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RELATIONSHIPS BETWEEN SELECTED TENNESSEE BEEF CATTLE PRODUCERS' PERSONAL AND FARM CHARACTERISTICS AND THE NUMBER OF CATTLE HANDLING FACILITY COMPONENTS PRESENT ON THEIR FARMS

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Finis Neal Smith

August 1990

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DEDICATION

This thesis is dedicated to my wife, Mary Grace, and my parents, Mr. and Mrs. Charlie W. Smith. As with any endeavor I have undertaken, they have given me the support and encouragement needed to do my best. For this I dedicate my thesis and express my love to them.

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ABSTRACT

The purpose of this study was to characterize the Tennessee beef cattle producers who did not construct or repair any cattle handling facility components during the implementation of the CATCH FOUR program in order to identify program content, target audiences and delivery methods to emphasize in future Extension beef cattle programs. An analysis of the relationships between those selected beef producers' personal and farm characteristics and the number of cattle handling facility components present on their farm was used to accomplish this purpose. The population of this study was the Tennessee beef cattle producers that did not construct or repair any cattle handling facility components from January 1, 1985 to the fall of 1987. The producers had at least 25 beef cows of breeding age. To identify the producers, Extension agents used an up-to-date mailing list of beef cattle producers to select a stratified random sample by applying the n^{th} number technique. The Extension agents were instructed to select 10 producers who since the beginning of the CATCH FOUR program had either constructed or remodeled one or more compnents for handling cattle. If 10 producers were not available, the agents were to survey all producers who did something to their cattle handling facilities since January 1, 1985. Secondly, the Extension agents were to select 15 other producers who had not constructed or repaired any component of their cattle handling facilities since the beginning of the CATCH FOUR program.

Following the completion of the survey, the data were coded and processed for computer analysis. Computations were made by the

University of Tennessee Computing Center. The F-ratio analysis of variance test and the chi square statistical test were used to determine the strength of the relationship between the independent and dependent variables. The .05 probability level was the point at which the relationship was considered significant.

Major findings included the following:

1. Beef producers had a mean age of 53 years, over 53 percent were high school graduates, 47 percent were part-time farmers and over 50 percent reported the sale of feeder calves as their major source of farm income. The producers exposed an average of 47.8 females to bulls, weaned an average of 43 calves and sold calves with an average weaning weight of 478 pounds. In regard to the type of cattle handling facilities on the farm, almost 36 percent of the producers had all 5 components and 18 percent had no components. Over 78 percent of the producers surveyed had received visits from an Extension agent.

2. Beef producers ranging in age from 21 to 45 years, with college or technical school training, who were full-time farmers and who listed row crops as their major source of farm income had a greater number of cattle handling facility components on their farms than producers who were 46 or older, had less education, were part-time farmers or retired, and listed feeder calves as their major source of farm income. Those producers who exposed 25 to 35 females, weaned 17 to 35 calves, and sold calves at an average weight range of 501 or more pounds had a greater number of cattle handling facility components on their farms than producers who exposed 36 or more females, weaned 36 or more calves, and sold calves that weighed less than 500 pounds at weaning. Those

producers who had 9 to 13 total Extension contacts had a greater number of cattle handling facility components on their farms than producers with less Extension contacts.

3. Beef cattle producers who rated economic benefit, safety, labor saving, pride of ownership, have good location, recommended by Extension, and recommended by veterinarian as important reasons for constructing cattle handling facilities had a greater number of cattle handling facility components on their farms than the producers who rated the reasons as unimportant. The beef producers who indicated time, not economical, no suitable location, no materials, no plans available, and no Extension help as important reasons for not constructing facilities had a fewer number of cattle handling facility components present on their farms than the producers who rated the reasons as not important.

4. Beef producers with all 5 cattle handling facility components rated Extension meetings, beef cattle demonstrations, newspaper articles, Extension newsletters, visits from Extension agents, visits to Extension office and telephone calls to Extension office as helpful sources of information about Extension's CATCH FOUR program.

5. Beef producers with all 5 cattle handling facility components were more likely than producers with no handling facilities to vaccinate females for leptospirosis, vaccinate cows/calves for respiratory disease complex, vaccinate calves for blackleg, implant calves, de-worm cows/bulls, deworm calves, castrate, dehorn, permanently identify animals, use horn and face fly control and treat cattle for grubs and/or lice.

Implications and recommendations are also included in this study.

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CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

The production and sale of beef cattle is a vital piece in the puzzle that makes up Tennessee's agricultural industry. The state's beef industry is basically cow-calf operations, with 1,038,000 beef brood cows on 68,000 farms. As of January 1, 1989, all cattle and calves in Tennessee totaled 2,300,000 head. Cash receipts from the sale of cattle and calves amounted to $528 million in 1988. Currently, Tennessee ranks fourteenth nationwide in terms of beef cattle numbers (13).*

In recent years, Tennessee beef cattle producers have seen an increase in the price paid per pound for their product. In 1988, the average price per head for all cattle and calves was $515 with a total of 1,225,000 head being sold across the state. This compares to 1987 when 1,428,000 cows and calves were marketed at an average value per head of $465 (13).

Tennessee is considered an ideal state for beef cattle production due to its abundance of natural resources, such as pasture land and water. With over four million acres in grass, there are more acres in pasture than all other crops combined.

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

The Agricultural Extension Service, through the years, has been involved in the growth of the beef industry by assisting producers to become more aware of the needs to adopt recommended practices which help to increase their efficiency. By diffusing sound, research-based information, the Extension service assists the beef cattle producers to achieve their ultimate goal of a greater return on their investment.

Nevertheless, with all the progress that has been made there is still room for improvement. For example, the average percent calf crop in Tennessee is about 70 percent and the average calf weaning weight is about 450 pounds. Heavier weaning weights and higher calf crop percents can increase a producer's efficiency, thus increasing returns. One important step producers can take to make their operation more efficient is to build or improve the quality of the beef cattle handling facilities on their farms.

It has been estimated by Agricultural Extension Agents that no more than one-fourth of Tennessee beef producers have cattle handling facilities in which cattle could be worked. This lack of cattle handling facilities was the leading cause of poor management and consequently low returns from beef cattle operations (10).

Management practices, such as vaccinating, castrating, dehorning and implanting require restraining of cattle. Treating cattle for internal and external parasites also require some limited restraint. Examining beef females for pregnancy, carrying out emergency herd health treatments and making genetic improvements through performance

testing and artificial insemination require handling facilities. Without adequate handling facilities, many of these management practices will not be done and consequently returns will suffer (10).

The CATCH FOUR program was introduced by the University of Tennessee Agricultural Extension Service in January of 1985 and continued through the fall of 1987. CATCH FOUR was an educational program directed at Tennessee beef producers to make them aware of the need for adequate beef cattle handling facilities on their farms. CATCH FOUR is an acronym for Consider Advantages That Cattle Handling Facilities Offer 'Ur Returns.

II. NEED FOR THE STUDY

With the signing of the Smith-Lever Act in 1914, the Cooperative Extension Service accepted the obligation to diffuse useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same. Extension personnel are continuously searching for methods to improve this diffusion process of research-based information and increase its application by the clientele. This study was an effort to characterize the Tennessee beef cattle producers who did not construct or repair any cattle handling facility components during the implementation of the CATCH FOUR program in order to provide a basis for improvement in future educational programs.

III. PURPOSE OF THE STUDY

The purpose of this study was to characterize the Tennessee beef cattle producers who did not build or repair any cattle handling

facility components during the implementation of the CATCH FOUR program in order to identify program content, target audiences and delivery methods to emphasize in future Extension beef cattle programs.

The specific objectives include:

1. To characterize beef cattle producers in Tennessee who did not construct or repair any cattle handling facility components during the CATCH FOUR program as to their farm operation, the availability of cattle handling facility components, the rating of reasons for or not constructing cattle handling facilities, the rating of sources of information about Extension's CATCH FOUR program, number and type of Extension contacts and the use of selected management practices.

2. To determine relationships between selected Tennessee beef cattle producers' personal and farm characteristics, Extension contacts and the number of cattle handling facility components present on their farms.

3. To determine relationships between selected beef cattle producers' rating of reasons for constructing or not constructing cattle handling facilities and the number of cattle handling facility components on their farms.

4. To determine relationships between selected beef cattle producers' number of cattle handling facility components present on the farms and the rating of information sources of Extension's CATCH FOUR program.

5. To determine relationships between selected Tennessee beef cattle producers' number of cattle handling facility components present on their farms and their use of selected management practices.

IV. LIMITATIONS OF THE STUDY

This study was limited to the analysis of the data available from the Tennessee Agricultural Extension Service 1987 Beef Cattle Handling Facilities Survey. Those selected Tennessee beef producers who did not construct or repair any components of a cattle handling facility from January 1985 to the fall of 1987 were included in this study. The data were obtained by Extension agents through personal interviews and the survey was limited to beef producers who have at least 25 beef cows of breeding age. Producers in 73 of the 95 Tennessee counties were surveyed. The study included data from 755 beef producers.

V. METHODS AND PROCEDURES

Population

The population of this study was the Tennessee beef cattle producers that did not construct or repair any cattle handling facility components from January 1, 1985 to the fall of 1987. The producers had at least 25 beef cows of breeding age.

Selection of Sample

To identify the producers to be included in this study, Extension agents used an up-to-date mailing list of beef cattle producers to select a stratified random sample by applying the n^{th} number technique. The Extension agents were instructed to select 10 producers who since the beginning of the CATCH FOUR program (i.e., January 1, 1985) had either constructed or remodeled one or more components for handling cattle. If 10 producers were not available, the agents were

to survey all producers who did something to their cattle handling facilities since January 1, 1985. Secondly, the Extension agents were to select 15 other producers who had not constructed or repaired any component of their cattle handling facilities since the beginning of the CATCH FOUR program. These producers may or may not have cattle handling facilities.

Development of Survey

The 1987 Beef Cattle Handling Facilities Survey was developed by the University of Tennessee Agricultural Extension Service Specialist staff in the Animal Science department and the Extension Education department.

Conducting the Survey

The surveys were conducted by Extension agents through personal interviews with beef cattle producers in 1987. Data from 73 of the 95 Tennessee counties were compiled for this study.

Method of Analysis

Following the completion of the surveys, the data were coded and processed for computer analysis. Computations were made by the University of Tennessee Computing Center.

The F-ratio analysis of variance test and the chi square statistical test were used to determine the strength of the relationship between the independent and dependent variables. The .05 probability level was the point at which a relationship was considered significant.

The independent variables in this study were selected Tennessee beef cattle producers' personal and farm operation characteristics, their number and type of Extension contacts, their rating of reasons for constructing or not constructing cattle handling facilities and the number of cattle handling facility components present on their farms. The dependent variables were the number of cattle handling facility components on the farm, the rating of information sources of Extension's CATCH FOUR program and the beef producers use of selected management practices.

VI. DEFINITION OF TERMS

The following terms are defined to insure a common understanding of the termonology used in this study.

1. Selected Tennessee Beef Cattle Producer. In this study this term refers to the beef producers who did not construct or repair any cattle handling facility components during the implementation of the CATCH FOUR program. The beef producers main purpose is to produce feeder calves to be sold at weaning from his/her brood cow herd.

2. Beef Cattle Handling Facilities. Refers to the equipment used by beef producers to congregate and restrain their cattle while conducting management practices. The five recommended components that make up a complete cattle handling facility system include a headgate, a working chute, a holding chute, a crowding pen and holding pen.

3. Headgate. Refers to the component of the cattle handling facility that restrains the animal by holding or "catching" the head and neck.

4. Holding Chute. Refers to the cattle handling facility component that is connected to the headgate and can be adjusted to further restrain the movement of the animal.

5. Working Chute. Refers to a narrow, sometimes circular alley that is connected to the holding chute and keeps the animals in a single file line. The working chute should be 26 to 28 inches wide to prevent the animals from turning around.

6. Crowding Pen. Refers to a funnel-shaped enclosure that aids in movement of the animals into the working chute.

7. Holding Pens. Refers to a fenced enclosure used to congregate the animals in an area where they can be held until management practices can be performed.

8. Management Practice. A commonly accepted procedure that is research verified and can increase returns if carried out correctly and on a timely basis.

9. Extension Contact. Refers to the various methods Extension agents use to deliver agricultural information to beef producers. Examples include Extension beef meetings, beef demonstrations, telephone calls, radio programs, television programs, newspaper articles, newsletters and farm visits.

10. CATCH FOUR. Refers to the educational program presented by the University of Tennessee Agricultural Extension Service to promote the importance of having adequate cattle handling facilities. CATCH FOUR is the acronym for Consider Advantages That Cattle Handling Facilities Offer 'Ur Returns.

CHAPTER II

REVIEW OF RELATED STUDIES

Currently, there are numerous studies completed on the relationships between beef producer characteristics, their use of recommended management practices and their contacts with County Extension Agents. These studies focus primarily on technical subject matter and do not deal directly with the availability of adequate cattle handling facilities on the farm. However, there are selected findings from these previous studies that can be related to this study.

