1985 Tennessee Beef Cow-Calf Producer Survey. The data were obtained by Extension agents through personal interviews and included beef

cow-calf producers. The number of interviews varied from county to county, depending on the number of beef producers in the county. Eighty-five of the 95 counties in Tennessee were surveyed and 1,813 producers were included.

V. METHODS AND PROCEDURES

Population

The population of this study was beef cow-calf producers in 85 counties in Tennessee who had 25 or more breeding age cows in their herd during the year previous to the survey.

Selection of Sample

Extension agents used their county list of beef producers to obtain the sample. The number of producers surveyed per county varied from 15 to 30 depending upon the number of beef producers in the county. The "n^{th}" number technique was used to identify producers to be surveyed.

Development of Survey Instrument

The 1985 Tennessee Beef Cow-Calf Producer Survey was developed by the University of Tennessee, Agricultural Extension Service specialist staff in the Animal Science and Extension Education section.

Conducting the Survey

The survey was conducted by Extension agents in 85 counties through personal interviews. The Extension agent scheduled interviews with producers and completed the survey on the farm or at the county Extension office.

Method of Analysis

The data were coded and punched on computer cards. Computations were made by the University of Tennessee Computing Center. The chi square test was used to determine the strength of the relationship between dependent and independent variables. The .05 probability level was the point at which a relationship was considered to be significant.

VI. DEFINITION OF TERMS

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

1. 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.

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

3. Extension Contact. One of the personal contact methods, such as a farm visit, by which Extension agents provide agriculture information to producers.

CHAPTER II

REVIEW OF RELATED STUDIES

There have been several studies related to characteristics of beef producers and factors influencing practice adoption. There have also been several studies of the influence of Extension contacts on the use of agriculture production practices.

This chapter contains literature related to:

1. Characteristics of Tennessee Beef Producers,
2. Producers Use of Health Management Practices, and
3. Extension Contacts with Agriculture Producers.

I. CHARACTERISTICS OF TENNESSEE BEEF PRODUCERS

Beeler (2) in a 1986 study involving 1,799 beef producers in a 1981 statewide survey found the number of full-time beef operators was 885 (51 percent) compared to 705 (40.6 percent) part-time beef operators and 146 (8.4 percent) retired beef operators.

Headrick's (6) study involving 1,799 Tennessee beef producers surveyed in 1981 revealed that the beef producers had an average herd size of 79 breeding age cows.

In a 1979 study, Lovely (8) surveyed 52 beef producers in Campbell County to secure data concerning producer characteristics. Lovely reported that 58 percent were full-time farmers and they had an average of 20 cows.

In a 1972 study, Brewer (3) surveyed 40 beef producers in Marshall County. Brewer reported that 58 percent were full-time farmers and had an average of 35 cows in the herd.

In 1971, Barnes (1) conducted a study of 38 beef producers in Claiborne County and reported that 60 percent of the producers were full-time farmers and had an average of 25 cows.

Matthews (11) in 1968 surveyed 75 Lawrence County beef producers and reported that 27 percent of the producers were full-time farmers and they had an average of 18 cows.

Luck (9) conducted a 1968 study of beef producer characteristics in Macon County. He found the following: 65 percent were full-time farmers and they had an average of 20 cows.

Keyes (7) in a 1966 study of Campbell County beef producers discovered the following characteristics: 67 percent were full-time farmers and they had an average of 29 cows.

II. PRODUCERS USE OF HEALTH MANAGEMENT PRACTICES

Beeler's (2) study of beef producers surveyed in 1981 found the following information regarding the use of health management practices: (1) 29 percent did implant their feeder calves at least once, (2) 61 percent did deworm their cows at least once per year, and (3) 45 percent dewormed their calves while they were nursing.

Lumpkin's (10) statewide study of the beef cattle producers showed that most producers: (1) vaccinated for blackleg, (2) used grub and lice control practices, (3) dewormed cows at least once a year, and (4) used backrubbers for control of flies.

Matthew's (11) Lawrence County study found that the reasons reported most often by producers to explain why cattlemen do not adopt more recommended practices were: (1) lack of time and labor, (2) too small a margin of profit, and (3) lack of technical knowledge.

Mohamad's (12) study of beef producers surveyed in 1977 found the following information regarding the use of recommended beef production practices. Most producers were doing the following: (1) vaccinating calves for blackleg, (2) using grub and lice control practices, and (3) worming cows at least once a year.

Rudder's (14) study of beef producers surveyed in 1977 found that most producers were using the following recommended practices: (1) 82 percent of the producers vaccinated for blackleg; (2) 87 percent of the producers used growth stimulants (3) backrubs for fly control was used by 50 percent of the producers, (4) 63 percent used grub and lice control, and (5) 85 percent wormed their cattle once a year.

III. EXTENSION CONTACT WITH AGRICULTURE PRODUCERS

Beeler's (2) statewide study in 1986 revealed that there were 167 producers (9 percent) who reported having no Extension contact over the past 12 months who used 35 percent of the 22 selected practices while 1,629 producers (91 percent) indicated having one or more Extension contact, and they used 43 percent of the 22 practices.

Rudder (14) reported that at least one Extension meeting of any type had been attended over the past 12 months by 79 percent of the beef producers. At least one Extension beef meeting was attended by 61 percent

of the producers. The Extension office had been visited during the past year by 78 percent of the producers at least once while 51 percent had visited 3 or more times. At least 1 telephone call to Extension was made by 86 percent, and 3 or more calls had been made by 65 percent. Eighty-three percent of the beef producers had received farm visits by Extension agents during the previous 12 months.

Chadwell (4) in a statewide study of feeder pig producers in 1987, reported that the number of contacts producers had with Extension were significantly associated with their use of recommended swine management practices.

Gordon (5), in a study of 20 Haywood County feeder pig producers in 1975, reported that the number of contacts producers had with Extension were significantly associated with their use of 5 of the 21 recommended swine management practices. Producers using the recommended practices had a larger number of Extension contacts than did producers not using the practices.

Officer (13) reported in his 1987 soybean study that a significant relationship existed between the number of contacts producers had with Extension and their use of 22 of 33 production practices. Producers using the recommended practices had a larger number of Extension contacts than did producers not using the practices.

CHAPTER III

CHARACTERIZATION OF TENNESSEE BEEF CATTLE PRODUCERS AND THEIR FARM OPERATION

This chapter on characterization of Tennessee beef cattle producers and their farm operation was divided into two sections dealing with the first two tables of this study. Selected variables were discussed in each section.

Section I presents data regarding the characteristics of the beef producers operation and the number and type of contacts the producers had with the Agricultural Extension Service.

Section II presents data regarding use of the beef health practices recommended by the Extension Service.

I. CHARACTERISTICS OF BEEF CATTLE PRODUCERS, THEIR BEEF OPERATION, AND NUMBER AND TYPE OF EXTENSION CONTACTS

This section presents findings (Table I) regarding the characteristics of beef cattle producers, their beef operation and the number and type of Extension contacts. Frequencies and percentages are used to summarize findings.

Selected Characteristics of Producer

The first three variables in Table I deal with the selected characteristics of the beef cattle producer with regard to their number of breeding age cows exposed to bull (size of operation), farming status, and major source of farm income.

Table I. Characteristics of Tennessee Beef Cattle Producers, Their Farm Operation and Number and Types of Extension Contacts

Selected Characteristics of Producer and Extension Contacts	Number of Producers	Valid Percent of Producers
SELECTED CHARACTERISTICS		
Number Cows-Heifers Exposed to Bulls		
40-less	891	49.3
41-over	916	50.7
No response	6	Missing
Total	1,813	100.0
Farming Status		
Full-time farm	1,030	57.9
Part-time farm	750	42.1
No response	33	Missing
Total	1,813	100.0
Major Source of Farm Income		
Beef cattle	917	51.7
Row crops	858	48.3
No response	38	Missing
Total	1,813	100.0
EXTENSION CONTACTS		
Number Telephone Calls to Extension Office		
Not any	502	27.7
One-more	1,310	72.3
No response	1	Missing
Total	1,813	100.0
Number Visits to Extension Office		
Not any	659	36.4
One-more	1,153	63.6
No response	1	Missing
Total	1,813	100.0
Number Farm Visits Received-Extension Agent		
Not any	474	26.1
One-more	1,339	73.9
No response	0	Missing
Total	1,813	100.0
Number Extension Beef Meetings Attented		
Not any	771	42.5
One-more	1,042	57.5
No response	0	Missing
Total	1,813	100.0

Number of breeding age cows exposed to bull. Just over 49 percent, or 891 of the 1,813 producers, had 40 or less breeding age cows. A slightly larger percentage of over 50 percent, or 916 producers, had 41 or over breeding age cows.

Farming status. Part-time farmers totaled 750, or 42.1 percent, of the 1,780 producers responding with the majority, 57.9 percent, or 1,030, being full-time farmers.

Major source of farm income. Eight hundred and fifty-eight, or 48.3 percent, of the beef cattle producers surveyed received their major source of farm income from row crops. The remaining 917 producers, or 51.7 percent, received their major source of farm income from beef cattle.

Number and Types of Extension Contacts

The second division of Section I involves four quantitative variables which attempt to characterize the beef producers by the number of contacts made during the past 12 months with the Agricultural Extension Service through telephone calls to the Extenison office, visits to the Extension office, Extension farm visits received, and Extension beef meetings attended.

Telephone calls to Extension office. About 28 percent of the beef producers surveyed made no telephone calls to the Extension office during the past year. Nearly 72 percent, or 1,310 producers, made 1 or more telephone calls to the Extension office.

Visits to Extension office. Only about 36 percent of the producers had not made any visits to the county Extension office during the past year. Eleven hundred and fifty-three producers, or nearly 64 percent, had made 1 or more visits to the county Extension office.

Number of farm visits received from Extension agents. Just over 26 percent of the beef producers surveyed did not receive any farm visits from the Extension agent during the previous 12 months. Nearly 74 percent (1,339) of the producers received 1 or more farm visits from the Extension agent.

Beef meetings attended. Seven hundred and seventy-one (42.5 percent) of the beef producers responding to the survey did not attend any Extension meetings during the past year. The remaining 57.5 percent, or 1,042 producers, attended 1 or more Extension beef meetings.

II. BEEF PRODUCERS USE OF HEALTH MANAGEMENT PRACTICES

The purpose of Section II is to present findings regarding the characteristics of beef producers and their use of 11 health management practices reported in Table II. Frequencies and percents are used to help summarize Tennessee beef cattle producers use of 11 beef health management practices.

Number of Producers Vaccinating Cows and Heifers for Leptospirosis

Nearly 44 percent of the beef producers surveyed did not vaccinate their cows and heifers for leptospirosis. The remaining 56 percent, or 1,018 producers, did vaccinate their cows and heifers.

Table II. Tennessee Beef Producers' Use of Health Management Practices

Health Management Practices	Number of Producers	Valid Percent of Producers
Cows and Heifers Vaccinated-Leptospirosis		
Yes	1,018	56.4
No	788	43.6
No response	7	Missing
Total	1,813	100.0
Cows Vaccinated-IBR, BVD, and PI3		
Yes	721	39.8
No	1,089	60.2
No response	3	Missing
Total	1,813	100.0
Calves Vaccinated-IBR, BVD, and PI3		
Yes	801	45.5
No	1,001	55.5
No response	11	Missing
Total	1,813	100.0
Calves Vaccinated-Blackleg		
Yes	1,603	88.6
No	206	11.4
No response	4	Missing
Total	1,813	100.0
Replacement Heifers Vaccinated-Brucellosis		
Yes	582	34.1
No	1,127	65.9
No response	104	Missing
Total	1,813	100.0
Calves Implanted		
Yes	968	53.4
No	845	46.6
No response	0	Missing
Total	1,813	100.0
Cows Dewormed		
Yes	1,483	82.0
No	326	18.0
No response	4	Missing
Total	1,813	100.0
Calves Dewormed		
Yes	1,285	71.3
No	516	28.7
No response	12	Missing
Total	1,813	100.0
Controlled Flies		
Yes	1,681	93.1
No	125	6.9
No response	7	Missing
Total	1,813	100.0
Treated for Lice		
Yes	1,221	67.6
No	584	32.4
No response	8	Missing
Total	1,813	100.0
Treated for Grubs		
Yes	1,122	62.2
No	681	37.8
No response	10	Missing
Total	1,813	100.0

Number of Producers Vaccinating Cows for IBR, BVD, and PI3

Over 60 percent (1,089) of the producers surveyed did not vaccinate their cows for IBR, BVD, and PI3; whereas, 40 percent did vaccinate.

Number of Producers Vaccinating Calves for IBR, BVD, and PI3

One thousand and one, or 55.5 percent, of the producers surveyed did not vaccinate their calves for IBR, BVD, or PI3. The remaining 801 producers (44.5 percent) did vaccinate their calves.

Number of Producers Vaccinating Calves for Blackleg

Just over 11 percent, or 206, of the producers did not vaccinate their calves for blackleg. The remaining 1,603 producers (88.6 percent) did vaccinate for blackleg.

Number of Producers Vaccinating Replacement Heifers for Brucellosis

Nearly 66 percent, or 1,127 of the 1,709 producers responding, did not vaccinate their replacement heifers for brucellosis; whereas, 34 percent, or 582 producers did vaccinate.

Number of Producers Implanting Calves

About 47 percent of the producers did not implant their calves. The remaining 53 percent implanted their calves at least once.

Number of Producers Deworming Cows

Only 18 percent, or 326, of the producers did not deworm the cows, while 82 percent, or 1,483, of the producers did deworm their cows at least once per year.

Number of Producers Deworming Calves

Nearly 29 percent, or 516, of the producers did not deworm their calves compared to over 71 percent, or 1,285, that did deworm.

Number of Producers Controlling Flies

Just under 7 percent, or 125, of the producers did not control flies, compared to over 93 percent, or 1,681, of the producers who did use some fly control program.

Number of Producers Treating for Lice

About 32 percent, or 584, of the producers surveyed did not treat their herd for lice, compared to almost 68 percent (1,221) who did.

Number of Producers Treating for Grubs

Of the 1,803 producers responding to this question, about 37 percent did not treat their herd for grubs, compared to over 62 percent who did.

III. CHAPTER SUMMARY

Almost 51 percent of the producers had 41 or more breeding age cows exposed to the bull and about 58 percent of the producers were full-time farmers. Of the beef producers surveyed, nearly 52 percent of

them reported that their major source of income was from beef cattle.

Over 72 percent of the producers surveyed made 1 or more telephone calls to the Extension office and nearly 64 percent made 1 or more Extension office visits. Almost 74 percent of the producers received 1 or more farm visits from the Extension agent and nearly 58 percent of the producers attended 1 or more Extension beef meetings.

Three of the 11 health management practices studied were not used by over 55 percent of the producers. These were vaccinating cows for IBR, BVD, and PI3, vaccinating calves for IBR, BVD, and PI3, and vaccinating replacement heifers for brucellosis. Eight of the health management practices were used by over 71 percent of the producers with a larger percent using the following practices: (1) vaccinated calves for blackleg (88.6 percent), (2) dewormed cows (82 percent), (3) dewormed calves (71.3 percent), and (4) controleld flies (93.1 percent).

CHAPTER IV

RELATIONSHIP BETWEEN THE SELECTED CHARACTERISTICS OF BEEF PRODUCERS, THEIR SIZE OF FARM OPERATION AND THE NUMBER AND TYPE OF CONTACTS WITH EXTENSION

This chapter presents findings regarding relationships between selected characteristics of the beef producers, the number of breeding age cows in their herd and the number and type of contacts they had with Extension agents during the previous 12 months. Three characteristics were studied: (1) number of breeding age cows in the herd, (2) farming status, and (3) major source of income. These variables were studied to determine the characteristics of beef producers who had contacts with Extension and those who did not. Data were collected on four Extension contact variables which included number of telephone calls to the Extension office, number of visits to the Extension office, number of farm visits received from Extension agents, and the total number of Extension contacts. The chi square test was used to determine strengths of relationships between dependent and independent variables. Data were summarized in four tables. Each table constitutes a section.

I. NUMBER OF BREEDING AGE COWS IN HERD AND NUMBER AND TYPE OF EXTENSION CONTACT

Findings regarding the relationship between beef producers' number of cows and heifers exposed to bulls and the number and types of

contacts made with Extension are presented in Table III. Numbers and percents of producers responding are given for each variable as well as the chi square value and the probability level.

Number of Breeding Age Cows in Herd and Telephone Calls to the Extension Office

Seventy-six percent of the beef producers with herds of 41 and over breeding age cows made 1 or more telephone calls to the county Extension office compared to about 69 percent of those with 40 or less cows. There was a significant relationship between the size of the herd and the phone calls to the Extension office as indicated by the chi square test. Producers with a larger number of breeding age cows (41 and over) were more likely to call the Extension office than producers with herds of fewer cows.

Number of Breeding Age Cows in the Herd and Visits to Extension Office

Sixty-nine percent of the beef producers with herds of 41 and over breeding age cows made 1 or more visits to the Extension office, compared to 58 percent of those with 40 or less. The chi square test indicated a significant relationship between the size of the herd and number of visits made to the Extension office. Producers with larger numbers of cows (41 and over) were more likely to visit the Extension office than producers with smaller herds.

Table III. Relationships Between the Number of Breeding Age Cows in Herd and the Number of Contacts Beef Producer had with Extension

Extension Contacts	Number Breeding Age Cows in Herd: 40-less, Number of Response	40-less, Percent Response	41-over, Number of Response	41-over, Percent Response
Phone Calls to Extension Office				
Not any	280	31.4	220	24.0
One or more	611	68.6	695	76.0
Total	891	100.0	915	100.0
Statistical test $x^2 = 11.92$ df = 1 p = 0.01				
Visits to Extension Office				
Not any	373	41.9	285	31.1
One or more	518	58.1	630	68.9
Total	891	100.0	915	100.0
Statistical test $x^2 = 21.92$ df = 1 p = 0.01				
Farm Visits Received-Extension Agent				
Not any	280	31.4	193	21.1
One or more	611	68.6	723	78.9
Total	891	100.0	916	100.0
Statistical test $x^2 = 24.53$ df = 1 p = 0.01				
Beef Meetings Attended				
Not any	432	48.5	337	36.8
One or more	459	51.5	579	63.2
Total	891	100.0	916	100.0
Statistical test $x^2 = 24.79$ df = 1 p = 0.01				

Number of Breeding Age Cows in the Herd and Farm Visits Received from Extension Agent

Nearly 79 percent of the beef producers with herds of 41 and over breeding age cows received 1 or more farm visits from the Extension agent, compared to 69 percent of those with 40 or less. There was a significant relationship between the size of the herd and the number of farm visits received from the Extension agent as indicated by the chi square test. Producers with larger herds (41 and over cows) were more likely to receive farm visits from the Extension agent than producers with smaller herds.

Number of Breeding Age Cows in the Herd and Beef Meetings Attended

About 63 percent of the beef producers with herds of 41 and over breeding age cows attended 1 or more beef meetings as compared to 52 percent of those with 40 or less. The chi square test indicated a significant relationship between the size of the herd and the number of beef meetings attended. Producers with larger herds (41 and over breeding age cows) were more likely to attend the beef meetings than producers with smaller herds.

II. FARMING STATUS OF BEEF PRODUCERS AND THE NUMBER AND TYPE OF CONTACTS THEY HAD WITH EXTENSION AGENTS

Findings regarding the relationship between beef producers farming status and the number and type of contacts made with Extension agents

are presented in Table IV. The number and percent of producers responding are given for each variable as well as the chi square value and the probability level.

Farming Status and Phone Calls to Extension Office

Table IV indicates that of the full-time farmers 73 percent made 1 or more phone calls to the Extension office during the last year compared to 74 percent of the part-time farmers. Although the data did show a slight tendency for part-time farmers to make more phone calls to the Extension office, the differences were not significant as tested by the chi square test. Therefore, there was not a significant relationship between farming status of the beef producers and the number of phone calls they made to the Extension office.