Review of related studies cited in this chapter is reported under the following headings: (1) Characteristics of Tennessee Beef Producers and Their Farm Operation; (2) Tennessee Beef Producers Use of Selected Recommended Management Practices; (3) Tennessee Beef Producers Use of Extension Contacts; and (4) The Availability of Adequate Cattle Handling Facilities on the Farm.

I. CHARACTERISTICS OF TENNESSEE BEEF PRODUCERS AND THEIR FARM OPERATION

Signaigo (12) in his 1990 study of the 1987 Beef Cattle Handling Facilities Survey of 1313 beef producers from 73 Tennessee counties found that 46 percent of the producers were part-time farmers, 41 percent were between 46 and 60 years old and 85 percent were high school graduates or above. Just over 48 percent of the beef producers reported feeder calves as their major source of farm income, 48 percent

bred 25 to 35 cows and heifers, 55 percent raised 17 to 35 calves to weaning and 61 percent sold weaned calves in the 401 to 500 pound range.

Myers (9) in a study of the 1985 Beef Cow-Calf Producer Survey of 84 counties found that 58 percent of the 1816 beef producers surveyed were 50 years old or older. Forty-two percent of the producers with 25 or more breeding age cows were part-time farmers. Over 74 percent of the beef producers surveyed had over 75 acres of permanent pasture. Half of the producers had beef herds with 41 cows or more and 65 percent of the producers had beef herds of crossbred cattle.

Killgore (5) in a 1988 study using the Tennessee Beef Cow-Calf Producer Survey of 1985 found 52 percent of the producers major source of income was beef cattle and 48 percent was row crops. Twenty-eight percent of the producers lost 3 to 5 calves at birth. Of the producers surveyed 42 percent weaned 30 to 59 calves and 46 percent sold calves with average weaning weights of 500 pounds and over.

In a 1986 study of the 1981 Tennessee Beef Cow-Calf Producer Survey, Beeler (2) reported that 885 (51 percent) of the producers were full-time farmers, as compared to 705 (40.6 percent) part-time beef producers and 146 (8.4 percent) retired beef producers. Of the 1799 producers receiving personal interviews from the Extension agents, 53 percent had herd sizes in the 25 to 49 cow range. Sixty-six percent of the producers surveyed had over 90 percent of the cows and heifers weaning calves.

Data collected by Lumpkin (6) in 1977 from 1047 Tennessee beef cattle producers from 58 counties showed 54 percent of those cattlemen

were full-time farmers. Fifty-five percent of the producers gave their farm as their major source of income and 48 percent were 50 years old or younger. Seventy-two percent of the producers had livestock as their major agricultural enterprise and 88 percent had beef as their major livestock enterprise. The average number of breeding age cows on the farm was 35, with 32 being the average number of calves raised. In this study producers with 15 cows or more were randomly selected and interviewed by County Extension Agents.

Rutter (11) in a study in 1982 of the data available from the 1977 Tennessee Beef Cow-Calf Producer Survey showed 53 percent of the 1047 beef producers were full-time farmers, 54 percent listed farming as their major source of income and 56 percent were 50 years old or older. The mean age was 50 years. The average size cow herd in 1977 was 48 breeding age cows and the average number of calves raised to weaning was 44.

In a 1979 study Mohamad (8) sampled 955 producers in 57 counties with 15 or more cows and found the average age of the producers to be 50.2 years. The average herd size included 47.6 breeding cows and all producers had 43.6 calves raised.

In a 1972 study Brewer (3) randomly sampled 40 beef cattle producers in Marshall County. Comparisons were made between 15 high, 15 medium, and 10 low producers based on pounds of beef sold per cow bred. Of the 40 farmers interviewed, 58 percent were full-time farmers and 53 percent of the high producers listed beef as the major source of income. Only 30 percent of the low producers listed beef as a major source of income. The average age of those interviewed was 55 years and the

average number of beef cows per producer was 37.8 for the high category, 35 for the medium, and 31.6 for the low producers.

Barnes (1) in a 1971 analysis of the Caliborne County cow-calf producers possessing 10 or more cows found that 60 percent of all cattlemen interviewed listed their major occupation as full-time farmer. The population was divided into two categories, participants and non-participants, depending on their participation in the 1969 Claiborne County feeder calf sale. All beef producers had an average cow herd size of 25.3 cows.

Matthews (7) in a 1968 study to determine the characteristics of 74 Lawrence County beef producers found 30 percent of the producers interviewed were retired and full-time farmers made up 27 percent of all cattlemen. Only 8 percent of the cattlemen considered beef cattle as their major source of income. The average educational grade level completed by all Lawrence County cattlemen was 8.7 grades. The average age was 55.2 years, with the range from 25 to 75 years of age.

Keyes (4) in a 1964 study of 36 farmers in Campbell County with 15 or more cows reported the average herd size as 29 cows, the average calves weaned was 20 and 67 percent of the beef producers were full-time farmers.

II. TENNESSEE BEEF PRODUCERS USE OF SELECTED RECOMMENDED MANAGEMENT PRACTICES

Killgore (5) in a 1988 study reported the following use of recommended management practices by 1813 Tennessee beef producers: 78 percent did not pregnancy check, 56 percent vaccinated cows and heifers for leptospirosis, 89 percent vaccinated calves for blackleg, 68 percent

did not vaccinate heifers for brucellosis, 53 percent did implant calves with growth stimulant, 82 percent did deworm cows, 68 percent treated cattle for lice, 88 percent did not breed cows and heifers by artificial insemination, 60 percent did not vaccinate cows for IBR, BVD and PI3, and 56 percent did not vaccinate calves for IBR, BVD and PI3.

Beeler (2) in his analysis of 1799 producers in 1986 found that 12 percent pregnancy checked their cows and 17 percent had herd bulls checked for breeding soundness. Twenty-nine percent of the producers did implant their feeder calves at least once, 61 percent did deworm their cows at least once per year, and 45 percent dewormed their calves while they were nursing.

Lumpkin (6) reported in a 1985 study of data collected from 1047 Tennessee beef cattle producers the following information dealing with the use of recommended management practices: 77 percent used ear tags as an identification system, 46 percent castrated and dehorned calves at 2 months or less of age, 83 percent vaccinated for blackleg and malignant edema, 13 percent used growth stimulants, 51 percent used backrubs as their major fly control program, 62 percent used grub and lice control, 28 percent vaccinated for leptospirosis, and 85 percent dewormed cows one time.

Rutter (11), in a study of 1047 beef producers completed in 1982, found that only 10 percent of the producers pregnancy checked their cows. Calf crop management consisted of 47 percent of the producers castrating calves before 3 months of age, 82 percent vaccinated calves for blackleg and malignant edema, and 87 percent were not using growth

stimulants. Herd health management included: 50 percent of the 1047 producers used a backrub to control flies, while 36 percent used nothing for fly control; 63 percent used a grub and lice control material; 27 percent vaccinated for leptospirosis; and 85 percent of the beef producers dewormed cows one time during the year.

The 1979 study by Mohamad (8) showed less than 60 percent of the 955 beef producers studied pregnancy checked cows after the breeding season, used growth stimulants, and vaccinated for leptospirosis.

III. TENNESSEE BEEF PRODUCERS USE OF EXTENSION CONTACTS

Signaigo (12) found that over 89 percent of the 1313 beef producers surveyed had contact with Extension by receiving one or more Extension newsletters. Over 76 percent of the producers received one or more farm visits from the Extension agent, called the Extension office one or more times and visited the Extension office one time or more. Over 51 percent received one or more phone calls from the Extension office, attended one or more beef meetings and attended one or more beef demonstrations. The mean total number of contacts beef producers had with Extension was 11.8 contacts.

Myers (9) reported 88 percent of the 1813 beef producers surveyed had some type of contact with the Agricultural Extension Service. His study was based on the 1985 Beef Cow-Calf Producer Survey.

Killgore's (5) analysis in 1988 revealed the following in relation to Extension contacts: 57 percent of the 1813 producers attended one or more Extension beef meeting (the mean number of meetings attended

was one); 65 percent made one or more visits to the Extension office (mean = 2); 72 percent made one or more telephone calls to the Extension office (mean = 3); and 74 percent received one or more farm visit from the Extension agent (the mean number of visits was 2).

Beeler (2) reported 91 percent of the beef producers surveyed had one or more Extension contacts. His information was based on the 1981 Tennessee Beef Cow-Calf Producer Survey.

Rutter's (11) study of the 1977 Tennessee Beef Cow-Calf Producer Survey revealed the following: 79 percent of the beef producers attended at least one Extension meeting of any kind (mean = 3); 61 percent of the producers attended at least one Extension beef meeting; 78 percent of the producers visited the Extension office at least once, while 51 percent had visited 3 or more times; 86 percent of the beef producers called the Extension office at least once during the past 12 months (mean = 6); and 83 percent of the beef producers had received an average number of 4 farm visits from the Extension agents during the past 12 months. The sample was based on 1047 producers in 58 of the 95 counties in Tennessee.

Mohamad (8) found in 1979 that producers averaged a total of 19 Extension contacts each during 1976-77. The average contact consisted of 6 telephone calls to the Extension office, 4 visits to the Extension office, 4 Extension general meetings attended, 4 farm visits by the Extension agent and 1 Extension beef meeting attended.

IV. THE AVAILABILITY OF ADEQUATE CATTLE HANDLING FACILITIES ON THE FARM

In regard to the availability of adequate cattle handling facilities on the farm, Signaigo (12) found that almost 83 percent of the 1313 beef producers surveyed did have a headgate, 69 percent did have a holding chute, almost 63 percent did have a working chute, over 51 percent did have a crowding pen and almost 65 percent did have a holding pen. The mean number of 5 beef cattle handling facility components constructed or repaired during the CATCH FOUR program was 2.3 components.

Myers (9) reported that 91 percent of the 1813 producers he studied had some type of cattle handling facilities.

Killgore (5) determined that the types of cattle handling facilities being utilized by Tennessee beef producers were: 29 percent of the 1813 beef producers had type 5 beef cattle handling facilities available; 69 percent constructed beef cattle handling facilities between 1976 and 1985, and only 9 percent of the producers reported not having any cattle handling facilities available; 10 percent had a headgate only, 23 percent had a headgate and holding chute, 17 percent had a headgate, holding chute and a working chute, 13 percent had a headgate, holding chute, working chute and a crowding pen, and 29 percent had a headgate, holding chute, working chute, crowding pens and holding pens.

Lumpkin (6) found in a 1985 study of 1047 Tennessee beef producers that 65 percent had adequate working facilities. He reported that

the major agricultural enterprise, age of producer, major source of farm income and percentage of cows weaning calves was not significantly related to the producers having adequate working facilities. He went on to report that the use of performance tested bulls and producers having a higher proportion of cows in their herds did have a significant influence on having adequate working facilities on the farm.

Rutter (11) found in a 1982 study that 65 percent of the 1028 beef producers surveyed indicated that their beef cattle handling facilities were adequate for safe and effective management purposes. The producers that had adequate facilities had more contacts through Extension meetings, beef Extension meetings, office visits, telephone calls and farm visits.

Mohamad (8) reported in 1979 that 81 percent of the large producers reported having adequate working facilities, while 58 percent of the smaller producers had adequate working facilities.

Barnes' (1) study in 1971 in Claiborne County revealed 87 percent of the beef producers surveyed had no restraining equipment, 10 percent of the participants had chutes, corrals and headgates with 16 percent of the non-participants having headgates only. The sample was based on Claiborne County cow-calf producers possessing 10 or more cows. The population was divided into two categories, participants and non-participants, depending on their participation in the 1969 graded feeder calf sale held in Claiborne County.

Matthews (7) reported in 1968 that 23 percent of the 74 randomly selected Lawrence County beef producers had no restraining equipment.

Fifteen percent of the cattlemen had a loading chute, corral and headgate in workable condition.

Keyes (4) showed in a 1966 study in Campbell County, Tennessee that 42 percent of the 36 farmers interviewed had either a squeeze chute and/or a headgate for restraining cattle.

CHAPTER III

FINDINGS REGARDING TENNESSEE BEEF CATTLE PRODUCERS' PERSONAL AND FARM CHARACTERISTICS, REASONS FOR CONSTRUCTING OR NOT CONSTRUCTING CATTLE HANDLING FACILITIES, EXTENSION "CATCH FOUR" INFORMATION SOURCES, AND USE OF MANAGEMENT PRACTICES IN RELATIONSHIP WITH NUMBER OF CATTLE HANDLING FACILITIES ON THEIR FARMS

The purpose of this chapter is to present the findings of a study regarding Tennessee beef cattle producers who did not construct or repair any cattle handling facility components during the implementation of the Extension CATCH FOUR program. The findings are organized into five tables within this chapter, with each table constituting a section.

Section I presents the findings regarding the selected characteristics of Tennessee beef cattle producers that did not participate in Extension's CATCH FOUR program. Section II presents the findings of the relationships between Tennessee beef producers selected personal and farm characteristics, Extension contacts and the types of cattle handling facilities on their farms. Section III consists of information pertaining to relationships between Tennessee beef cattle producers' number of cattle handling facility components present on their farm and the reasons given for constructing or not constructing cattle handling facilities. Section IV includes the findings regarding the relationship between Tennessee beef producers' number of cattle handling facility components and the rating of information sources about Extension's

CATCH FOUR program. Section V presents findings of the relationship between Tennessee beef cattle producers types of cattle handling facilities and their use of selected recommended management practices.

I. CHARACTERISTICS OF TENNESSEE BEEF CATTLE PRODUCERS WHO DID NOT CONSTRUCT OR REPAIR ANY CATTLE HANDLING FACILITY COMPONENTS DURING THE "CATCH FOUR" PROGRAM

Section I presents the findings regarding selected characteristics of Tennessee beef cattle producers who did not participate in Extension's CATCH FOUR program. This section was organized into seven subsections: (1) personal and farm characteristics, (2) handling facility components on farm prior to January 1985, (3) rating of reasons for having cattle handling facilities, (4) rating of reasons for not having cattle handling facilities, (5) rating of sources of information about Extension's CATCH FOUR program, (6) number and type of contacts beef producers had with Extension agent, and (7) beef producers use of selective recommended management practices. To summarize the findings in this section, the number and percent of producers are given for each variable on selected characteristics listed in Table 1. The mean, median, mode and valid cases are given where appropriate.

Personal and Farm Characteristics

Selected personal and farm characteristics of Tennessee beef cattle producers are listed in Table 1. Those personal characteristics include age of beef producer, level of education of beef producer and farming status of beef producer. The farming operation variables included

Table 1. Characteristics of Tennessee Beef Cattle Producers Who Did Not Construct or Repair Any Cattle Handling Facility Components During the CATCH FOUR Program

Selected Characteristics	Number of Producers	Percent of Producers
PERSONAL AND FARM CHARACTERISTICS		
Age of Beef Producer		
21 to 45	216	29.1
46 to 60	314	42.3
61 and Over	212	28.6
No Response	13	Missing
TOTAL	755	100.0
Mean = 53.0; Median = 55.0; Mode = 60.0; Valid Cases = 742		
Level of Education of Beef Producers		
Less Than High School	132	17.8
High School Graduate	395	53.2
College or Technical School	215	29.0
No Response	13	Missing
TOTAL	755	100.0
Farming Status of Beef Producers		
Full-Time	269	36.3
Part-Time	347	46.8
Retired	126	17.0
No Response	13	Missing
TOTAL	755	100.0
Major Source of Farm Income		
Feeder Calves	372	50.2
Row Crops	162	21.9
Other	207	27.9
No Response	14	Missing
TOTAL	755	100.0
Total Number of Cows-Heifers Exposed to Bulls		
25 to 35	392	52.5
36 to 50	169	22.7
51 and Over	185	24.8
No Response	9	Missing
TOTAL	755	100.0
Mean = 47.8; Median = 35.0; Mode = 25.0; Valid Cases = 746		
Number of Calves Weaned		
17 to 35	432	57.8
36 to 50	150	20.1
51 and Over	166	22.2
No Response	7	Missing
TOTAL	755	100.0
Mean = 43.0; Median = 31.0; Mode = 25.0; Valid Cases = 746		
Average Weight of Calves Sold at Weaning		
225 to 400	84	11.4
401 to 500	473	64.3
501 and Over	179	24.3
No Response	19	Missing
TOTAL	755	100.0
Mean = 478.0; Median = 475.0; Mode = 500.0; Valid Cases = 736		
HANDLING FACILITY COMPONENTS ON FARM PRIOR TO JANUARY 1985		
Have Headgate		
No	190	25.2
Yes	565	74.8
TOTAL	755	100.0
Have Holding Chute		
No	293	38.8
Yes	462	61.2
TOTAL	755	100.0

Table 1 (Continued)

Selected Characteristics	Number of Producers	Percent of Producers
Have Working Chute		
No	352	46.6
Yes	403	53.4
TOTAL	755	100.0
Have Crowding Pens		
No	392	51.9
Yes	363	48.1
TOTAL	755	100.0
Have Holding Pens		
No	306	40.5
Yes	449	59.5
TOTAL	755	100.0
Type of Handling Facilities on Farm Before January 1985		
Not Any	130	18.7
Headgate Only	119	17.1
Headgate, Holding Chute	105	15.1
Headgate, Holding Chute, Working Chute	66	9.5
Headgate, Holding Chute, Working Chute, Crowding Pens	26	3.7
Headgate, Holding Chute, Working Chute, Crowding Pens, Holding Pens	249	35.8
No Response	60	Missing
TOTAL	755	100.0
Mean = 2.7; Median = 2.0; Mode = 5.0; Valid Cases = 695		
RATING OF REASONS FOR CONSTRUCTING CATTLE HANDLING FACILITIES		
Economic Benefits		
Not Important	99	13.3
Important	646	86.7
Don't Know-No Response	10	Missing
TOTAL	755	100.0
Safety Reasons		
Not Important	101	13.6
Important	644	86.4
Don't Know-No Response	10	Missing
TOTAL	755	100.0
Labor Saving		
Not Important	87	11.7
Important	657	88.3
Don't Know-No Response	11	Missing
TOTAL	755	100.0
Have Materials Available		
Not Important	331	44.6
Important	411	55.4
Don't Know-No Response	13	Missing
TOTAL	755	100.0
Pride of Ownership		
Not Important	475	63.8
Important	269	36.2
Don't Know-No Response	11	Missing
TOTAL	755	100.0
Neighbor Has Handling Facility		
Not Important	582	78.4
Important	160	21.6
Don't Know-No Response	13	Missing
TOTAL	755	100.0

Table 1 (Continued)

Selected Characteristics	Number of Producers	Percent of Producers
Have Good Location		
Not Important	304	41.0
Important	438	59.0
Don't Know-No Response	13	Missing
TOTAL	755	100.0
Recommended by Extension		
Not Important	249	33.5
Important	494	66.5
Don't Know-No Response	12	Missing
TOTAL	755	100.0
Recommended by Veterinarian		
Not Important	273	36.7
Important	470	63.3
Don't Know-No Response	12	Missing
TOTAL	755	100.0
Recommended by Agribusiness		
Not Important	412	55.5
Important	331	44.5
Don't Know-No Response	12	Missing
TOTAL	755	100.0
RATING OF REASONS FOR NOT CONSTRUCTING CATTLE HANDLING FACILITIES		
Cost		
Not Important	187	25.2
Important	557	74.8
Don't Know-No Response	12	Missing
TOTAL	755	100.0
Not Enough Time		
Not Important	314	42.5
Important	425	57.5
Don't Know-No Response	16	Missing
TOTAL	755	100.0
Not Economical		
Not Important	335	45.2
Important	406	54.8
Don't Know-No Response	14	Missing
TOTAL	755	100.0
Too Few Animals		
Not Important	326	43.9
Important	416	56.1
Don't Know-No Response	13	Missing
TOTAL	755	100.0
Don't Have Available Labor		
Not Important	336	45.6
Important	401	54.4
Don't Know-No Response	18	Missing
TOTAL	755	100.0
No Good Location		
Not Important	417	56.6
Important	320	43.4
Don't Know-No Response	18	Missing
TOTAL	755	100.0
No Materials Available		
Not Important	419	56.7
Important	320	43.3
Don't Know-No Response	16	Missing
TOTAL	755	100.0

Table 1 (Continued)

Selected Characteristics	Number of Producers	Percent of Producers
Too Old to Justify Investment		
Not Important	405	54.9
Important	333	45.1
Don't Know-No Response	17	Missing
TOTAL	755	100.0
Plans Not Available		
Not Important	579	78.7
Important	157	21.3
Don't Know--No Response	19	Missing
TOTAL	755	100.0
No Assistance From Extension		
Not Important	609	83.1
Important	124	16.9
Don't Know-No Response	22	Missing
TOTAL	755	100.0
Haven't Gotten Around to Building		
Not Important	267	36.3
Important	469	63.7
Don't Know-No Response	19	Missing
TOTAL	755	100.0
RATING OF SOURCES OF INFORMATION ABOUT EXTENSION'S "CATCH FOUR" PROGRAM		
Extension Meetings		
Not Aware of Program	156	20.7
Not Helpful	137	18.1
Helpful	462	61.2
TOTAL	755	100.0
Beef Cattle Demonstrations		
Not Aware of Program	182	24.1
Not Helpful	177	23.4
Helpful	396	52.5
TOTAL	755	100.0
Radio Programs		
Not Aware of Program	249	33.0
Not Helpful	299	39.6
Helpful	207	27.4
TOTAL	755	100.0
Television Programs		
Not Aware of Program	413	54.7
Not Helpful	287	38.0
Helpful	55	7.3
TOTAL	755	100.0
Newspaper Articles		
Not Aware of Program	187	24.8
Not Helpful	264	35.0
Helpful	304	40.3
TOTAL	755	100.0
Extension Newsletters		
Not Aware of Program	156	20.7
Not Helpful	129	17.1
Helpful	470	62.3
TOTAL	755	100.0
Posters		
Not Aware of Program	283	37.5
Not Helpful	320	42.4
Helpful	152	20.1
TOTAL	755	100.0

Table 1 (Continued)

Selected Characteristics	Number of Producers	Percent of Producers
Bumper Stickers		
Not Aware of Program	307	40.7
Not Helpful	354	46.9
Helpful	94	12.5
TOTAL	755	100.0
Extension Agent Visits		
Not Aware of Program	140	18.5
Not Helpful	138	18.3
Helpful	477	63.2
TOTAL	755	100.0
Extension Office Visits		
Not Aware of Program	162	21.5
Not Helpful	224	29.7
Helpful	369	48.9
TOTAL	755	100.0
Telephone Calls to Extension Office		
Not Aware of Program	167	22.1
Not Helpful	267	35.4
Helpful	321	42.5
TOTAL	755	100.0
Telephone Calls From Extension Office		
Not Aware of Program	165	21.9
Not Helpful	286	37.9
Helpful	304	40.3
TOTAL	755	100.0
Contacts With Agribusiness		
Not Aware of Program	175	23.2
Not Helpful	343	45.4
Helpful	237	31.4
TOTAL	755	100.0
Contacts With Other Family Members		
Not Aware of Program	203	26.9
Not Helpful	397	52.6
Helpful	155	20.5
TOTAL	755	100.0
Contacts With Friends and Neighbors		
Not Aware of Program	193	25.6
Not Helpful	332	44.0
Helpful	230	30.5
TOTAL	755	100.0
NUMBER AND TYPE OF CONTACTS BEEF PRODUCERS HAD WITH EXTENSION AGENT		
Extension Beef Cattle Meetings		
Not Any	325	44.4
One	257	35.1
2-7	150	20.5
No Response	23	Missing
TOTAL	755	100.0
Mean = 0.9; Median = 1.0; Mode = 0.0; Valid Cases = 732		
Extension Beef Cattle Demonstrations		
Not Any	404	55.3
One	248	33.9
2-Over	79	10.8
No Response	24	Missing
TOTAL	755	100.0
Mean = 0.6; Median = 0.0; Mode = 0.0; Valid Cases = 731		

Table 1 (Continued)

Selected Characteristics	Number of Producers	Percent of Producers
Visits to Extension Office		
Not Any	230	31.3
One to Two	305	41.4
3-Over	201	27.3
No Response	19	Missing
TOTAL	755	100.0
Mean = 2.0; Median = 1.0; Mode = 0.0; Valid Cases = 736		
Telephone Calls to Extension Office		
Not Any	172	23.3
One to Two	287	38.9
3 to 5	184	25.0
6-Over	94	12.8
No Response	19	Missing
TOTAL	755	100.0
Mean = 2.8; Median = 2.0; Mode = 0.0; Valid Cases = 736		
Telephone Calls From Extension Office		
Not Any	245	33.7
One to Two	291	40.0
3 to 24	192	26.4
No Response	27	Missing
TOTAL	755	100.0
Mean = 2.1; Median = 1.0; Mode = 0.0; Valid Cases = 728		
Farm Visits From Extension Office		
Not Any	162	22.1
One to Two	377	51.5
3-Over	193	26.4
No Response	23	Missing
TOTAL	755	100.0
Mean = 2.0; Median = 1.0; Mode = 1.0; Valid Cases = 732		
BEEF PRODUCERS USE OF SELECTIVE RECOMMENDED MANAGEMENT PRACTICES		
Cows/Heifers Vaccinated For Leptospirosis		
No	415	55.0
Yes	340	45.0
TOTAL	755	100.0
Cows/Calves Vaccinated For Respiratory Disease Complex		
No	506	67.0
Yes	249	33.0
TOTAL	755	100.0
Calves Vaccinated For Blackleg		
No	174	23.0
Yes	581	77.0
TOTAL	755	100.0
Replacement Heifers Vaccinated For Brucellosis		
No	489	72.0
Yes	190	28.0
No Replacement Heifers	76	Missing
TOTAL	755	100.0
Number of Times Calves Were Implanted		
Not Any	443	58.7
One-More	312	41.3
TOTAL	755	100.0

Table 1 (Continued)

Selected Characteristics	Number of Producers	Percent of Producers
Cows/Bulls Dewormed in 12 Months		
None Dewormed	174	23.0
Yes Dewormed	581	77.0
TOTAL	755	100.0
Calves Dewormed		
None Dewormed	203	26.9
Yes Dewormed	552	73.1
TOTAL	755	100.0
Castrated Male Calves		
No	88	11.7
Yes	667	88.3
TOTAL	755	100.0
Dehorned Cattle		
No	121	32.6
Yes	250	67.4
No Horned Calves	384	Missing
TOTAL	755	100.0
Permanently Identified Animals		
No	422	55.9
Yes	333	44.1
TOTAL	755	100.0
Horn/Face Fly Control		
None Used	66	8.7
Used One-More	689	91.3
TOTAL	755	100.0
Cattle Treated For Grubs and/or Lice		
No	496	65.7
Yes	259	34.3
TOTAL	755	100.0
Bulls Evaluated For Breeding Soundness		
No	671	88.9
Yes	84	11.1
TOTAL	755	100.0
Cows/Heifers Pregnancy Checked		
No	673	89.1
Yes	82	10.9
TOTAL	755	100.0
Number of Cows/Heifers Artificially Inseminated		
Not Any	676	89.5
One-More	79	10.5
TOTAL	755	100.0

in this subsection are major source of farm income, total number of cows and heifers exposed to bulls, number of calves weaned and the average weight of calves sold at weaning.