Farming Status and Visits to Extension Office

Sixty-six percent of the full-time farmers made 1 or more visits to the Extension office compared to 62 percent of the part-time farmers. Although the data did show a slight tendency for full-time farmers to make more visits to the Extension office, the differences were not significant as tested by the chi square test. Therefore, there was not a significant relationship between the beef producers' farming status and the number of visits they made to the Extension office.

Farming Status and Farm Visits Received from Extension Agent

Nearly 79 percent of the full-time farmers received 1 or more farm visits from Extension agents during the past 12 months as compared

Table IV. Relationships Between the Farming Status of Beef Producers and the Number of Contacts they had with Extension

Extension Contacts	Farming Status			
	Full-Time		Part-Time	
	Number of Response	Percent Response	Number of Response	Percent Response
Phone Calls to Extension Office				
Not any	279	27.1	196	26.1
One or more	750	72.9	554	73.9
Total	1,029	100.0	750	100.0
Statistical test $x^2 = 0.17$ df = 1 p = 0.68				
Visits to Extension Office				
Not any	347	33.7	283	37.7
One or more	682	66.3	467	62.3
Total	1,029	100.0	750	100.0
Statistical test $x^2 = 2.88$ df = 1 p = 0.09				
Farm Visits Received-Extension Agent				
Not any	221	21.5	224	29.9
One or more	809	78.5	526	70.1
Total	1,030	100.0	750	100.0
Statistical test $x^2 = 15.93$ df = 1 p = 0.01				
Beef Meetings Attended				
Not any	399	38.7	343	45.7
One or more	631	61.3	407	54.3
Total	1,030	100.0	750	100.0
Statistical test $x^2 = 8.45$ df = 1 p = 0.01				

to about 70 percent of the part-time farmers. There was a significant relationship between the farming status and the number of farm visits received from Extension agents. Full-time farmers were more likely to receive farm visits from Extension agents than the part-time farmers.

Farming Status and Beef Meetings Attended

About 61 percent of the full-time farmers attended 1 or more beef meetings during the past year as compared to 54 percent of the part-time farmers. The chi square test indicated a significant relationship between farming status and the number of beef meetings attended. Full-time farmers were more likely to attend beef meetings than the part-time farmers.

III. MAJOR SOURCE OF FARM INCOME AND NUMBER AND TYPE OF EXTENSION CONTACTS

Table V presents findings regarding the relationship between beef producers' major source of farm income and the number and type of contacts made with Extension. The number and percent of producers responding are given for each variable as well as the chi square value and the probability level.

Major Source of Farm Income and Phone Calls to Extension Office

About 73 percent of the producers with beef cattle as their major source of farm income made 1 or more phone calls to the Extension office compared to 74 percent of those having a major source of income something

Table V. Relationships Between Major Source of Beef Producers Farm Income and the Number of Contacts they had with Extension

Extension Contacts	Major Source of Farm Income			
	Beef Cattle		Other	
	Number of Response	Percent Response	Number of Response	Percent Response
Phone Calls to Extension Office				
Not any	250	27.3	225	26.2
One or more	666	72.7	633	73.8
Total	916	100.0	858	100.0
Statistical test $x^2 = 0.21$ df = 1 p = 0.65				
Visit to Extension Office				
Not any	317	34.6	313	36.5
One or more	599	65.4	545	63.5
Total	916	100.0	858	100.0
Statistical test $x^2 = 0.60$ df = 1 p = 0.44				
Farm Visits Received-Extension Agent				
Not any	255	27.8	189	22.0
One or more	662	72.2	669	78.0
Total	917	100.0	858	100.0
Statistical test $x^2 = 7.59$ df = 1 p = 0.01				
Beef Meetings Attended				
Not any	385	42.0	357	41.6
One or more	532	58.0	501	58.4
Total	917	100.0	858	100.0
Statistical test $x^2 = 0.01$ df = 1 p = 0.91				

other than beef. Although the data did show a slight tendency for the farmers with beef as their major source of income to make more phone calls to the Extension office, the differences were not significant as tested by the chi square test. Therefore, there was not a significant relationship between the beef producers' major source of farm income and the number of phone calls they made to the Extension office.

Major Source of Farm Income and Visits to Extension Office

Sixty-five percent of the producers with beef cattle as their major source of farm income made 1 or more visits to the Extension office during the past year as compared to nearly 64 percent of producers having a major source of farm income from something other than beef. Although the data did show a slight tendency for the farmers with beef as their major source of farm income to make more visits to the Extension office, the differences were not significant as tested by the chi square test. Therefore, there was not a significant relationship between major source of farm income and the number of visits to the Extension office.

Major Source of Farm Income and Farm Visits Received from Extension Agent

Seventy-two percent of the producers with beef cattle as their major source of farm income received 1 or more farm visits from Extension agent as compared to 78 percent of producers having a major source of farm income from something other than beef. There was a significant

relationship between the major source of farm income and the number of farm visits received from Extension agent as indicated by the chi square test. Producers with a major source of farm income of something other than beef were more likely to receive farm visits from Extension agents than the producers with beef as their major source of farm income.

Major Source of Farm Income and Beef Meetings Attended

Fifty-eight percent of the producers with beef cattle as their major source of farm income attended 1 or more beef meetings as compared to 58 percent of producers having a major source of farm income from something other than beef. As tested by the chi square test these differences were not significant. Therefore, there was not a significant relationship between major source of farm income and the number of beef meetings attended.

IV. RELATIONSHIP BETWEEN THE TOTAL NUMBER OF CONTACTS BEEF CATTLE PRODUCERS HAD WITH EXTENSION AGENT AND THEIR PERSONAL CHARACTERISTICS

Findings regarding the relationship between the total Extension contacts with beef producers and their personal characteristics of the beef producer are presented in Table VI. The personal characteristics studied were farming status, major source of income, and size of operation. The number and percent of producers is given for each variable as well as the chi square value and the probability level.

Table VI. Relationships Between the Number of Contacts Beef Cattle Producers had with Extension and Selected Characteristics

Selected Characteristics	Total Number of Extension Contacts: Not Any — Number of Response	Not Any — Percent Response	One or More — Number of Response	One or More — Percent Response	Total — Number of Response	Total — Percent Response
Farming Status						
Full-time	96	9.3	933	90.7	1,029	100.0
Part-time	88	11.7	662	88.3	750	100.0
Statistical test $x^2 = 2.45$ df = 1 p = 0.12						
Major Source of Income						
Beef cattle	100	10.9	816	89.1	916	100.0
Other	84	9.8	774	90.2	858	100.0
Statistical test $x^2 = 0.49$ df = 1 p = 0.48						
Size of Operation						
40 or less	130	14.6	761	85.4	891	100.0
41 or more	80	8.7	835	91.3	915	100.0
Statistical test $x^2 = 14.46$ df = 1 p = 0.01						

Total Number of Extension Contacts and Farming Status

About 91 percent of the full-time farmers made 1 or more contacts with Extension as compared to 88 percent of the part-time farmers. Although the data show a slight tendency for full-time farmers to make more total contact with Extension, the differences were not significant as tested by the chi square test.

Total Number of Extension Contacts and Major Source of Income

Ninety percent of the producers with income from something other than beef made 1 or more contacts with Extension, as compared to 89 percent of the producers with income from beef. Although the data show a slight tendency for producers with a major source of income from something other than beef to make more total contact with Extension, the differences were not significant as tested by the chi square test.

Total Number of Extension Contacts and Size of Operation

Approximately 91 percent of producers with herds of 41 and over breeding age cows made 1 or more contacts with Extension as compared to about 85 percent of those with 40 or less in the herd. There was a significant relationship between the size of the operation and the total number of contacts made with Extension, as indicated by the chi square test. Producers with 41 and over breeding age cows were more likely to have made 1 or more Extension contacts during the past year than producers with 40 or less in the herd.

V. CHAPTER SUMMARY

Producers who had 41 and over breeding age cows in their herd did differ significantly from those who had 40 and less breeding age cows in the herd in terms of the number of contacts they had with Extension through phone calls to Extension office, visits to Extension office, farm visits received from Extension agents, and beef meeting attended. Beef producers with herds of 41 and over breeding age cows made more phone calls, made more office visits, received more farm visits from Extension agents, and attended more Extension beef meetings than those who had fewer cows.

Full-time and part-time producers did differ significantly in the number of contacts they had with Extension through farm visits received from Extension agent and beef meetings attended. Full-time farmers had more contacts with Extension than part-time farmers. Full-time and part-time beef producers did not differ as to the number of phone calls made to the Extension office and the number of visits made to the Extension office.

The beef producers with the major source of farm income from something other than beef did differ significantly from the producers with beef as a major source of income as to the farm visits received from Extension agent. Beef producers who said beef was their major source of farm income did not differ significantly from those who indicated that their major farm income was not beef as to whether

or not they made telephone calls, made visits to the Extension office, and attended Extension beef meetings during the last 12 months.

The size of the beef producers operation did differ significantly in the number of total contacts they had with Extension. The beef producers with the herd size of 41 or more breeding age cows had more total contacts with Extension than herds of 40 or less. Beef producers who farmed full-time did not differ significantly from those who were part-time farmers as to whether or not they had contacts of any type with Extension agents during the past year. This was also true for major source of farm income.

CHAPTER V

RELATIONSHIPS BETWEEN PRODUCER CHARACTERISTICS, NUMBER OF BREEDING AGE COWS IN THE HERD, EXTENSION CONTACTS AND THEIR USE OF HEALTH MANAGEMENT PRACTICES

This chapter presents findings regarding relationships between the number of breeding age cows in the herd, selective characteristics of the producers, the total number of contacts producers had with Extension, and their use of the health management practices. The producers' selective characteristics studied were the number of breeding age cows in the herd, farming status, and the major source of farm income. These variables were studied to determine relationships with the use of the health management practices. Data were collected on 11 variables which include cows and heifers vaccinated for leptospirosis, cows vaccinated for IBR, BVD, and PI3, calves vaccinated for IBR, BVD, and PI3, calves vaccinated for blackleg, replacement heifers vaccinated for brucellosis, calves implanted, cows and bulls dewormed, calves dewormed, controlled flies, treated for lice, and treated for grubs. The chi square test was used to determine strengths of relationships between dependent and independent variables.

Data are summarized in four tables. Each table constitutes a section. Section I deals with the relationship between size of the cow herd and the use of health management practices. Section II looks at

the relationship between producers' farming status and the use of health management practices. Section III deals with the relationship of major source of farm income and use of the health management practices. Section IV looks at the relationship between the total number of contacts beef producers made with Extension agents and their use of health management practices.

I. NUMBER OF BREEDING AGE COWS IN THE HERD AND THE USE OF HEALTH MANAGEMENT PRACTICES

Table VII presents findings regarding the relationship between beef producers' number of breeding age cows on hand and the use of health management practices. The number and percent of producers are given for each variable as well as the chi square value and the probability level.

Number of Breeding Age Cows in the Herd and Vaccinated for Leptospirosis

Nearly 50 percent of the beef producers who had 40 and less breeding age cows vaccinated cows and heifers for leptospirosis, while almost 63 percent of the producers with 41 and over breeding age cows vaccinated cows and heifers for leptospirosis. There was a significant relationship between the size of the herd and whether or not the cows and heifers were vaccinated for leptospirosis as indicated by the chi square test. Producers with 41 and over breeding age cows were more likely to vaccinate the cows and heifers for leptospirosis than producers with herds of 40 or less.

Table VII. Relationships Between the Number of Breeding Age Cows in Herd in 1985 and the use of Selected Health Management Practices

Health Management Practices	Number of Breeding Age Cows in Herd: 40 or Less — Number of Response	40 or Less — Percent Response	41 and Over — Number of Response	41 and Over — Percent Response
Cows and Heifers Vaccinated for Leptospirosis				
Yes	441	49.8	573	62.6
No	444	50.2	343	37.4
Total	885	100.0	916	100.0
Statistical test $x^2 = 29.10$ df = 1 p = 0.01				
Cows Vaccinated for IBR, BVD, and PI3				
Yes	308	34.6	409	44.7
No	582	65.4	506	55.3
Total	890	100.0	915	100.0
Statistical test $x^2 = 18.77$ df = 1 p = 0.01				
Calves Vaccinated for IBR, BVD, and PI3				
Yes	356	40.1	442	48.5
No	531	59.9	469	51.5
Total	887	100.0	911	100.0
Statistical test $x^2 = 12.46$ df = 1 p = 0.01				
Calves Vaccinated for Blackleg				
Yes	752	84.6	846	92.6
No	137	15.4	68	7.4
Total	889	100.0	914	100.0
Statistical test $x^2 = 27.63$ df = 1 p = 0.01				
Replacement Heifers Vaccinated for Brucellosis				
Yes	256	30.9	322	36.8
No	573	69.1	553	63.2
Total	829	100.0	875	100.0
Statistical test $x^2 = 6.39$ df = 1 p = 0.01				
Calves Implanted				
Yes	394	44.2	572	62.4
No	497	55.8	344	37.6
Total	891	100.0	916	100.0
Statistical test $x^2 = 63.11$ df = 1 p = 0.01				
Cows and Bulls Dewormed				
Yes	690	77.6	788	86.1
No	199	22.4	127	13.9
Total	889	100.0	915	100.0
Statistical test $x^2 = 21.46$ df = 1 p = 0.01				
Cows Dewormed				
Yes	585	66.3	695	76.0
No	297	33.7	219	24.0
Total	882	100.0	914	100.0
Statistical test $x^2 = 20.21$ df = 1 p = 0.01				
Controlled Flies				
Yes	811	91.5	864	94.5
No	75	8.5	50	5.5
Total	886	100.0	914	100.0
Statistical test $x^2 = 5.79$ df = 1 p = 0.02				
Treated for Lice				
Yes	549	61.8	667	73.2
No	339	38.2	244	26.8
Total	888	100.0	911	100.0
Statistical test $x^2 = 26.12$ df = 1 p = 0.01				
Treated for Grubs				
Yes	494	55.6	623	68.5
No	394	44.4	286	31.5
Total	888	100.0	909	100.0
Statistical test $x^2 = 31.26$ df = 1 p = 0.01				

Number of Breeding Age Cows in the Herd and Cows Vaccinated for IBR, BVD, and PI3

Nearly 35 percent of the beef producers with herds of 40 and less breeding age cows vaccinated cows and heifers for IBR, BVD, and PI3; while almost 45 percent of the producers with 41 and over breeding age cows vaccinated cows and heifers for IBR, BVD, and PI3. There was a significant relationship between the size of the herd and the cows vaccinated for IBR, BVD, and PI3 as indicated by the chi square test. Beef producers with 41 and over breeding age cows were more likely to vaccinate the cows for IBR, BVD, and PI3 than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Calves Vaccinated for IBR, BVD, and PI3

About 40 percent of the beef producers with herds of 40 and less breeding age cows vaccinated calves for IBR, BVD, and PI3, compared to nearly 49 percent of the producers with 41 and over breeding age cows vaccinated calves for IBR, BVD, and PI3. There was a significant relationship between the size of the herd and the calves vaccinated for IBR, BVD, and PI3 as indicated by the chi square test. Producers with 41 and over breeding age cows were more likely to vaccinate calves for IBR, BVD, and PI3 than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Calves Vaccinated for Blackleg

Nearly 85 percent of the beef producers who had 40 and less breeding age cows vaccinated replacement heifers for blackleg while about 93

percent of the producers with 41 and over breeding age cows vaccinated for blackleg. There was a significant relationship between the size of the herd and the calves vaccinated for blackleg as indicated by the chi square test. Beef producers with 41 and over breeding age cows were more likely to vaccinate the calves for blackleg than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Replacement Heifers Vaccinated for Brucellosis

About 31 percent of the beef producers with herds of 40 and less breeding age cows vaccinated replacement heifers for brucellosis compared to nearly 37 percent of the producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and vaccinating replacement heifers for brucellosis. Producers with 41 and over breeding age cows were more likely to vaccinate replacement heifers for brucellosis than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Calves Implanted

Just over 44 percent of the producers with 40 and less breeding age cows implanted calves compared to about 62 percent of those producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and the calves implanted. Producers with 41 and over breeding age cows were more likely to implant calves than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Cows and Bulls Dewormed

Nearly 78 percent of the beef producers with herds of 40 and less breeding age cows dewormed their cows and bulls compared to over 86 percent of the producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and the cows and bulls dewormed as indicated by the chi square test. Producers with 41 and over breeding age cows were more likely to deworm their cows and bulls than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Calves Dewormed

Over 66 percent of the beef producers with herds of 40 and less breeding age cows dewormed their calves compared to 76 percent of the producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and the calves dewormed. Producers with 41 and over breeding age cows were more likely to deworm their calves than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Controlled Flies

Nearly 92 percent of the beef producers with herds of 40 and less breeding age cows controlled flies compared to about 95 percent of the producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and controlling flies.

Producers with 41 and over breeding age cows were more likely to control flies than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Treated for Lice

Almost 62 percent of the beef producers with herds of 40 and less breeding age cows treated for lice compared to 73.2 percent of the producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and treatment for lice. Producers with 41 and over breeding age cows were more likely to treat for lice than producers with herds of 40 or less.

Number of Breeding Age Cows in the Herd and Treated for Grubs

Nearly 56 percent of the beef producers with herds of 40 and less breeding age cows treated for grubs compared to almost 69 percent of the producers with 41 and over breeding age cows. There was a significant relationship between the size of the herd and the treatment for grubs. Producers with 41 and over breeding age cows were more likely to treat for grubs than producers with herds of 40 or less.

II. RELATIONSHIPS BETWEEN THE PRODUCERS EMPLOYMENT STATUS AND THE USE OF HEALTH MANAGEMENT PRACTICES

Findings regarding relationships between producers' employment status and their use of health management practices are presented in Table VIII. Beef producers' employment status was analyzed as to:

Table VIII. Relationships Between Beef Producers' Employment Status and their use of Selected Health Management Practices

Health Management Practices	Farming Status			
	Full-Time		Part-Time	
	Number of Response	Percent Response	Number of Response	Percent Response
Cows and Heifers Vaccinated for Leptospirosis				
Yes	576	56.2	422	56.3
No	449	43.8	327	43.7
Total	1,025	100.0	749	100.0
Statistical test $x^2 = 0.00017$ df = 1 p = 0.98				
Cows Vaccinated for IBR, BVD, and PI3				
Yes	395	38.4	317	42.3
No	633	61.6	433	57.7
Total	1,028	100.0	750	100.0
Statistical test $x^2 = 2.50$ df = 1 p = 0.11				
Calves Vaccinated for IBR, BVD, and PI3				
Yes	443	43.3	342	45.7
No	579	56.7	406	54.3
Total	1,022	100.0	748	100.0
Statistical test $x^2 = 0.89$ df = 1 p = 0.34				
Calves Vaccinated for Blackleg				
Yes	914	88.8	662	88.5
No	115	11.2	86	11.5
Total	1,029	100.0	748	100.0
Statistical test $x^2 = 0.02$ df = 1 p = 0.89				
Replacement Heifers Vaccinated for Brucellosis				
Yes	334	34.4	243	34.4
No	637	65.6	464	65.6
Total	971	100.0	707	100.0
Statistical test $x^2 = 0.01$ df = 1 p = 1.00				
Calves Implanted				
Yes	561	54.5	390	52.0
No	469	45.5	360	48.0
Total	1,030	100.0	750	100.0
Statistical test $x^2 = 2.49$ df = 1 p = 0.48				
Cows and Bulls Dewormed				
Yes	839	81.6	620	82.8
No	189	18.4	129	17.2
Total	1,028	100.0	749	100.0
Statistical test $x^2 = 0.32$ df = 1 p = 0.57				
Calves Dewormed				
Yes	733	71.4	533	71.8
No	294	28.6	209	28.2
Total	1,027	100.0	742	100.0
Statistical test $x^2 = 0.03$ df = 1 p = 0.87				
Controlled Flies				
Yes	962	93.8	691	92.3
No	64	6.2	58	7.7
Total	1,026	100.0	749	100.0
Statistical test $x^2 = 1.31$ df = 1 p = 0.25				
Treated for Lice				
Yes	695	67.8	507	67.8
No	330	32.2	241	32.2
Total	1,025	100.0	748	100.0
Statistical test $x^2 = 0.00$ df = 1 p = 1.00				
Treated for Grubs				
Yes	624	60.9	479	64.0
No	400	39.1	269	36.0
Total	1,024	100.0	748	100.0
Statistical test $x^2 = 1.64$ df = 1 p = 0.20				

(1) those who were full-time farmers and (2) those who were part-time farmers. The number and percent of producers are given for each variable as well as the chi square value and the probability level.