Findings indicate over 28 percent of the beef cattle producers range in age from 21 to 45 years, as compared to almost 42 percent being between the age of 46 and 60 and almost 30 percent being 61 years old or older. The mean age of the producers studied was 53 years.

A greater percentage of the beef producers were high school graduates, with the value being 53.2 percent. This compares to almost 18 percent having education levels less than high school and 29 percent attending college or technical school.

Almost 47 percent of the beef cattle producers studied were part-time farmers, as compared to over 36 percent full-time farmers and 17 percent were retired.

Regarding the major source of income for the farm, findings indicate that over 50 percent of the producers receive the majority of farm income from the sale of feeder calves. This compares to almost 22 percent of the farm income coming from row crops and almost 28 percent coming from other sources.

Over half (51.9 percent) of the producers studied reported exposing 25 to 35 cows and heifers to bulls, compared to over 22 percent who bred 36 to 50 females and almost 26 percent who bred 51 or more cows and heifers. The mean number of cows and heifers exposed to bulls was 47.8 head.

Findings indicated that over 57 percent of the beef producers raised 17 to 35 calves to weaning, slightly more than 20 percent raised

36 to 50 calves and over 22 percent raised 51 or more. The mean number of calves raised to weaning was 43 head.

Only 11.1 percent of the producers reported having sold calves with weaning weights of 225 to 400 pounds, as compared to 62.6 percent that sold calves weighing 401 to 500 pounds, and 26.2 percent sold calves that weighed 501 or more pounds. The average weight of calves sold at weaning was 478 pounds.

Handling Facility Components on Farm Prior to January 1985

This subsection indicates the findings in regard to the availability of a particular beef cattle handling facility on the farm. The five recommended components include a headgate, a holding chute, a working chute, crowding pens and holding pens.

Of the beef producers studied, almost 75 percent had a headgate, over 61 percent had a holding chute, over 53 percent had a working chute, slightly over 48 percent had crowding pens, and almost 60 percent had holding pens.

In regard to the type of handling facilities on the farm before January 1985, almost 36 percent of the beef cattle producers had all five components. This compares to over 18 percent of the producers who had none of the components that make up a cattle handling facility and slightly over 45 percent of the producers who had 1 to 4 of the recommended components. The mean number of cattle handling facility components on the farm was 2.7.

Reasons for Constructing Cattle Handling Facilities

This subsection reports the findings regarding the rating of reasons the surveyed beef cattle producers gave for constructing cattle handling facilities. The 10 reasons that beef producers rated were economic benefits, safety, labor saving, materials available, pride of ownership, neighbor has handling facility, have good location, recommended by Extension, recommended by veterinarian, and recommended by agribusiness.

Over 86 percent of the producers reported that economic benefits, safety and labor saving were important reasons for constructing cattle handling facilities. This compares to over 55 percent of the producers rating have materials available, have good location, recommended by Extension and recommended by veterinarian as important reasons for constructing. On the other hand, pride of ownership, neighbor has handling facility and recommended by agribusiness was rated not important by 63.8 percent, 78.4 percent and 55.5 percent of the beef cattle producers, respectively.

Reasons for not Constructing Cattle Handling Facilities

Findings indicated in this subsection relate to the rating of reasons given by beef cattle producers for not constructing cattle handling facilities. The 11 reasons that were rated as important or not important include cost, not enough time, not economical, too few animals, don't have available labor, no good location, no materials

available, too old to justify investment, plans not available, no assistance from Extension, and just haven't gotten around to building.

Over 74 percent of the beef cattle producers rated cost as an important reason for not constructing cattle handling facilities. This compares to beef producers that rated not enough time, not economical, too few animals, don't have available labor, and just haven't gotten around to building as important reasons for not constructing at a range of 54.4 percent to 63.7 percent. In comparison, over 54 percent of the producers reported no good location, no materials available and too old to justify investment as reasons that were not important. In addition, over 78 percent and 83 percent of the producers reported plans not available and no assistance from Extension as reasons that were not important in their decision to construct cattle handling facilities.

Sources of Information about CATCH FOUR Program

This subsection presents findings regarding the rating of sources of information about Extension's CATCH FOUR program. A total of 15 variables were rated by the beef cattle producers as to whether they were not aware of the program, not helpful or helpful as information sources. The 15 sources of information were: (1) Extension meetings, (2) beef cattle demonstrations, (3) radio programs, (4) television programs, (5) newspaper articles, (6) Extension newsletters, (7) posters, (8) bumper stickers, (9) Extension agent visits, (10) Extension

office visits, (11) telephone calls to Extension office, (12) telephone calls from Extension office, (13) contacts with agribusiness, (14) contacts with other family members, and (15) contacts with friends and neighbors.

Beef producers reported, at a range of 52.5 percent to 63.2 percent, that beef cattle demonstrations, Extension meetings, Extension newsletters and Extension visits were helpful sources of information about Extension's CATCH FOUR program. Greater than 40 percent but less than 50 percent of the producers indicated newspaper articles, Extension office visits, telephone calls to Extension office and telephone calls from Extension office as helpful sources of information. Radio programs, posters, contacts with agribusiness, contacts with other family members and contacts with friends and neighbors were reported as being helpful sources of information to between 20.1 percent to 31.4 percent of the beef producers surveyed. Only 7.3 percent of the beef producers indicated television programs as being helpful sources of information and just 12.5 percent indicated bumper stickers as helpful sources of information about Extension's CATCH FOUR program.

Contacts With Extension

Findings presented in this subsection indicate the number and type of contacts beef producers had with the Extension agent during a 12 month period. The six types of contacts were: (1) Extension beef cattle meetings, (2) Extension beef cattle demonstrations, (3) visits to the Extension office, (4) telephone calls to the Extension office, (5) telephone calls from the Extension office, and (6)

farm visits from the Extension office representative. In the survey the producers indicated the number of the particular type of contact made during the past 12 months.

Over 44 percent of the producers surveyed had not attended an Extension beef cattle meeting. This compares to slightly over 35 percent of the producers who attended one meeting and almost 21 percent that attended 2 to 7 beef cattle meetings. The mean number of meetings attended was 0.9.

In regard to Extension beef cattle demonstrations attended, over 55 percent of the beef cattlemen had not attended one, as compared to almost 34 percent that attended one demonstration on beef cattle and almost 11 percent that attended 2 or more.

Slightly more than 31 percent of the cattlemen did not have any visits to the Extension office. However, over 41 percent of the beef cattlemen visited the Extension office 1 to 2 times and over 27 percent visited 3 or more times in the previous 12 months. The mean number of office visits was 2.

A higher percent (38.9) of beef producers made 1 to 2 telephone calls to the Extension office, as compared to 23.3 percent that had not made any, 25 percent that had made 3 to 5 and 12.8 percent that had made 6 or more. The average number of telephone calls to the Extension office was 2.8 in the past 12 months.

As for telephone calls from the Extension office, over one-third (33.7 percent) of the producers had not received one, 40 percent had received 1 to 2 and over 26 percent had received 3 or more. An average number of 2.1 telephone calls were received from the Extension office.

Over one-half (51.5 percent) of the beef cattle producers had been visited by an Extension representative 1 to 2 times in the past 12 months. This compares to over 26 percent visited 3 or more times and slightly more than 22 percent not receiving any visits from an Extension agent. The mean number of visits was 2.

Recommended Management Practices

The final subsection in Section I deals with the findings pertaining to the beef producers use of 15 recommended management practices. The variables included are: (1) cows/heifers vaccinated for leptospirosis, (2) cows/calves vaccinated for respiratory disease complex, (3) calves vaccinated for blackleg, (4) replacement heifers vaccinated for brucellosis, (5) number of times calves were implanted, (6) cows/bulls dewormed in the past 12 months, (7) calves dewormed, (8) castrated male calves, (9) dehorned cattle, (10) permanently identified animals, (11) use horn/face fly control, (12) cattle treated for grubs and/or lice, (13) bulls evaluated for breeding soundness, (14) cows/heifers pregnancy checked, and (15) number of cows/heifers artificially inseminated.

Of those 15 recommended practices, between 73.1 percent and 91.3 percent of the beef cattle producers used 4 of them. The management practices were calves vaccinated for blackleg (77 percent), cows/bulls dewormed in the past 12 months (77 percent), calves dewormed (73.1 percent), castrated male calves (88.3 percent), and used horn/face fly control (91.3 percent).

In regard to the practice of dehorning cattle, over 67 percent of the producers with horned cattle did dehorn with some type of mechanical method. However, 384 of the 755 surveyed beef producers did not have horned cattle.

Of the remaining 9 recommended practices, all were done by less than half of the producers surveyed. The practices and percent of producers using them are cows/heifers vaccinated for leptospirosis (45 percent), cows/calves vaccinated for respiratory disease complex (33 percent), replacement heifers vaccinated for brucellosis (28 percent) number of times calves were implanted one or more times (41.3 percent), permanently identified animals (44.1 percent), cattle treated for grubs and/or lice (34.3 percent), bulls evaluated for breeding soundness (11.1 percent), cows/heifers pregnancy checked (10.9 percent), and one or more cows/heifers artificially inseminated (10.5 percent).

II. RELATIONSHIPS BETWEEN SELECTED TENNESSEE BEEF CATTLE PRODUCERS' PERSONAL AND FARM CHARACTERISTICS, EXTENSION CONTACTS AND THE NUMBER OF CATTLE HANDLING FACILITY COMPONENTS PRESENT ON THEIR FARMS

Section II reports the findings regarding the relationship between Tennessee beef cattle producers' personal and farm characteristics, Extension contacts and the number of cattle handling facility components present on their farms. This section was organized into three subsections: (1) personal characteristics, (2) farm characteristics, and (3) number and type of Extension contacts during the past 12 months. To summarize

the findings in this section, the number of producers and the mean number of cattle handling facility components present on the farm are given for each variable listed in Table 2. The F-ratio analysis of variance test was used to determine strength of the relationships between the independent and dependent variables. The 0.05 probability level was used to determine significant relationships.

Personal Characteristics

Variables included in this subsection are selected producer characteristics found in Table 2. They include age of beef producer, education level of beef producer, farming status of beef producer, and major source of farm income.

Findings from the data in Table 2 indicate beef producers who were 21 to 45 years of age had a mean number of 3.22 cattle handling facility components on the farm, as compared to producers who were 61 or older having 2.53 components, and 46 to 60 year old producers having 3.11 components. When tested by the F test, it was found these differences were significant at the .05 level. Younger beef producers had more cattle handling facility components on the farm than older producers.