Producers' Employment Status and Cows and Heifers Vaccinated for Leptospirosis

Just over 56 percent of the beef producers who were full-time farmers vaccinated their cows and heifers for leptospirosis compared to the same percent who were part-time farmers. Both full-time and part-time producers tended to be vaccinating their cows and heifers for leptospirosis. There was not a significant relationship between farming status and whether or not cows and heifers were vaccinated for leptospirosis.

Producers' Employment Status and Cows Vaccinated for IBR, BVD, and PI3

About 38 percent of the beef producers who were full-time farmers vaccinated their cows for IBR, BVD, and PI3 while just over 42 percent of the producers who were part-time farmers followed this practice. These observed differences in full-time and part-time farmers as to vaccinating cows for IBR, BVD, and PI3 were not significant as tested by the chi square test.

Producers' Employment Status and Calves Vaccinated for IBR, BVD, and PI3

Just over 43 percent of the beef producers who were full-time farmers vaccinated their calves for IBR, BVD, and PI3 while nearly

46 percent of the producers who were part-time farmers followed this practice. These observed differences in the farming status and the vaccinating calves for IBR, BVD, and PI3 were not significant.

Producers' Employment Status and Calves Vaccinated for Blackleg

Nearly 89 percent of the beef producers who were full-time farmers vaccinated their calves for blackleg compared to the same 89 percent of the producers who were part-time farmers. Therefore, there was not a significant relationship between farming status and calves vaccinated for blackleg.

Producers' Employment Status and Replacement Heifers Vaccinated for Brucellosis

About 34 percent of the beef producers who were full-time farmers and the same percent of part-time farmers vaccinated their replacement heifers for brucellosis. Therefore, there was not a significant relationship between farming status and whether or not replacement heifers were vaccinated for brucellosis.

Producers' Employment Status and Calves Implanted

Nearly 55 percent of the beef producers who were full-time farmers implanted their calves compared to 52 percent of the producers who were part-time farmers. These observed differences in farming status and implanting calves were not significant at the .05 level.

Producers' Employment Status and Cows and Bulls Dewormed

Almost 82 percent of the beef producers who were full-time farmers dewormed their cows and bulls compared to nearly 83 percent of the producers who were part-time farmers. These observed differences in farming status as to deworming cows and bulls were not significant.

Producers' Employment Status and Calves Dewormed

Just over 71 percent of the beef producers who were full-time farmers dewormed their calves compared to nearly 72 percent of the producers who were part-time farmers. These observed differences in farming status and deworming calves were not significant.

Producers' Employment Status and Controlled Flies

Nearly 94 percent of the beef producers who were full-time farmers controlled flies compared to about 92 percent of the producers who were part-time farmers. These observed differences in farming status and controlling flies were not significant.

Producers' Employment Status and Treated for Lice

Almost 68 percent of the beef producers who were full-time farmers treated for lice compared to 68 percent of the producers who were part-time farmers. These observed differences in farming status and treating for lice were not significant.

Producers' Employment Status and Treated for Grubs

Nearly 61 percent of the beef producers who were full-time farmers treated for grubs compared to 64 percent of the producers who were part-time farmers. These observed differences in farming status and treating for grubs were not significant.

III. MAJOR SOURCE OF FARM INCOME OF BEEF PRODUCERS AND THEIR USE OF HEALTH MANAGEMENT PRACTICES

Table IX presents findings regarding the relationship between beef producers major source of farm income and the use of health management practices. Producers were classified into two groups as to major source of farm income: (1) those with beef cattle as their major source of farm income, and (2) those with something other than beef as their major source of farm income. The number and percent of producers are given for each variable as well as the chi square value and the probability level.

Producers Major Source of Farm Income and Cows and Heifers Vaccinated for Leptospirosis

Just over 58 percent of the beef producers with beef cattle as their major source of farm income vaccinated cows and heifers for leptospirosis compared to over 54 percent of the producers with something other than beef as their major source of farm income. Although the data show a slight tendency for producers with beef as a major source of farm income to be more likely than other producers to vaccinate cows

Table IX. Relationships Between Beef Producers' Major Source of Farm Income and their use of Selected Health Management Practices

Health Management Practices	Major Source of Farm Income			
	Beef Cattle		Other	
	Number of Response	Percent Response	Number of Response	Percent Response
Cows and Heifers Vaccinated for Leptospirosis				
Yes	530	58.1	463	54.1
No	383	41.9	393	45.9
Total	913	100.0	856	100.0
Statistical test $x^2 = 2.66$ df = 1	p = 0.10			
Cows Vaccinated for IBR, BVD, and PI3				
Yes	355	38.8	353	41.1
No	561	61.2	505	58.9
Total	916	100.0	858	100.0
Statistical test $x^2 = 0.96$ df = 1	p = 0.33			
Calves Vaccinated for IBR, BVD, and PI3				
Yes	404	44.2	377	44.2
No	510	55.8	475	55.8
Total	914	100.0	852	100.0
Statistical test $x^2 = 0.00$ df = 1	p = 1.00			
Calves Vaccinated for Blackleg				
Yes	817	89.3	755	88.0
No	98	10.7	103	12.0
Total	915	100.0	858	100.0
Statistical test $x^2 = 0.61$ df = 1	p = 0.43			
Replacement Heifers Vaccinated for Brucellosis				
Yes	294	33.8	282	35.1
No	576	66.2	522	64.9
Total	870	100.0	804	100.0
Statistical test $x^2 = 0.25$ df = 1	p = 0.62			
Calves Implanted				
Yes	536	58.5	412	48.0
No	381	41.5	446	52.0
Total	917	100.0	858	100.0
Statistical test $x^2 = 23.37$ df = 1	p = 0.01			
Cows and Bulls Dewormed				
Yes	750	81.9	704	82.2
No	166	18.1	152	17.8
Total	916	100.0	856	100.0
Statistical test $x^2 = 0.02$ df = 1	p = 0.89			
Calves Dewormed				
Yes	660	72.2	601	70.7
No	254	27.8	249	29.3
Total	914	100.0	850	100.0
Statistical test $x^2 = 0.42$ df = 1	p = 0.52			
Controlled Flies				
Yes	858	93.9	791	92.3
No	56	6.1	66	7.7
Total	914	100.0	857	100.0
Statistical test $x^2 = 1.47$ df = 1	p = 0.23			
Treated for Lice				
Yes	639	70.1	559	65.2
No	273	29.9	298	34.8
Total	912	100.0	857	100.0
Statistical test $x^2 = 4.51$ df = 1	p = 0.03			
Treated for Grubs				
Yes	591	64.8	508	59.3
No	321	35.2	348	40.7
Total	912	100.0	856	100.0
Statistical test $x^2 = 5.36$ df = 1	p = 0.02			

and heifers for leptospirosis, the differences were not significant as tested by the chi square test.

Producers Major Source of Farm Income and Cows Vaccinated for IBR, BVD, and PI3

Nearly 39 percent of the beef producers with beef cattle as their major source of farm income vaccinated cows for IBR, BVD, and PI3, compared to over 41 percent of the producers with something other than beef as their major source of farm income. Although the data show a slight tendency for producers with something other than beef as a major source of farm income to be more likely to vaccinate cows for IBR, BVD, and PI3, the differences were not significant as tested by the chi square test.

Producers Major Source of Farm Income and Calves Vaccinated for IBR, BVD, and PI3

Just over 44 percent of the beef producers with beef cattle as their major source of farm income vaccinated calves for IBR, BVD, and PI3, compared to 44 percent of the producers with something other than beef as their major source of farm income. These observed differences in major source of farm income as to vaccinating calves for IBR, BVD, and PI3 were not significant.

Producers Major Source of Farm Income and Calves Vaccinated for Blackleg

Approximately 89 percent of the beef producers with beef cattle as their major source of farm income vaccinated calves for blackleg,

compared to 88 percent of the producers with something other than beef as their major source of income. Although the data show a slight tendency for producers with beef as their major source of farm income to be more likely to vaccinate calves for blackleg, the differences were not significant.

Producers Major Source of Farm Income and Replacement Heifers Vaccinated for Brucellosis

Nearly 34 percent of the beef producers with beef cattle as a major source of farm income vaccinated replacement heifers for brucellosis, compared to 35 percent of the producers with something other than beef as their major source of income. Although the data show a slight tendency for producers with something other than beef as their major source of farm income to be more likely to vaccinate replacement heifers for brucellosis, the differences were not significant as tested by the chi square test.

Producers Major Source of Farm Income and Calves Implanted

Almost 59 percent of the beef producers with beef cattle as their major source of farm income implanted calves compared to 48 percent of the producers with something other than beef as their major source of income. There was a significant relationship between the major source of farm income and implanting calves, as indicated by the chi square test. Producers with beef as a major source of farm income were more likely to implant their calves than producers with something other than beef as a major source of farm income.

Producers Major Source of Farm Income and Cows and Bulls Dewormed

Almost 82 percent of the beef producers with beef cattle as their major source of farm income dewormed their cows and bulls compared to just over 82 percent of the producers with something other than beef as their major source of income. These observed differences in the major source of farm income and deworming cows and bulls were not significant.

Producers Major Source of Farm Income and Calves Dewormed

Just over 72 percent of the beef producers with beef cattle as their major source of farm income dewormed their calves compared to nearly 71 percent of the producers with something other than beef as their major source of income. Although the data show a slight tendency for producers with a major source of income from beef to be more likely to deworm their calves, the differences were not significant.

Producers Major Source of Farm Income and Controlled Flies

Nearly 94 percent of the beef producers with beef cattle as their major source of farm income controlled flies compared to just over 92 percent of the producers with something other than beef as their major source of income. Although the data show a slight tendency for producers with a major source of income from beef to be more likely to control flies, the differences were not significant as tested by the chi square test.

Producers Major Source of Farm Income and Treated for Lice

Just over 70 percent of the beef producers with beef cattle as their major source of farm income treated for lice while only about 65 percent of those with something other than beef as their major source of income treated for lice. There was a significant relationship between the major source of farm income and producers treating for lice. Producers with beef as their major source of farm income were more likely to treat for lice than producers with their major source of income from something other than beef.

Producers Major Source of Farm Income and Treated for Grubs

Nearly 65 percent of the beef producers with beef cattle as their major source of farm income treated for grubs compared to just over 59 percent of the producers with something other than beef as their major source of income. There was a significant relationship between major source of farm income and treating for grubs. Producers with beef as a major source of farm income were more likely to treat for grubs than producers with a major source of income from something other than beef.

IV. TOTAL NUMBER OF CONTACTS AND THE USE OF HEALTH MANAGEMENT PRACTICES

Findings regarding the relationship between total number of contacts beef producers made with Extension agents and the use of health

management practices are presented in Table X. The total number of contacts producers had with Extension agents were divided into two groups: (1) those producers who had no contacts, and (2) those producers who had 1 or more. The number and percent of producers are given for each variable as well as the chi square value and the probability level.

Total Number of Extension Contacts and Vaccinated for Leptospirosis

Over 37 percent of the beef producers who did not make any contacts with the Extension agents vaccinated their cows and heifers for leptospirosis compared to nearly 59 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and whether or not cows and heifers were vaccinated for leptospirosis. Producers with 1 or more total Extension contacts during the past year were more likely to vaccinate the cows and heifers for leptospirosis than producers who did not contact Extension agents.

Total Number of Extension Contacts and Cows Vaccinated for IBR, BVD, and PI3

Twenty-one percent of the beef producers who did not make any contact with the Extension agent vaccinated cows for IBR, BVD, and PI3 compared to over 42 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and the cows vaccinated for IBR, BVD, and PI3 as indicated by the chi square test. Producers with 1 or

Table X. Relationships Between Total Number of Contacts Beef Producers made with Extension and their use of Selected Health Practices

Health Management Practices	Total Number of Extension Contacts: Not Any — Number of Response	Not Any — Percent Response	One or More — Number of Response	One or More — Percent Response
Cows and Heifers Vaccinated for Leptospirosis				
Yes	76	36.7	941	58.9
No	131	63.3	657	41.1
Total	207	100.0	1,598	100.0
Statistical test $x^2 = 35.7$ df = 1	p = 0.01			
Cows Vaccinated for IBR, BVD, and PI3				
Yes	44	21.0	677	42.3
No	166	79.0	922	57.7
Total	210	100.0	1,599	100.0
Statistical test $x^2 = 34.5$ df = 1	p = 0.01			
Calves Vaccinated for IBR, BVD, and PI3				
Yes	65	31.1	736	46.2
No	144	68.9	856	53.8
Total	209	100.0	1,592	100.0
Statistical test $x^2 = 16.5$ df = 1	p = 0.01			
Calves Vaccinated for Blackleg				
Yes	164	78.1	1,438	90.0
No	46	21.9	160	10.0
Total	210	100.0	1,598	100.0
Statistical test $x^2 = 24.8$ df = 1	p = 0.01			
Replacement Heifers Vaccinated for Brucellosis				
Yes	26	12.9	556	36.9
No	175	87.1	951	63.1
Total	201	100.0	1,507	100.0
Statistical test $x^2 = 44.3$ df = 1	p = 0.01			
Calves Implanted				
Yes	56	26.5	911	56.9
No	155	73.5	690	43.1
Total	211	100.0	1,601	100.0
Statistical test $x^2 = 77.9$ df = 4	p = 0.01			
Cows and Bulls Dewormed				
Yes	142	67.6	1,340	83.9
No	68	32.4	258	16.1
Total	210	100.0	1,598	100.0
Statistical test $x^2 = 32.0$ df = 1	p = 0.01			
Calves Dewormed				
Yes	119	56.7	1,165	73.3
No	91	43.3	425	26.7
Total	210	100.0	1,590	100.0
Statistical test $x^2 = 24.2$ df = 1	p = 0.01			
Controlled Flies				
Yes	181	86.6	1,500	94.0
No	28	13.4	96	6.0
Total	209	100.0	1,596	100.0
Statistical test $x^2 = 14.6$ df = 1	p = 0.01			
Treated for Lice				
Yes	97	46.4	1,124	70.5
No	112	53.6	471	29.5
Total	209	100.0	1,595	100.0
Statistical test $x^2 = 47.8$ df = 1	p = 0.01			
Treated for Grubs				
Yes	86	41.1	1,035	65.0
No	123	58.9	558	35.0
Total	209	100.0	1,593	100.0
Statistical test $x^2 = 43.6$ df = 1	p = 0.01			

more Extension contacts were more likely to vaccinate the cows for IBR, BVD, and PI3 than producers who did not contact Extension agents.

Total Number of Extension Contacts and Calves Vaccinated for IBR, BVD, and PI3

Approximately 31 percent of the beef producers who did not make any contact with the Extension agent vaccinated calves for IBR, BVD, and PI3 compared to over 46 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and vaccinating calves for IBR, BVD, and PI3. Producers with 1 or more Extension contacts were more likely to vaccinate the calves for IBR, BVD, and PI3 than producers who did not contact Extension agents.

Total Number of Extension Contacts and Calves Vaccinated for Blackleg

Just over 78 percent of the beef producers who did not make any contact with the Extension agent vaccinated calves for blackleg compared to 90 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and vaccinating calves for blackleg. Producers with 1 or more Extension contacts were more likely to vaccinate their calves for blackleg than producers who did not contact Extension agents.

Total Number of Extension Contacts and Replacement Heifers Vaccinated for Brucellosis

Nearly 13 percent of the beef producers who did not make any contacts with the Extension agents vaccinated their replacement heifers for brucellosis compared to almost 37 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and vaccinating replacement heifers for brucellosis. Producers with 1 or more Extension contacts were more likely to vaccinate the replacement heifers for brucellosis than producers who did not contact Extension agents.

Total Number of Extension Contacts and Calves Implanted

Almost 27 percent of the beef producers who did not make any contacts with the Extension agents implanted calves compared to nearly 57 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and implanting calves. Producers with 1 or more Extension contacts were more likely to implant calves than producers who did not contact Extension agents.

Total Number of Extension Contacts and Cows and Bulls Dewormed

About 68 percent of the beef producers who did not make any contacts with the Extension agents dewormed cows and bulls comapred to almost 84 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of

Extension contacts and deworming cows and bulls. Producers with 1 or more Extension contacts were more likely to deworm cows and bulls than producers who did not contact Extension agents.

Total Number of Extension Contacts and Calves Dewormed

Nearly 57 percent of the beef producers who did not make any contacts with the Extension agents dewormed calves compared to just over 73 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and deworming calves. Producers with 1 or more Extension contacts were more likely to deworm calves than producers who did not contact Extension agents.

Total Number of Extension Contacts and Controlled Flies

Nearly 87 percent of the beef producers who did not make any contacts with the Extension agents controlled flies compared to 94 percent of the producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and controlling flies. Producers with 1 or more Extension contacts were more likely to control flies than producers who did not contact Extension agents.

Total Number of Extension Contacts and Treated for Lice

Just over 46 percent of the beef producers who did not make any contacts with the Extension agents treated for lice compared to nearly

71 percent of those producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and treating for lice. Producers with 1 or more Extension contacts were more likely to treat for lice than producers who did not contact Extension agents.

Total Number of Extension Contacts and Treated for Grubs

Just over 41 percent of the beef producers who did not make any contacts with the Extension agents treated for grubs compared to 65 percent of the producers who made 1 or more Extension contacts. There was a significant relationship between the total number of Extension contacts and treating for grubs. Producers with 1 or more Extension contacts were more likely to treat for grubs than producers who did not contact Extension agents.

V. CHAPTER SUMMARY

Findings presented in Chapter V are summarized under four subsections: (1) Number of Breeding Age Cows in the Herd and Their Use of Health Management Practices, (2) Beef Producers Employment Status and Their Use of Health Management Practices, (3) Beef Producers Major Source of Farm Income and Their Use of Health Management Practices, and (4) Total Number of Extension Contacts Beef Producers Made With Extension Agents and Their Use of Health Management Practices.

Number of Breeding Age Cows in the Herd and Their Use of Health Management Practices

Producers with 41 or more breeding age cows were more likely than those with fewer cows to: (1) vaccinate for leptospirosis, IBR, BVD, and PI3, (2) vaccinate calves for blackleg and replacement heifers for brucellosis, (3) implant their calves, (4) deworm their cows, bulls and calves, and (5) control flies, lice, and grubs.

Beef Producers Employment Status and Their Use of Health Management Practices

The status of being a full-time or a part-time beef producer did not influence their use of the health management practices.

Beef Producers Major Source of Farm Income and Their Use of Health Management Practices

The beef producers with the major source of farm income from beef were more likely than those with a major source of farm income from something other than beef to: (1) implant their calves, and (2) control lice and grubs.

The beef producers with the major source of farm income from beef were as likely as those with a major source of farm income from something other than beef to: (1) vaccinate for leptospirosis, IBR, BVD, and PI3, (2) vaccinate calves for blackleg and replacement heifers for brucellosis, (3) deworm their cows, bulls, and calves, and (4) control flies.