In regard to the education level of beef producers, the findings show those with less than a high school education had an average of 2.09 cattle handling facility components on the farm. This compares to high school graduates having an average of 2.92 components and those with college or technical school experience having 3.66 components on the farm. When analyzed by the F test, there was a significant

Table 2. Relationships Between Selected Tennessee Beef Cattle Producers Personal and Farm Characteristics, Extension Contacts and the Number of Cattle Handling Facility Components Present on Their Farms

Selected Characteristics	Number of Cattle Handling Facility Components on Farm	
	Number of Producers	Mean
PERSONAL CHARACTERISTICS		
Age of Beef Producer		
21-45	216	3.22
46-60	314	3.11
61-Over	225	2.53
TOTAL	755	2.97
F-ratio Test $F = 9.5$; $p < 0.01$		
Education Level of Beef Producer		
Less Than High School	132	2.09
High School Graduate	395	2.92
College/Technical School	215	3.66
TOTAL	742	2.99
F-ratio Test $F = 32.9$; $p < 0.01$		
Farming Status of Beef Producer		
Full-Time	269	3.50
Part-Time	347	2.73
Retired	126	2.63
TOTAL	742	2.99
F-ratio Test $F = 16.9$; $p < 0.01$		
Major Source of Farm Income		
Feeder Calves	372	2.95
Row Crop	162	3.51
Other	207	2.66
TOTAL	741	2.99
F-ratio Test $F = 9.9$; $p < 0.01$		
FARM CHARACTERISTICS		
Number of Cows/Heifers Exposed to Bulls		
25-35	392	1.85
36-50	169	1.63
51-Over	194	1.47
TOTAL	755	1.85
F-ratio Test $F = 63.6$; $p < 0.01$		
Number of Calves Weaned		
17-35	432	1.86
36-50	150	1.64
51-Over	166	1.38
TOTAL	748	1.84
F-ratio Test $F = 56.6$; $p < 0.01$		
Average Weight of Calves Sold at Weaning		
225-400	84	2.24
401-500	473	2.74
501-Over	198	3.83
TOTAL	755	2.97
F-ratio Test $F = 34.3$; $p < 0.01$		
NUMBER AND TYPE OF EXTENSION CONTACTS DURING THE PAST 12 MONTHS		
Number of Extension Beef Meetings Attended		
Not Any	325	1.95
One	257	1.64
2-Over	173	1.80
TOTAL	755	1.85
F-ratio Test $F = 14.8$; $p < 0.01$		

Table 2 (Continued)

Selected Characteristics	Number of Cattle Handling Facility Components on Farm	
	Number of Producers	Mean
Beef Demonstrations Attended		
Not Any	404	2.64
One	248	3.41
2-Over	80	3.41
TOTAL	732	2.98
F-ratio Test F = 16.5; p < 0.01		
Visits to Extension Office		
Not Any	230	1.89
One-Two	305	1.83
3-Over	220	1.73
TOTAL	755	1.85
F-ratio Test F = 13.0; p < 0.01		
Telephone Calls to Extension Office		
Not Any	172	2.34
One-Two	287	3.02
3-Over	296	3.28
TOTAL	755	2.97
F-ratio Test F = 14.7; p < 0.01		
Telephone Calls From Extension Office		
Not Any	245	2.43
One-Two	291	3.06
3-Over	219	3.45
TOTAL	755	2.97
F-ratio Test F = 18.8; p < 0.01		
Farm Visits From Extension Agents		
Not Any	162	2.48
One-Two	377	2.94
3-Over	216	3.39
TOTAL	755	2.97
F-ratio Test F = 11.7; p < 0.01		
Total Number of Extension Contacts		
0-4	315	2.47
5-8	276	3.20
9-13	141	3.70
TOTAL	732	2.98
F-ratio Test F = 26.7; p < 0.01		

relationship between the different education level of the producers and the number of cattle handling facility components on the farm. It is concluded that beef producers with college or technical school training had more cattle handling facility components than those with less education.

Data in Table 2 indicates full-time farmers have 3.5 cattle handling facility components on their farms, as compared to part-time farmers with 2.73 components and producers indicating they were retired having 2.63 components. When tested by the F test, farming status was significantly related to the number of cattle handling facility components on the farm. Full-time beef producers were more likely to have more cattle handling facility components on their farms than part-time or retired producers.

The findings on the major source of farm income variable indicates those producers reporting row crops as their primary source of revenue had an average of 3.51 cattle handling facility components. This compares to producers with the sale of feeder calves as their major source of farm income having an average of 2.95 components and those with other major sources of income having an average of 2.66 components. When tested by the F test, these differences were significant at the .05 level. Producers with their major source of income being row crops had more cattle handling facility components on their farm than those with the sale of feeder calves or other means as their major source of farm revenue.

Farm Characteristics

Findings from this subsection are reported from three selected farm characteristics. Those variables are: (1) number of cows/heifers exposed to the bulls, (2) number of calves weaned, and (3) average weight of calves sold at weaning.

Producers with 25 to 35 cows and heifers exposed to bulls reported having an average of 1.85 cattle handling components on their farms, as compared to producers who bred 36 to 50 females having 1.63 components and those who bred 51 or more females having 1.47 components. When tested by the F test, those differences were significant at the 0.05 level. Therefore, the number of calves/heifers exposed to bulls was significantly related to the number of cattle handling facility components on the farm. For example, producers with 25 to 35 cows/heifers exposed to bulls had more cattle handling facility components on their farm than those producers with 36 or more cows and heifers bred.

In regard to the number of calves weaned, the findings show producers that weaned 17 to 35 calves a year had a mean number of 1.86 cattle handling facility components on the farm. This compares to producers weaning 36 to 50 calves having 1.64 cattle handling facility components and those weaning 51 or more calves having 1.38 components. When tested by the F test, the number of calves weaned was significantly related to the number of cattle handling facility components on the farm. Therefore, beef producers that weaned between 17 and 35 calves had more cattle handling facility components on the farm than those producers who weaned 36 or more calves per year.

Beef producers who sold calves at weaning that weighed 501 or more pounds had 3.83 cattle handling facility components on the farm, as compared to those who sold calves weighing 401-500 pounds at weaning having 2.74 components, and those selling 225 to 400 pound weaned calves having 2.24 components. When tested with the F test, the average weight of calves sold at weaning was significantly related at the 0.05 level to the number of cattle handling facility components on the farm. Producers who sold calves at heavier weaning weights had a greater number of cattle handling facility components on the farm.

Number and Type of Extension Contacts During the Past 12 Months

Findings from this subsection are in regard to selected types of contacts beef cattle producers had with the Extension agents during the past 12 months. Those types of Extension contacts are listed in Table 2 as seven variables. The variables include: (1) number of Extension beef meetings attended, (2) beef demonstrations attended, (3) visits to Extension office, (4) telephone calls to Extension office, (5) telephone calls from Extension office, (6) farm visits from Extension agent, and (7) total number of Extension contacts.

Data in Table 2 indicates that 325 (43 percent) of the beef cattle producers did not attend any Extension beef meetings the past 12 months and had 1.95 cattle handling facility components on the farm. This compares to 257 (34 percent) of the producers who had attended one Extension beef meeting and had 1.64 components, as well as 173 (23 percent) of the producers attending 2 or more meetings and having 1.80 components. When tested by the F test, the number of Extension beef

meetings attended by the beef producer was significantly related to the number of cattle handling facility components present on their farm. Producers who had not attended an Extension beef meeting were more likely to have a greater number of cattle handling facility components present on the farm than those producers who had attended one or more meetings.

Fifty-five percent (404) of the 732 beef producers responding had not attended a beef demonstration and had 2.64 cattle handling facility components on their farm, compared to 45 percent (328) of the producers who had attended one or more beef demonstrations and had an average of 3.41 components. When tested by the F test, it was indicated the number of beef demonstrations attended by the producer was significant at the 0.05 level to the number of cattle handling facility components present on the farm. Those beef producers who had attended one or more beef demonstrations had a greater number of cattle handling facility components on their farms than those producers who had not attended a demonstration.

Data in Table 2 indicates that 31 percent (230) of the respondents did not visit the Extension office and had an average of 1.89 cattle handling facility components present on their farms. This compares to 40 percent (305) of the beef producers who visited the Extension 1 to 2 times having 1.83 components and 29 percent (220) of the producers with 3 or more visits and 1.73 components. The F test indicates that the number of times producers visited the Extension office was significantly related to the number of cattle handling

facility components present on the farm. Producers that had not visited the Extension office had a higher number of cattle handling facility components on their farms than those who had visited one or more times.

The data from Table 2 shows 23 percent (172) of the 755 beef producers surveyed had not placed a telephone call to the Extension office and had an average of 2.34 cattle handling facility components on their farms. This compares to 38 percent (287) of the producers who placed 1 to 2 telephone calls to the Extension office having 3.02 components, and 39 percent (296) of the producers placing 3 or more calls and having 3.28 components. When tested by the F test, the number of telephone calls to the Extension office was significantly related to the number of cattle handling facility components on the farm. Producers with more telephone calls to the Extension office had a higher number of cattle handling facility components on their farms than those with no telephone calls to the Extension office.

Thirty-two percent (245) of the beef producers surveyed did not receive a telephone call from the Extension office and had 2.43 cattle handling facility components, compared to 39 percent (291) of the producers receiving 1 to 2 telephone calls and having 3.06 components, and 29 percent (219) of the producers with 3.45 components receiving 3 or more calls. The F test indicated the number of telephone calls received from the Extension office to be significantly related to the number of cattle handling facility components on the farms. Beef producers who received more telephone calls from the Extension office had a larger number of cattle handling facility components on their farms than those receiving no telephone calls from the Extension office.

Of the producers surveyed, 21 percent (162) that had not been visited by the Extension agent had an average of 2.48 cattle handling facility components, compared to 50 percent (377) that received 1 to 2 farm visits having 2.94 components, and 29 percent (216) that received 3 or more farm visits having 3.39 components in their cattle handling system. When tested by the F test, the number of farm visits from the Extension agent was significantly related to the number of cattle handling facility components on the farm. The beef cattle producers who received more farm visits from the Extension agent had a greater number of cattle handling facility components on their farms than producers receiving no farm visits.

Of the 732 respondents, 315 (43 percent) beef producers, that were contacted zero to 4 times by Extension had an average of 2.47 cattle handling facility components on the farm. This compares to 276 (38 percent) producers who received 5 to 8 contacts having 3.20 components and 216 (29 percent) producers that received 9 to 13 total Extension contacts having an average of 3.70 components. When tested by the F test, the total number of Extension contacts was significantly related to the number of cattle handling facility components on the producers' farm. The beef producers who received a greater number of total Extension contacts had a greater number of cattle handling facility components present on their farms than those producers who had zero to 4 Extension contacts.

Table Summary

The number of cattle handling facility components present on the beef cattle producers farms were significantly related to the four

personal characteristics of the beef producers, the three farm characteristics and the seven types of Extension contacts during the past 12 months.

Beef producers ranging in age from 21 to 45 years had a greater number of cattle handling facility components on their farms than producers 46 or older. Beef producers with college or technical school training had a greater number of cattle handling facility components on their farms than producers with less education. Full-time farmers had a greater number of cattle handling facility components on their farms than part-time or retired producers. Producers with row crops as their major source of farm income had a greater number of cattle handling facility components on their farms than producers with feeder calves as their major source of income.

Those producers that exposed 25 to 35 cows/heifers to bulls, weaned 17 to 35 calves, and sold calves at an average weight range of 501 or more pounds had a greater number of cattle handling facility components on their farms than producers who exposed 36 or more females, weaned 36 or more calves, and sold calves that weighed less than 500 pounds at weaning.

In regard to the number and type of Extension contacts during the past 12 months, those producers that attended no Extension beef meetings, attended one or more beef demonstrations, did not visit the Extension office, placed 3 or more telephone calls to the Extension office, received 3 or more telephone calls from the Extension office, received 3 or more farm visits from the Extension agent, and had 9 to 13

total Extension contacts had a greater number of cattle handling facility components on their farms than the producers who attended one or more beef meetings, not any beef demonstrations, visited the Extension office one or more times, called the Extension office less than 3 times, received less than 3 calls from the Extension office, received less than 3 farm visits, and had fewer than 9 total Extension contacts.

III. RELATIONSHIP BETWEEN SELECTED TENNESSEE BEEF CATTLE PRODUCERS' RATING OF REASONS FOR CONSTRUCTING OR NOT CONSTRUCTING CATTLE HANDLING FACILITIES AND NUMBER OF CATTLE HANDLING FACILITY COMPONENTS ON THEIR FARMS

This section presents findings regarding the relationship between Tennessee beef cattle producers rating of reasons for constructing or not constructing cattle handling facilities and the number of cattle handling facility components present on their farms. Section III is organized into two subsections: (1) rating of reasons for constructing cattle handling facilities, and (2) rating of reasons for not constructing cattle handling facilities. To summarize the findings in this section, the number of producers and the mean number of cattle handling facility components present on the farm are given for each variable listed in Table 3. The analysis of variance F-ratio test was used to determine the strength of the relationship between the independent and dependent variables. The 0.05 probability level was used to determine significant relationships.

Table 3. Relationships Between Selected Tennessee Beef Cattle Producers Rating of Reasons for Constructing or not Constructing Cattle Handling Facilities and Number of Cattle Handling Facility Components Present on Their Farms

Reasons Given	Number of Cattle Handling Facility Components on Farm	
	Number of Producers	Mean
RATING OF REASONS FOR CONSTRUCTING CATTLE HANDLING FACILITIES		
Economic Benefit		
Not Important	99	1.93
Important	646	3.15
TOTAL	745	2.99
F-ratio Test $F = 40.0$; $p < 0.01$		
Safety		
Not Important	101	2.01
Important	644	3.14
TOTAL	745	2.99
F-ratio Test $F = 34.8$; $p < 0.01$		
Labor Saving		
Not Important	87	1.52
Important	657	3.17
TOTAL	744	2.98
F-ratio Test $F = 66.9$; $p < 0.01$		
Have Materials Available		
Not Important	331	2.84
Important	411	3.09
TOTAL	742	2.98
F-ratio Test $F = 3.4$; $p = 0.07$		
Pride of Ownership		
Not Important	475	2.86
Important	269	3.20
TOTAL	744	2.99
F-ratio Test $F = 6.0$; $p < 0.01$		
Neighbor Has Facility		
Not Important	582	3.02
Important	160	2.84
TOTAL	742	2.98
F-ratio Test $F = 1.14$; $p = 0.28$		
Have Good Location		
Not Important	304	2.74
Important	438	3.15
TOTAL	742	2.98
F-ratio Test $F = 8.7$; $p < 0.01$		
Recommended by Extension		
Not Important	250	2.57
Important	493	3.19
TOTAL	743	2.98
F-ratio Test $F = 19.4$; $p < 0.01$		
Recommended by Veterinarian		
Not Important	274	2.76
Important	469	3.12
TOTAL	743	2.98
F-ratio Test $F = 6.8$; $p < 0.01$		
Recommended by Agribusiness		
Not Important	413	2.97
Important	330	2.99
TOTAL	743	2.98
F-ratio Test $F = 0.03$; $p = 0.85$		

Table 3 (Continued)

Reasons Given	Number of Cattle Handling Facility Components on Farm: Number of Producers	Mean
RATING OF REASONS FOR NOT CONSTRUCTING CATTLE HANDLING FACILITIES		
Cost		
Not Important	187	3.18
Important	556	2.90
TOTAL	743	2.97
F-ratio Test F = 3.1; p = 0.08		
Time		
Not Important	314	3.27
Important	425	2.75
TOTAL	739	2.97
F-ratio Test F = 14.5; p < 0.01		
Not Economical		
Not Important	335	3.23
Important	406	2.75
TOTAL	741	2.97
F-ratio Test F = 12.1; p < 0.01		
Too Few Animals		
Not Important	326	3.01
Important	416	2.93
TOTAL	742	2.98
F-ratio Test F = 0.3; p = 0.59		
No Labor		
Not Important	336	3.10
Important	401	2.87
TOTAL	737	2.97
F-ratio Test F = 2.8; p = 0.09		
No Suitable Location		
Not Important	417	3.11
Important	320	2.81
TOTAL	737	2.98
F-ratio Test F = 4.8; p = 0.03		
No Materials		
Not Important	419	3.11
Important	320	2.80
TOTAL	739	2.98
F-ratio Test F = 5.2; p = 0.02		
Too Old To Justify		
Not Important	405	3.01
Important	333	2.92
TOTAL	738	2.97
F-ratio Test F = 0.42; p = 0.52		
No Plans Available		
Not Important	579	3.10
Important	157	2.54
TOTAL	736	2.98
F-ratio Test F = 11.6; p < 0.01		
No Extension Help		
Not Important	609	3.05
Important	124	2.60
TOTAL	733	2.98
F-ratio Test F = 6.4; p = 0.01		
Just Not Ready		
Not Important	267	3.11
Important	469	2.91
TOTAL	736	2.98
F-ratio Test F = 1.9; p = 0.16		

Rating of Reasons for Constructing Cattle Handling Facilities

In this subsection 10 variables or reasons given for constructing facilities are found in Table 3. They include: (1) economic benefit, (2) safety, (3) labor saving, (4) have materials available, (5) pride of ownership, (6) neighbor has facility, (7) have good location, (8) recommended by Extension, (9) recommended by veterinarian, and (10) recommended by agribusiness. The variables are rated as not important or important.

The data from Table 3 indicates that 646 (87 percent) of 745 beef producers surveyed rated economic benefit as an important reason for constructing cattle handling facilities, and their mean number of cattle handling facility components was 3.15. This compares to 99 (13 percent) of the respondents reporting economic benefit as not important and having 1.93 cattle handling facility components on the farm. When tested by the F test, economic benefit was significantly related to the number of cattle handling facility components on the farm. Beef producers who rated economic benefit as an important reason for constructing cattle handling facilities had a greater number of cattle handling facility components on their farms than those who rated economic benefit as not important.

Eighty-six percent (644) of the 745 producers surveyed indicated that safety was an important reason for constructing cattle handling facilities and had an average of 3.14 components on the farm, compared to 14 percent (101) producers that reported safety as not important

and having an average of 2.01 components. When tested by the F test, safety was significantly related to the number of cattle handling facility components on the farm. Producers who indicated safety as an important reason for constructing cattle handling facilities had a significantly greater number of cattle handling facility components on their farms than those producers who thought safety was not important.

Of the 744 beef producers responding, 657 (88 percent) reported labor saving as an important reason for constructing cattle handling facilities and had a mean number of 3.17 cattle handling facility components; whereas, 87 (12 percent) reported labor saving as not important and had 1.52 components. When tested by the F test, labor saving was significantly related to the number of cattle handling facility components on the farm. Producers who rated labor saving as an important reason for constructing cattle handling facilities had a significantly greater number of cattle handling facility components on their farms than producers who rated labor saving as not important.

Fifty-five percent (411) of the 742 producers responding rated the availability of materials as an important reason for constructing cattle handling facilities and had a mean of 3.09 cattle handling facility components, compared to 45 percent (331) that rated having available materials as not important and had a mean of 2.84 components. When tested by the F test, the availability of materials was not significant, at the 0.05 level, to the number of cattle handling facility components on the farm. Therefore, producers who rated the availability of materials as an important reason for constructing cattle

handling facilities did not have significantly more cattle handling facility components on their farms than producers who reported the reasons as not important.

Sixty-four percent (475) of the beef producers surveyed indicated pride of ownership as not an important reason for constructing cattle handling facilities and had a mean of 2.86 cattle handling facility components on the farm. This compares to 36 percent (269) of the producers rating pride of ownership as important and having 3.20 components. When tested by the F test, pride of ownership was significantly related to the number of cattle handling facility components on the farm. Producers who rated pride of ownership as an important reason for constructing cattle handling facilities had a greater number of cattle handling facility components on their farms than the producers who thought pride of ownership was not important.

Seventy-eight percent (582) of the 742 beef producers responding rated their neighbor has facilities as not an important reason for constructing cattle handling facilities and had an average of 3.02 components, compared to 22 percent (160) rating the reason important and having 2.84 components. The F test indicated the reason of neighbor has handling facility was not significantly related to the number of cattle handling facility components on the farm. Beef producers that rated their neighbor has facilities as not an important reason for constructing cattle handling facilities did not have a significantly greater number of cattle handling facility components on their farms than the producers who rated the reason as important.

Fifty-nine percent (438) of the producers surveyed indicated the availability of a good location as an important reason for constructing cattle handling facilities and had an average of 3.15 cattle handling facility components; whereas, 41 percent (304) of the producers rated having a good location as not important and had an average of 2.74 components. When tested by the F test, the availability of a good location for constructing cattle handling facilities was significantly related to the number of cattle handling facility components on the farm. Beef producers that rated the availability of a good location as an important reason for constructing cattle handling facilities had a significantly greater number of cattle handling facility components on their farms than the producers who felt having a good location was not important.

In regard to the reason of recommended by Extension, 66 percent (493) of the 743 beef producers reported the reason as important to constructing cattle handling facilities. Those producers had an average of 3.19 cattle handling facility components on their farms. This compares to 34 percent (250) of the producers rating recommended by Extension as not an important reason for constructing and having a mean of 2.57 components. When tested by the F test, recommended by Extension was significantly related to the number of cattle handling facility components on the farm. Producers rating recommended by Extension as an important reason for constructing cattle handling facilities had a significantly greater number of cattle handling facility components on their farms than the producers who felt the reason was not important.

Sixty-three percent (469) of the producers surveyed indicated recommended by veterinarian was an important reason for constructing cattle handling facilities and had an average of 3.12 cattle handling facility components, compared to 37 percent (274) that rated the reason as not important and had an average of 2.76 components. When tested by the F test, recommended by veterinarian was significantly related to the number of cattle handling facility components on the farm. Therefore, beef producers who rated recommended by veterinarian as an important reason for constructing cattle handling facilities had a significantly greater number of cattle handling facility components on their farms than producers who rated the reason as not important.

Fifty-six percent (413) of the beef producers reported recommended by agribusiness was not an important reason for constructing cattle handling facilities and they had an average of 2.97 cattle handling facility components on their farm, compared to 44 percent (330) that rated the reason as important and had 2.99 components. When tested by the F test, recommended by agribusiness was not significantly related to the number of cattle handling facility components on the farm. Producers who rated recommended by agribusiness as an important reason for constructing cattle handling facilities did not have a significantly greater number of cattle handling facility components on their farms than producers who rated the reason as not important.

Rating of Reasons for not Constructing Cattle Handling Facilities

In this subsection 11 variables or reasons given for not constructing cattle handling facilities were rated as not important or important

in Table 3. The reasons given include: (1) cost, (2) time, (3) not economical, (4) too few animals, (5) no labor, (6) no suitable location, (7) no materials available, (8) too old to justify, (9) no plans available, (10) no Extension help, and (11) just not ready.

Data from Table 3 indicates 25 percent (187) of the 743 beef producers rated cost as not an important reason for not constructing cattle handling facilities and had an average of 3.18 cattle handling facility components, compared to 75 percent (556) of the producers who rated the reason as important and had an average of 2.90 components. When tested by the F test, cost was not significantly related to the number of cattle handling facilities present on the farm. Beef producers who felt cost did not influence their decision to not construct cattle handling facilities did not have a significantly greater number of cattle handling facility components on their farms than producers who felt cost was an important reason.

Forty-two percent (314) of the 739 respondents rated time as an unimportant reason for not constructing cattle handling facilities and had a mean of 3.27 cattle handling facility components; whereas, 58 percent (425) of the producers reported time as an important reason for not constructing and had 2.75 components. When tested by the F test, not enough time was significantly related to the number of cattle handling facility components on the farm. Beef producers who rated time not a limiting factor for constructing cattle handling facilities had a significantly greater number of cattle handling facility components on their farms than producers who felt time was a limiting factor.

Of the 741 beef producers surveyed, 55 percent (406) felt the reason of the expense not being economical was a limiting factor when they considered constructing cattle handling facilities. Those producers had an average of 2.75 cattle handling facility components on their farms. This is compared to 45 percent (335) of the producers who reported not being able to economically justify the expense as an unimportant reason for not constructing facilities and had 3.23 components. When tested by the F test, not economical was significantly related to the number of cattle handling facility components on the farm. Producers who rated not economical as a limiting factor when considering cattle handling facility construction had a significantly fewer number of cattle handling facility components on their farms than the producers who rated the reason as not a limiting factor.

Fifty-six percent (416) of the 742 producers responding indicated too few animals as an important reason for not constructing cattle handling facilities and they had 2.93 cattle handling facility components on their farms, compared to 44 percent (326) who reported too few animals as not an important reason and had 3.01 components. When tested by the F test, too few animals was not significantly related to the number of cattle handling facility components on the farm. Producers who felt too few animals was a limiting factor did not have a significantly fewer number of cattle handling facility components on their farms than the producers who felt the number of animals was not a limiting factor.

Fifty-four percent (401) of the 737 producers responding felt no available labor was an important reason when they made the decision

to not construct cattle handling facilities and had 2.87 cattle handling facility components, compared to 46 percent (336) of the producers who felt no available labor was not an important reason and had 3.10 components. When tested by the F test, no available labor was not significantly related to the number of cattle handling facility components on the farm. Producers who felt no available labor was a limiting factor did not have a significantly fewer number of cattle handling facility components than the producers who felt the reason was not a limiting factor.

Forty-three percent (320) of the beef producers rated no suitable location on the farm as important when they decided not to construct beef cattle facilities and had an average of 2.81 facility components; whereas, 57 percent (417) rated the reason as important and had 3.11 components. When tested by the F test, no suitable location was significantly related to the number of cattle handling facility components on the farm. Beef producers who felt the lack of a suitable location was a limiting factor in their decision to not construct cattle handling facilities had a significantly fewer number of cattle handling facility components on their farms than the producers who felt the reason was not a limiting factor.

Forty-three percent (320) of the 739 respondents reported the lack of materials as an important reason when making the decision not to construct facilities and had a mean of 2.80 facility components, compared to 57 percent (349) of the producers who rated the reason as important and had 3.11 components. When tested by the F test, the

lack of materials was significantly related to the number of cattle handling facility components on the farm. Producers who felt the lack of materials was a limiting factor in their decision not to construct cattle handling facilities had a significantly fewer number of cattle handling facility components on their farms than those producers who felt the reason was not a limiting factor.

In regard to age, 45 percent (333) of the 738 respondents felt an important reason for not constructing facilities was they were too old to justify the investment. Those producers had an average of 2.92 cattle handling facility components. This is compared to 55 percent (405) of the beef producers who indicated being too old was an unimportant factor in their decision not to construct facilities and had an average of 3.01 components. When tested by the F test, the reason of too old to justify the investment was not significantly related to the number of cattle handling facility components on the farm. Beef producers who felt being too old to justify the investment was a limiting factor in their decision to not construct facilities did not have a significantly fewer number of cattle handling facility components on their farms than the producers who felt the reason was not a limiting factor.