Total Number of Extension Contacts Beef Producers Made With Extension Agents and Their Use of Health Management Practices

Producers with 1 or more Extension contacts during the past year were more likely than those with no Extension contacts to: (1) vaccinate for leptospirosis, IBR, BVD, and PI3, (2) vaccinate calves for blackleg and replacement heifers for brucellosis, (3) implant their calves, (4) deworm their cows, bulls, and calves, and (5) control flies, lice, and grubs.

CHAPTER VI

SUMMARY OF MAJOR FINDINGS

This chapter presents a summary of the major findings of this study. The chapter was divided into five sections relating to the purposes and objectives, methods of investigation, major findings, implications and recommendations, and recommendations for further study.

I. PURPOSE AND SPECIFIC OBJECTIVES

Purpose

The purpose of this study was to determine the relationships between selected farm characteristics, use of health management practices, and the number and types of contacts beef producers made with Extension.

Specific Objectives

The specific objectives of this study were:

1. To determine some of the characteristics of Tennessee beef cattle producers.

2. To determine the extent of contacts that beef producers had with Extension.

3. To determine what health management practices were being used by beef producers.

4. To determine the relationships between selected producer characteristics and Extension contacts.

5. To determine the relationships between the total number of Extension contacts and selected farm characteristics.

6. To determine the relationships between selected producer characteristics and the use of selected health management practices.

7. To determine the relationships between the total number of Extension contacts and the use of selected health management practices.

II. METHOD OF INVESTIGATION

The population of this study was beef cow-calf producers in 85 counties in Tennessee who had 25 or more breeding age cows in their herd during the year previous to the study. The number of producers surveyed ranged from 15 to 30 depending on the number of producers in the county. The total number of producers surveyed was 1,813.

Extension agents used their county list of beef producers to identify individuals to be surveyed using producers to the "n^{th}" number technique.

The 1985 Tennessee Beef Cow-Calf Producer Interview Schedule was developed by the University of Tennessee, Agricultural Extension Service specialist staff in the Animal Science and Extension Education department.

Extension agents in each of the 85 counties conducted the survey through personal interviews. The completed surveys were then returned to the Agricultural Extension Education office for analysis.

Method of Analysis

The data were processed for computer analysis. The University of Tennessee Computing Center facilities were used to analyze the data.

The chi square test was used to determine strengths of the relationship between dependent and independent variables. Chi square values which achieved the .05 probability level was chosen as being statistically significant.

III. MAJOR FINDINGS

Major findings were classifed and presented under heading related to the objectives of this study.

Characterization of Tennessee Beef Cattle Producers and Their Operation

Almost 51 percent of the producers had 41 or more breeding age cows exposed to the the bull with about 58 percent of the producers being full-time farmers. Of the beef producers surveyed, nearly 52 percent reported that their major source of farm income was from beef cattle.

Extension Contacts Made by Producers

Over 72 percent of the producers surveyed made 1 or more telephone calls to the Extension office and nearly 64 percent made 1 or more Extension office visit during the 12 months prior to the survey. Almost 74 percent of the producers received 1 or more farm visit from the Extension agent and nearly 58 percent of the producers attended 1 or more Extension beef meeting.

Use of Beef Health Management Practices

Three of the 11 health management practices studied were not used by about 61 percent of the producers. These were vaccinating cows for

IBR, BVD, and PI3, vaccinating calves for IBR, BVD, and PI3, and vaccinating replacement heifers for brucellosis. Eight of the health management practices were used by nearly 72 percent of the producers with over 84 percent using the following four practices: (1) vaccinated calves for IBR, BVD, and PI3, (2) dewormed cows, (3) dewormed calves, and (4) controlled flies.

Relationship Between Selective Characteristics of Beef Producers, Their Size of Farm Operation and the Number and Type of Contacts With Extension

Beef producers with herds of 41 and over breeding age cows made more phone calls, made more office visits, received more farm visits from Extension agents, and attended more Extension beef meetings than producers with smaller herds.

Full-time and part-time producers did differ significantly in the number of contacts they had with Extension through farm visits received from Extension agent and beef meetings attended. Full-time farmers had more contact with Extension than part-time farmers. The two Extension contacts where there was no significant differences between full-time and part-time farmers were the number of phone calls and visits to the Extension office.

The beef producers with the major source of farm income from something other than beef did differ significantly from the producers with beef as the major source of farm income as to the number of farm visits received from Extension agents. Beef producers with a major

source of income from beef had more contacts with Extension than producers with a major source of income from something other than beef. The three contacts where there was no significant differences between producers whose major source of farm income was from beef and those with other major source of income was from something other than beef were phone calls to the Extension office, visits to the Extension office, and beef meetings attended.

Beef producers with a herd size of 41 or more breeding age cows had more total contacts with Extension than did smaller producers. Producer characteristics that did not differ significantly as to number of contacts with Extension were the farming status and the major source of income.

Relationships Between the Selected Producer Characteristics, Number of Breeding Age Cows in the Herd, Extension Contacts and Their Use of Health Management Practices

Producers with 41 or more breeding age cows were more likely than those with fewer cows to: (1) vaccinate for leptospirosis, IBR, BVD, and PI3, (2) vaccinate calves for blackleg and replacement heifers for brucellosis, (3) implant their calves, (4) deworm their cows, bulls, and calves, and (5) control flies, lice, and grubs.

The status of being a full-time or a part-time beef producer did not influence their use of the health management practices.

Beef producers with their major source of farm income from beef were more likely than those with a major source of farm income from

something other than beef to: (1) implant their calves, and (2) control lice and grubs.

Beef producers with their major source of farm income from beef did not differ from those with their major source of farm income from something other than beef to: (1) vaccinate for leptospirosis, IBR, BVD, and PI3, (2) vaccinate calves for blackleg and replacement heifers for brucellosis, (3) deworm their cows, bulls, and calves, and (4) control flies.

Producers who made a total of 1 or more Extension contacts during the previous 12 months were more likely than those with no Extension contacts to: (1) vaccinate for leptospirosis, IBR, BVD, and PI3, (2) vaccinate calves for blackleg and replacement heifers for brucellosis, (3) implant their calves, (4) deworm their cows, bulls, and calves, and (5) control flies, lice, and grubs.

IV. IMPLICATIONS AND RECOMMENDATIONS

Based upon the findings of this study, the following implications and recommendations are suggested:

1. Almost half of the producers surveyed did not attend 1 or more Extension beef meetings. Producers attending beef meetings were more likely to use recommended health practices. It may be implied that Extension beef meetings are important in convincing producers to use recommended health management practices. This suggests that Extension should attempt to increase awareness and attendance at these beef meetings.

2. Nearly half of the beef producers owned small operations of 40 or less breeding age cows. These small operators were not as likely as the large operators to be using the 11 recommended health practices. This would indicate that small operators need help in learning the importance of using recommended health practices. This would suggest that Extension emphasize educating small producers as well as the large producers about the need for recommended health management practices.

3. An average of 56 percent of the producers surveyed were not following the recommendations of: (1) vaccinating cows and heifers for leptospirosis, (2) vaccinating cows for IBR, BVD, and PI3, and (4) vaccinating replacement heifers for brucellosis. A higher percentage of the producers that had 1 or more Extension contacts were using these health management practices compared to producers who had no contact. It is implied that Extension contacts are important if beef producers are to realize the benefits from using the health management practices. It is therefore recommended that Extension do a better job of contacting beef producers and promote all health management practices. Extension should emphasize contacting the part-time producer and the small producer (40 or less number of breeding age cows).

V. RECOMMENDATION FOR FURTHER STUDY

1. A similar study should be conducted routinely to determine if Tennessee beef producers are using practices recommended by the University of Tennessee Agricultural Extension Service. This will assist the Extension agent in adjusting its teaching methods and educational programs.

2. A continual effort should be made to improve surveys used to collect data. These changes need to be made so that the same information can be obtained each time since this is the only way to determine progress being made.

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APPENDIX



AEE INFO-20 TENNESSEE AGRICULTURAL EXTENSION SERVICE

1985 TENNESSEE BEEF COW-CALF PRODUCER SURVEY
(Interview producers with herds of 25 or more breeding age cows)
(See Instructions on Last Page)

Card No. 1 (1)

County Name _____

Respondent No. 0 0 (2) (3)

Co. TEMIS No. ___ ___ ___ (4) (5) (6)

PART I: GENERAL BEEF CATTLE SITUATION

For your most recently weaned calf crop give the:

(7-9) ___ ___ ___ a. NUMBER OF COWS AND HEIFERS EXPOSED TO BULL(s)?

(10-11) ___ ___ b. NUMBER OF CALVES LOST AT BIRTH OR DIED WITHIN TWO DAYS AFTER BIRTH?

(12-14) ___ ___ ___ c. NUMBER OF CALVES WEANED?

(15) ___ d. NUMBER OF BULLS USED?

PART II: MANAGEMENT SITUATION AND PRACTICES

Note: Use the most recently weaned calf crop in reference to questions in Part II.

A. Calving Management*

(16-19) ___ ___/___ ___ (Mo. / Year) 1. MONTH AND YEAR FIRST CALF BORN? (e.g. 0 1/8 4 = Jan. 1984; 9999 = don't know)

(20-23) ___ ___/___ ___ (Mo. / Year) 2. MONTH AND YEAR LAST CALF BORN? (e.g. 0 9/8 4 = Sept. 1984; 9999 = don't know)

(24-26) ___ ___ ___ 3. NUMBER OF CALVES BORN WITHIN 45 DAYS AFTER BIRTH OF THE FIRST CALF? (9999 = don't know)

B. Breeding Management

(27) ___ 1. FEMALES AND BULL(S) ARE OF THE SAME OR OF DIFFERENT BREEDS? (1 = same; 2 = different)

(28) ___ 2. FEMALES ARE CROSSBRED OR STRAIGHTBRED? (1 = crossbred; 2 = straightbred; 3 = both)

(29) ___ 3. WERE BULLS EVALUATED FOR BREEDING SOUNDNESS 30-45 DAYS BEFORE BREEDING SEASON BEGAN? (1 = no; 2 = yes; 9 = DNA)

(30) ___ 4. WERE PERFORMANCE TESTED BULLS USED? (1 = no; 2 = yes)

(31) ___ 5. WERE COWS AND HEIFERS PREGNANCY CHECKED? (1 = none; 2 = part; 3 = all)

(32) ___ 6. WERE OPEN FEMALES CULLED FROM HERD? (1 = none; 2 = part; 3 = all)

(33-34) ___ ___ 7. AVERAGE AGE OF REPLACEMENT HEIFERS WHEN BRED? (in months)

(35-37) ___ ___ ___ 8. AVERAGE WEIGHT OF REPLACEMENT HEIFERS WHEN BRED?