Twenty-one percent (157) of the producers responding indicated the lack of available plans was an important consideration in their decision not to construct facilities and had an average of 2.54 cattle handling facility components, compared to 79 percent (579) of the producers who reported no plans available was an unimportant reason and

had an average of 3.10 components. When tested by the F test, the lack of available plans was significantly related at the 0.05 level to the number of cattle handling facility components on the farm. Beef producers who felt the lack of available plans was a limiting factor in their decision to not construct cattle handling facilities had a significantly fewer number of cattle handling facility components on their farms than those producers who rated the reason as not a limiting factor.

Seventeen percent (124) of the 733 respondents reported no assistance from Extension was an important consideration in their decision to not construct facilities and had 2.60 cattle handling facility components; whereas, 83 percent (609) of the producers felt no Extension help was an unimportant reason for not constructing facilities and had a mean of 3.05 components. When tested by the F test, the lack of Extension assistance was significantly related to the number of cattle handling facility components on the farm. Beef producers who felt the lack of Extension assistance was a limiting factor in their decision to not construct cattle handling facilities had a significantly fewer number of cattle handling facility components on their farms than the producers who felt the reason was not a limiting factor.

In concluding this subsection, 64 percent (469) of the beef producers responding indicated just not ready was an important consideration in their decision not to construct cattle handling facilities and had a mean of 2.91 facility components, compared to 36 percent (267) of the producers who indicated the reason was not important

and had 3.11 components. When tested by the F test, the reason of just not ready was not significantly related to the number of cattle handling facility components on the farm. Beef producers who felt the reason of just not ready was a limiting factor in their decision to not construct facilities did not have a significantly fewer number of cattle handling facility components on their farms than the producers who felt the reason was not a limiting factor.

Table Summary

The number of cattle handling facility components present on the beef cattle producers farms were significantly related to 7 of the 10 reasons for constructing cattle handling facilities and 6 of the 11 reasons for not constructing cattle handling facilities. The reasons were rated as not important or important.

Beef cattle producers who rated economic benefit, safety, labor saving, pride of ownership, have good location, recommended by Extension and recommended by veterinarian as important reasons for constructing cattle handling facilities had a greater number of cattle handling facility components present on their farms than producers who rated the reasons as not important.

In regard to the reasons for not constructing cattle handling facilities, beef producers who indicated time, not economical, no suitable location, no materials, no plans available, and no Extension help as important had a significantly fewer number of cattle handling facility components present on their farms than the producers who felt the reasons were not important.

IV. RELATIONSHIPS BETWEEN SELECTED TENNESSEE BEEF CATTLE PRODUCERS' NUMBER OF CATTLE HANDLING FACILITY COMPONENTS PRESENT ON THEIR FARMS AND THE RATING OF INFORMATION SOURCES ABOUT EXTENSION'S "CATCH FOUR" PROGRAM

This section reports findings regarding the relationships between Tennessee beef cattle producers' number of cattle handling facility components present on the farm and the rating of information sources about Extension's CATCH FOUR program. Number of cattle handling facility components present on the farm was set up as the independent variable and the rating of sources of information as the dependent variable. The sources of information about Extension's CATCH FOUR program include: (1) Extension meetings, (2) beef cattle demonstrations, (3) radio programs, (4) television programs, (5) newspaper articles, (6) Extension newsletters, (7) posters, (8) bumper stickers, (9) visits from Extension agents, (10) visits to Extension office (11) telephone calls to Extension office, (12) telephone calls from Extension agent, (13) agribusiness contacts, (14) other family member contacts, and (15) contacts with friends and/or neighbors. The sources of information are rated as not helpful or helpful. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. The 0.05 probability level was used to determine significant relationships.

Number of Cattle Handling Facility Components and Rating of Extension Meetings

Data in Table 4 indicates over 72 percent of the beef producers with all 5 components rated Extension meetings as a helpful source of information about Extension's CATCH FOUR program, compared to just over 36 percent of the producers with no facilities rating the source of information as helpful. When tested by the chi square test, the number of cattle handling facility components was significantly related to Extension meetings as a source of information about Extension's CATCH FOUR program. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to rate Extension meetings as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Beef Cattle Demonstrations

Over 63 percent of the beef producers with all 5 cattle handling facility components rated beef cattle demonstrations as helpful sources of information about Extension's CATCH FOUR program, compared to almost 35 percent of the producers with no handling facilities. When tested by the chi square test, the number of cattle handling facility components was significantly related to beef cattle demonstrations as a source of information about Extension's CATCH FOUR program. Beef producers with all 5 components were more likely to rate beef cattle demonstrations as important sources of information than the producers with 4 or less components.

Table 4. Relationships Between Selected Tennessee Beef Cattle Producers Number of Cattle Handling Facility Components Present on the Farm and Rating of Information Sources of Extension's CATCH FOUR program

Source of Information	Number of Cattle Handling Facility Components Present on the Farm: Not Any — Number of Response	Not Any — Percent of Response	1 to 4 — Number of Response	1 to 4 — Percent of Response	All 5 — Number of Response	All 5 — Percent of Response
RATING OF THE SOURCES OF INFORMATION ABOUT EXTENSION'S "CATCH FOUR" PROGRAM						
Extension Meetings						
Not Helpful	83	63.8	141	37.5	69	27.7
Helpful	47	36.2	235	62.5	180	72.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $X^2 = 47.5$; df = 2; $p < 0.01$						
Beef Cattle Demonstrations						
Not Helpful	85	65.4	182	48.4	92	36.9
Helpful	45	34.6	194	51.6	157	63.1
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $X^2 = 27.9$; df = 2; $p < 0.01$						
Radio Programs						
Not Helpful	97	74.6	272	72.3	179	71.9
Helpful	33	25.4	104	27.7	70	28.1
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $X^2 = 0.3$; df = 2; $p = 0.84$						
Television Programs						
Not Helpful	119	91.5	351	93.4	230	92.4
Helpful	11	8.5	25	6.6	19	7.6
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $X^2 = 0.5$; df = 2; $p = 0.76$						
Newspaper Articles						
Not Helpful	89	68.5	225	59.8	137	55.0
Helpful	41	31.5	151	40.2	112	45.0
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $X^2 = 6.4$; df = 2; $p = 0.04$						
Extension Newsletters						
Not Helpful	70	53.8	141	37.5	74	29.7
Helpful	60	46.2	235	62.5	175	70.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 21.2$; df = 2; $p < 0.01$						
Posters						
Not Helpful	107	82.3	301	80.1	195	78.3
Helpful	23	17.7	75	19.9	54	21.7
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 0.9$; df = 2; $p = 0.65$						
Bumper Stickers						
Not Helpful	117	90.0	333	88.6	211	84.7
Helpful	13	10.0	43	11.4	38	15.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 2.9$; df = 2; $p = 0.24$						
Visits From Extension Agents						
Not Helpful	64	49.2	135	35.9	79	31.7
Helpful	66	50.8	241	64.1	170	68.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 11.5$; df = 2; $p < 0.01$						

Table 4 (Continued)

Source of Information	Number of Cattle Handling Facility Components Present on the Farm: Not Any — Number of Response	Not Any — Percent of Response	1 to 4 — Number of Response	1 to 4 — Percent of Response	All 5 — Number of Response	All 5 — Percent of Response
Visits to Extension Office						
Not Helpful	83	63.8	201	53.5	102	41.0
Helpful	47	36.2	175	46.5	147	59.0
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 19.5$; df = 2; $p < 0.01$						
Telephone Calls to Extension Office						
Not Helpful	87	66.9	224	59.6	123	49.4
Helpful	43	33.1	152	40.4	126	50.6
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 12.1$; df = 2; $p < 0.01$						
Telephone Calls From Extension Agent						
Not Helpful	90	69.2	233	62.0	128	51.4
Helpful	40	30.8	143	38.0	121	48.6
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 12.8$; df = 2; $p < 0.01$						
Agribusiness Contacts						
Not Helpful	95	73.1	266	70.7	157	63.1
Helpful	35	26.9	110	29.3	92	36.9
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 5.6$; df = 2; $p = 0.06$						
Other Family Member Contacts						
Not Helpful	107	82.3	312	83.0	181	72.7
Helpful	23	17.7	64	17.0	68	27.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 10.5$; df = 2; $p < 0.01$						
Contacts With Friends and/or Neighbors						
Not Helpful	101	77.7	263	69.9	162	65.1
Helpful	29	22.3	113	30.1	87	34.9
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 6.5$; df = 2; $p = 0.04$						

Number of Cattle Handling Facility Components and Rating of Radio Programs

Just over 28 percent of the producers with all 5 cattle handling facility components rated radio programs as helpful sources of information about Extension's CATCH FOUR program, compared to just over 25 percent of the producers with no facilities. When tested by the chi square test, the number of cattle handling facility components was not significantly related to the .05 level with the rating of radio programs as a source of information. Beef producers with all 5 cattle handling facility components did not differ from those with fewer components as to their rating of radio as a helpful source of information about the CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Television Programs

Over 92 percent of the beef producers with all 5 cattle handling facility components rated television programs not helpful as a source of information about Extension's CATCH FOUR program, as compared to almost 92 percent of the producers with no handling facilities. When tested by the chi square test, the number of cattle handling facility components was not significantly related to the rating of television programs as a source of information. Beef producers with all 5 cattle handling facility components were not more likely than producers with 4 or less components to rate television programs as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Newspaper Articles

Forty-five percent of the producers with all 5 cattle handling facility components rated newspaper articles as helpful sources of information about Extension's CATCH FOUR program, compared to almost 32 percent of the producers with not any handling facility components. When tested by the chi square test, the number of cattle handling facility components present on the farm was significantly related to newspaper articles as sources of information. Beef producers with all 5 cattle handling facility components were more likely than producers with 4 or less components to rate newspaper articles as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Extension Newsletters

Over 70 percent of the producers with all 5 cattle handling facility components rated Extension newsletters as helpful sources of information about Extension's CATCH FOUR program, as compared to just over 46 percent of the producers with no facilities. When tested by the chi square test, the number of cattle handling facility components was significantly related to Extension newsletters as a source of information. Beef producers with all 5 cattle handling facility components were more likely to rate Extension newsletters as helpful sources of information about Extension's CATCH FOUR program than producers with 4 or less components.

Number of Cattle Handling Facility Components and Rating of Posters

Over 82 percent of the beef producers with no cattle handling facility components rated posters as not helpful as a source of information about Extension's CATCH FOUR program, compared to over 78 percent of the producers with all 5 components. When tested by the chi square test, the number of cattle handling facility components present on the farm was not significantly related to posters as sources of information. Beef producers with no cattle handling facilities were not more likely than producers with all 5 components to rate posters as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and the Rating of Bumper Stickers

Ninety percent of the producers with no cattle handling facilities rated bumper stickers not helpful as sources of information about Extension's CATCH FOUR program, as compared to almost 85 percent of the producers with all 5 components. When tested by the chi square test, the number of facility components was not significantly related, to the .05 level, to bumper stickers as sources of information. Beef producers with no cattle handling facilities were not more likely than producers with all 5 components to rate bumper stickers as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Visits from Extension Agents

Over 68 percent of the beef producers with all 5 cattle handling facility components rated visits from Extension agents as helpful

sources of information about Extension's CATCH FOUR program, compared to almost 51 percent of the producers with no cattle handling facilities. When tested by the chi square test, the number of cattle handling facility components present on the farm was significantly related to visits from Extension agents as sources of information. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to rate visits from Extension agents as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Visits to Extension Office

Fifty-nine percent of the beef producers with all 5 cattle handling facility components rated visits to the Extension office as helpful sources of information about Extension's CATCH FOUR program, as compared to just over 36 percent of the producers with no handling facilities. When tested by the chi square test, the number of cattle handling facility components present on the farm was significantly related to visits to Extension office as sources of information. Beef producers with all 5 cattle handling facility components were more likely to rate visits to the Extension office as helpful sources of information about Extension's CATCH FOUR program than producers with no facilities.

Number of Cattle Handling Facility Components and Rating of Telephone Calls to Extension Office

Just over 50 percent of the beef cattle producers with all 5 cattle handling facility components rated telephone calls to Extension office

as helpful sources of information about Extension's CATCH FOUR program, as compared to 33 percent of the producers with no cattle handling facilities. When tested by the chi square test, the number of cattle handling facilities present on the farm was significantly related to telephone calls to Extension office as sources of information. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to rate telephone calls to Extension office as helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Telephone Calls from Extension Agent

Just over 69 percent of the beef producers with no cattle handling facilities rated telephone calls from the Extension agent not helpful as sources of information about Extension's CATCH FOUR program, compared to over 51 percent of the producers with all 5 components. When tested by the chi square test, the number of cattle handling facility components was significantly related to telephone calls from Extension agents as sources of information. Beef producers with no cattle handling facilities were more likely than producers with all 5 components to rate telephone calls from Extension agent not helpful as sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Agribusiness Contacts

Just over 73 percent of the producers with no cattle handling facilities rated agribusiness contacts as not helpful sources of

information about Extension's CATCH FOUR program; whereas, 63 percent of the producers with all 5 components rated it not helpful. When tested by the chi square test, the number of cattle handling facility components was not significantly related, to the 0.05 level, to agribusiness contacts as sources of information. Beef producers with no cattle handling facilities were not more likely to rate agribusiness contacts as not helpful than producers with all 5 components.