(38) ___ 9. HERD ENROLLED IN TBCIP OR A SIMILAR BREED PERFORMANCE TESTING PROGRAM? (1 = no; 2 = yes)

(39-41) ___ ___ ___ 10. NUMBER OF COWS AND HEIFERS BRED BY ARTIFICIAL INSEMINATION? (0 0 0 0 = not any)

*Coding Instructions:
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.

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C. Feeding Management

(42) ___ 1. KIND(S) OF HARVESTED FORAGES FED LAST WINTER? (1 = hay; 2 = silage; 3 = both hay and silage)

(43) ___ 2. HERD GROUPED LAST WINTER BY AGE AND STAGE OF PRODUCTION AND FED SEPARATELY? (1 = no; 2 = yes)

(44) ___ 3. DRY PREGNANT COWS FED LOWER QUALITY FORAGES EARLY IN WINTERING PERIOD? (1 = no; 2 = yes)

(45) ___ 4. KINDS OF CROP RESIDUE FED LAST WINTER? (1 = none fed; 2 = corn; 3 = soybeans; 4 = both corn and soybeans; 5 = other)

(46) ___ 5. FESCUE STOCKPILED FOR LATE FALL AND WINTER GRAZING? (1 = no; 2 = yes)

(47) ___ 6. HAY AND/OR SILAGE "FORAGE TESTED" BEFORE WINTER FEEDING? (1 = no; 2 = yes)

(48) ___ 7. KIND(S) OF SUPPLEMENTAL PROTEIN FED EACH DAY DURING WINTERING PERIOD? (1 = none fed; 2 = cottonseed or soybean meal; 3 = block or cubes; 4 = liquid)

D. Health Management (during past 12-months)

1. Vaccination

(49) ___ a. COWS AND REPLACEMENT HEIFERS VACCINATED FOR LEPTOSPIROSIS? (1 = no; 2 = yes)

(50) ___ b. COWS VACCINATED FOR IBR, BVD AND PI3? (1 = no; 2 = yes, part; 3 = yes, all)

(51) ___ c. CALVES VACCINATED FOR IBR, BVD AND PI3? (1 = no; 2 = yes, part; 3 = yes, all)

(52) ___ d. CALVES VACCINATED FOR BLACKLEG? (1 = no; 2 = yes, part; 3 = yes, all)

(53) ___ e. REPLACEMENT HEIFERS VACCINATED FOR BRUCELLOSIS? (1 = no; 2 = yes, part; 3 = yes, all; 9 = no replacement heifers)

(54) ___ f. NUMBER OF TIMES CALVES IMPLANTED? (0 = not any)

2. Deworming (during past 12-months)

(55) ___ a. SEASON WHEN COWS AND BULLS DEWORMED? (1 = not dewormed; 2 = Fall only; 3 = Spring only; 4 = both Fall and Spring; 5 = other)

(56) ___ b. CALVES DEWORMED? (Most recent calf crop) (1 = no; 2 = yes)

3. Fly Control

(57) ___ a. PRIMARY METHOD USED TO CONTROL HORN AND FACE FLIES? (1 = none used; 2 = Backrubbers and/or oilers; 3 = Dustbags; 4 = Backrubbers with flaps; 5 = Oral larvacides; 6 = ear tags)

(58-59) ___ ___ b. MONTH BEGAN TREATMENT FOR HORN AND FACE FLIES? (e.g. 0 4 = April)

4. Grub and Lice Control (past 12-months)

(60) ___ a. MONTH CATTLE TREATED FOR LICE? (1 = did not treat; 2 = by Nov. 1; 3 = by Nov. 1 and again in Feb.; 4 = did not treat until after Nov. 1 and lice build-up was present)

(61) ___ b. CATTLE TREATED FOR GRUBS BEFORE NOV. 1? (1 = not treated 2 = yes, treated before Nov.1; 3 = yes, treated but not before Nov. 1)

Card No. 2 (1)

Respondent No. 0 0 (2) (3)

County No. ___ ___ ___ (4) (5) (6)

PART III: FORAGE PRODUCTION

(7-10) ___ ___ ___ ___ 1. ACRES OF PERMANENT PASTURE LAND?

(11-14) ___ ___ ___ ___ 2. ACRES OF FESCUE PASTURE?

(15-17) ___ ___ ___ 3. ACRES OF TEMPORARY WINTER AND/OR SUMMER PASTURE?

(18-20) ___ ___ ___ 4. ESTIMATED PERCENT OF PERMANENT PASTURE LAND THAT HAD 30 PERCENT OR MORE LEGUME IN 1985?

PART IV: CATTLE HANDLING FACILITIES

(21) ___ 1. CATTLE HANDLING FACILITIES AVAILABLE FOR WORKING CATTLE? (1 = headgate only; 2 = headgate and holding chute; 3 = headgate, holding chute and working chute; 4 = headgate, holding chute, working chute and crowding pen; 5 = headgate, holding chute, working chute, crowding pens and holding pens; 9 = none of the above)

(22-23) ___ ___ 2. WIDTH OF WORKING CHUTE? (inches) (99 = no working chute)

(24-25) ___ ___ 3. YEAR CATTLE HANDLING FACILITIES CONSTRUCTED? (e.g. 8 3 = 1983; 99 = do not have handling facilities)

(26) ___ 4. DID YOU OBTAIN THE PLANS FOR CONSTRUCTING HANDELING FACILITIES FROM THE EXTENSION SERVICE ONLY, FROM THE EXTENSION SERVICE AND OTHER SOURCES OR FROM OTHER SOURCES ONLY? (1 = Extension service only; 2 = Extension service and other sources; 3 = other sources only; 9 = no plans were used or none constructed)

PART V: MARKETING

(27-29) ___ ___ ___ 1. NUMBER OF FEEDER CALVES SOLD AT WEANING? (1985 calf crop; 0 0 0 0 = not any)

(30-32) ___ ___ ___ 2. AVERAGE WEIGHT OF FEEDER CALVES SOLD AT WEANING? (1985 calf crop; 999 = none sold)

(33-35) ___ ___ ___ 3. NUMBER OF CALVES SOLD LAST SPRING (1984 calf crop) AS BACKGROUNDED SHORT YEARLINGS? (0 0 0 = not any)

(36-38) ___ ___ ___ 4. NUMBER OF CALVES SOLD SUMMER OR FALL (1985) AS BACKGROUNDED LONG YEARLINGS? (0 0 0 = not any)

(39-40) ___ ___ 5. NUMBER CALVES FROM 1984 CALF CROP FINISHED AND SOLD AS SLAUGHTER CATTLE? (0 0 0 = not any)

(41) ___ 6. 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)

(42) ___ 7. REASON FOR SELECTING THE MARKETING METHOD USED? (i.e. question 6) (1 = better price; 2 = cattle are not graded; 3 = habit; 4 = lower cost; 5 = frequency of sales; 6 = other)

PART VI : EXTENSION CONTACTS

(Note: Agent and/or producer should estimate the number of contacts the producer had with Extension Agents over the past 12-months)

(43) ___ 1. BEEF CATTLE MEETINGS ATTENDED?

(44-45) ___ ___ 2. OFFICE VISITS MADE? (regarding beef cattle)

(46-47) ___ ___ 3. TELEPHONE CALLS MADE? (regarding beef cattle)

(48-49) ___ ___ 4. FARM VISITS RECEIVED? (total number)

(50-51) ___ ___ 5. EXTENSION CIRCULAR OR NEWSLETTERS RECEIVED?

PART VII: RESPONDENT AND FARM SITUATION

(52) ___ 1. FARMING STATUS? (1 = full-time farm; 2 = part-time farm; 3 = retired)

(53-54) ___ ___ 2. ESTIMATED AGE OF FARM OPERATOR?

(55) ___ 3. MAJOR SOURCE OF FARM INCOME? (1 = feeder calves; 2 = slaughter cattle; 3 = row crop sales; 4 = other)

PART VIII: APPLICATION OF INFORMATION

What practices have you adopted the past four (4) years that have helped you improve your beef operation? (Note: Agent briefly list practices below; e.g. crossbreeding, implanting)

_____

_____

_____

_____

GENERAL SURVEY INSTRUCTIONS

Date Due: December 1985.

Disposition: Mail completed survey forms to your Associate District Supervisor.

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

Counties to be Surveyed: All counties.

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.

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The University of Tennessee Institute of Agriculture, U.S. Department of
Agriculture, and county governments cooperating in furtherance
of Acts of May 8 and June 30, 1914.
Agricultural Extension Service
M. Lloyd Downen, Dean

VITA

Steve Edward Walker was born June 23, 1956, to Mr. and Mrs. Durell Walker of Carthage, Smith County, Tennessee. He grew up in Smith County, Tennessee, where he attended Carthage Elementary School and was a graduate from Smith County High School in 1974. He entered Tennessee Technological University in 1974 and completed the requirements for a Bachelor of Science Degree in Agriculture Natural Resource Management in 1978. While at Tennessee Tech., he was a member of D.T.A. (Agriculture Honor Society), member of the Plant and Soil Science club, and a member of the Tennessee Tech. Soil Judging Team.

He was employed in September 1978 as an Assistant Extension Agent in Monroe County, Tennessee, responsible for youth agriculture programs. In 1982 he transferred to Lafayette, Macon County, Tennessee.

He is married to the former Beverly Ann Waller of Carthage, Tennessee and has two daughters, Christina, age 9 years and Stephanie, age 2 years.