Number of Cattle Handling Facility Components and Rating of Other Family Member Contacts

Over 82 percent of the beef producers with no cattle handling facilities rated other family member contacts as not a helpful source of information about Extension's CATCH FOUR program, compared to almost 73 percent of the producers with all 5 components. When tested by the chi square test, the number of cattle handling facility components was significantly related to other family member contacts as a source of information. Beef producers with no cattle handling facilities were more likely than producers with all 5 components to rate other family member contacts as not helpful sources of information about Extension's CATCH FOUR program.

Number of Cattle Handling Facility Components and Rating of Contacts with Friends and/or Neighbors

Almost 78 percent of the producers with no cattle handling facilities rated contacts with friends and/or neighbors as not helpful sources of information about Extension's CATCH FOUR program, as compared to just over 65 percent of the producers with all 5 components. When

tested by the chi square test, the number of cattle handling facility components was significantly related to contacts with friends and/or neighbors as sources of information. Beef producers with no cattle handling facilities were more likely to rate contacts with friends and/or neighbors as not helpful sources of information about Extension's CATCH FOUR program than producers with all 5 cattle handling facility components.

Table Summary

Number of cattle handling facility components present on the farms of beef producers was significantly related to 10 of the sources of information about Extension's CATCH FOUR program.

Beef producers with all 5 cattle handling facility components were more likely than producers with no cattle handling facilities to rate Extension meetings, beef cattle demonstrations, newspaper articles, Extension newsletters, visits from Extension agents, visits to Extension office, and telephone calls to Extension office as helpful sources of information about Extension's CATCH FOUR program. On the other hand, beef producers with no cattle handling facilities were more likely than producers with all 5 components to rate telephone calls from Extension agent, other family member contacts, and contacts with friends and/or neighbors as not helpful sources of information about Extension's CATCH FOUR program.

V. RELATIONSHIPS BETWEEN SELECTED TENNESSEE BEEF CATTLE PRODUCERS' NUMBER OF CATTLE HANDLING FACILITY COMPONENTS PRESENT ON THEIR FARM AND THEIR USE OF SELECTED MANAGEMENT PRACTICES

The final section presents findings regarding the relationship between selected Tennessee beef producers' number of cattle handling facility components present on their farms and their use of selected management practices. For purposes of this study, the independent variable or number of cattle handling facility components present on the farm was classified as not any, 1 to 4, or all 5. To summarize the findings, the number and percent response of the producers was given for the 15 dependent variables listed in Table 5. The dependent variables or beef producers' use of selected management practices include: (1) cow/heifers vaccinated for leptospirosis, (2) cows/calves vaccinated for respiratory disease complex, (3) calves vaccinated for blackleg, (4) replacement heifers vaccinated for brucellosis, (5) number of times calves were implanted, (6) number of times cows/bulls dewormed, (7) number of times calves dewormed, (8) male calves castrated, (9) horned cattle dehorned, (10) animals permanently identified, (11) method used to control horn and face flies, (12) cattle treated for grubs and/or lice, (13) bulls evaluated for breeding soundness, (14) cows/heifers pregnancy checked, and (15) number of cows/heifers bred by artificial insemination. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. The .05 probability level was used to determine significant relationships.

Table 5. Relationships Between Selected Tennessee Beef Cattle Producers Number of Cattle Handling Facility Components Present on Their Farm and Their Use of Selected Management Practices

Selected Management Practices	Number of Cattle Handling Facility Components Present on the Farm: Not Any — Number of Response	Not Any — Percent of Response	1 to 4 — Number of Response	1 to 4 — Percent of Response	All 5 — Number of Response	All 5 — Percent of Response
BEEF PRODUCERS USE OF SELECTED MANAGEMENT PRACTICES						
Cows/Heifers Vaccinated for Leptospirosis						
No	105	80.8	219	58.2	91	36.5
Yes	25	19.2	157	41.8	158	63.5
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 70.7$; df = 2; $p < 0.01$						
Cows/Calves Vaccinated for Respiratory Disease Complex						
No	115	88.5	277	73.7	114	45.8
Yes	15	11.5	99	26.3	135	54.2
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 85.4$; df = 2; $p < 0.01$						
Calves Vaccinated for Blackleg						
No	59	45.4	91	24.2	24	9.6
Yes	71	54.6	285	75.8	225	90.4
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 62.1$; df = 2; $p < 0.01$						
Replacement Heifers Vaccinated for Brucellosis						
No	104	85.2	245	73.6	140	62.5
Yes	18	14.8	88	26.4	84	37.5
TOTAL	122	100.0	333	100.0	224	100.0
Statistical Test $x^2 = 21.1$; df = 2; $p < 0.01$						
Number of Times Cows Implanted						
Not Any	104	80.0	229	60.9	110	44.2
One-More	26	20.0	147	39.1	139	55.8
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 46.7$; df = 2; $p < 0.01$						
Number of Times Cows/Bulls Dewormed						
None Dewormed	56	43.1	93	24.7	25	10.0
Yes Dewormed	74	56.9	283	75.3	224	90.0
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 53.8$; df = 2; $p < 0.01$						
Number of Times Calves Dewormed						
None Dewormed	65	50.0	112	29.8	26	10.4
Yes Dewormed	65	50.0	264	70.2	223	89.6
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 71.2$; df = 2; $p < 0.01$						
Male Calves Castrated						
No	37	28.5	37	9.8	14	5.6
Yes	93	71.5	339	90.2	235	94.4
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 45.7$; df = 2; $p < 0.01$						
Horned Cattle Dehorned						
No	35	51.5	52	30.2	34	26.0
Yes	33	48.5	120	69.8	97	74.0
TOTAL	68	100.0	172	100.0	131	100.0
Statistical Test $x^2 = 14.1$; df = 2; $p < 0.01$						

Table 5 (Continued)

Selected Management Practices	Number of Cattle Handling Facility Components Present on the Farm: Not Any — Number of Response	Not Any — Percent of Response	1 to 4 — Number of Response	1 to 4 — Percent of Response	All 5 — Number of Response	All 5 — Percent of Response
Animals Permanently Identified						
No	109	83.8	234	62.2	79	31.7
Yes	21	16.2	142	37.8	170	68.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 106.3$; df = 2; $p < 0.01$						
Method Used to Control Horn and Face Flies						
None Used	28	21.5	31	8.2	7	2.8
Used One or More	102	78.5	345	91.8	242	97.2
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 37.8$; df = 2; $p < 0.01$						
Cattle Treated For Grubs and/or Lice						
No	69	53.1	138	36.7	58	23.3
Yes	61	46.9	238	63.3	191	76.7
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 34.1$; df = 2; $p < 0.01$						
Bulls Evaluated for Breeding Soundness						
No	126	96.9	340	90.4	205	82.3
Yes	4	3.1	36	9.6	44	17.7
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 20.2$; df = 2; $p < 0.01$						
Cows/Heifers Pregnancy Checked						
No	128	98.5	339	90.2	206	82.7
Yes	2	1.5	37	9.8	43	17.3
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 22.6$; df = 2; $p < 0.01$						
Number of Cows/Heifers Bred by Artificial Insemination						
Not Any	122	93.8	347	92.3	207	83.1
One-More	8	6.2	29	7.7	42	16.9
TOTAL	130	100.0	376	100.0	249	100.0
Statistical Test $x^2 = 16.5$; df = 2; $p < 0.01$						

Number of Cattle Handling Facility Components and Cows/Heifers Vaccinated for Leptospirosis

Over 63 percent of the producers with all 5 cattle handling facility components vaccinated cows/heifers for leptospirosis, compared to just over 19 percent of the producers with no cattle handling facilities. When tested by the chi square test, the number of cattle handling facility components was significantly related to producers vaccinating for leptospirosis. Beef producers with all 5 cattle handling facility components were more likely than the producers with no facilities to vaccinate cows/heifers for leptospirosis.

Number of Cattle Handling Facility Components and Cows/Calves Vaccinated for Respiratory Disease Complex

Over 54 percent of the producers with all 5 cattle handling facility components vaccinated cows/heifers for the respiratory disease complex, as compared to only 11.5 percent of producers with no cattle handling facilities. When tested by the chi square test, the number of cattle handling facility components was significantly related to the use of vaccination for respiratory disease complex. Beef producers with all 5 cattle handling facility components were more likely to vaccinate cows/calves for the respiratory disease complex than producers with no facilities.

Number of Cattle Handling Facility Components and Calves Vaccinated for Blackleg

Over 90 percent of the beef producers with all 5 cattle handling facility components vaccinated calves for blackleg; whereas, over 54

percent of the producers with no facilities administered calfhood vaccination. When tested by the chi square test, the number of cattle handling facility components was significantly related to the use of vaccination for blackleg. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to vaccinate calves for blackleg.

Number of Cattle Handling Facility Components and Replacement Heifers Vaccinated for Brucellosis

Over 37 percent of the producers with all 5 cattle handling facility components did vaccinate replacement heifers for brucellosis, compared to almost 15 percent of the producers with not any components. When tested by the chi square test, the number of cattle handling facility components present on the farm was significantly related to the use of vaccination for brucellosis. Beef producers with complete cattle handling facilities were more likely than producers with no components to vaccinate replacement heifers for brucellosis.

Number of Cattle Handling Facility Components and Number of Times Calves were Implanted

Almost 56 percent of the producers with all 5 cattle handling facility components implanted their calves one or more times; whereas, only 20 percent of the producers with no facilities used growth promotants. When tested by the chi square test, the number of cattle handling facility components present on the farm was significantly related to the use of implants in calves. Beef producers with all 5 cattle handling

facility components were more likely than producers with no facilities to implant their calves one or more times.

Number of Cattle Handling Facility Components and Number of Times Cows/Bulls Dewormed

Ninety percent of the producers with all 5 cattle handling facility components dewormed their cows and bulls, compared to almost 57 percent of the producers with no facilities. When tested by the chi square test, the number of cattle handling facility components present on the farm was significantly related to the use of dewormers in cows and bulls. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to deworm their cows and bulls.

Number of Cattle Handling Facility Components and Number of Times Calves were Dewormed

Almost 90 percent of the beef producers with all 5 cattle handling facility components dewormed their calves; whereas, 50 percent of the producers with no facilities dewormed. When tested by the chi square test, the number of cattle handling facility components was significantly related to the use of dewormers in calves. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to deworm their calves.

Number of Cattle Handling Facility Components and Male Calves Castrated.

Over 94 percent of the producers with all 5 cattle handling facility components castrated their male calves, compared to over 71 percent

of the producers with no handling facilities. When tested by the chi square test, the number of cattle handling facility components on the farm was significantly related to the use of castration of male calves. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to castrate male calves.

Number of Cattle Handling Facility Components and Horned Cattle Dehorned

Seventy-four percent of the beef producers with all 5 cattle handling facility components dehorned their horned cattle, as compared to almost 49 percent of the producers with no handling facilities. When tested by the chi square test, the number of cattle handling facility components on the farm was significantly related to the use of the practice of dehorning. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to dehorn their horned cattle.

Number of Cattle Handling Facility Components and Animals Permanently Identified

Over 68 percent of the beef producers with all 5 cattle handling facility components permanently identified their animals, as compared to only 16 percent of the producers with no handling facilities. When tested by the chi square test, the number of cattle handling facility components on the farm was significantly related to the use of permanent identification of animals. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities to permanently identify their animals.

Number of Cattle Handling Facility Components and Method Used to Control Horn and Face Flies

Over 97 percent of the producers with all 5 cattle handling facility components used one or more method to control horn and face flies, compared to over 78 percent of the producers with no handling facilities on their farms. When tested by the chi square test, the number of cattle handling facility components was significantly related to the use of methods to control horn and face flies. Beef producers with all 5 cattle handling facility components were more likely than producers with no facilities on the farm to use one or more methods to control horn and face flies.

Number of Cattle Handling Facility Components and Cattle Treated for Grubs and/or Lice

Almost 77 percent of the beef producers with all 5 cattle handling facility components treated their cattle for grubs and/or lice, as compared to almost 47 percent of the producers with no handling facilities on their farms. When tested by the chi square test, the number of cattle handling facility components on the farm was significantly related to the treatment of cattle for grubs and/or lice. Beef producers with all 5 cattle handling facility components were more likely than the producers with no facilities on their farms to treat their cattle for grubs and/or lice.

Number of Cattle Handling Facility Components and Bulls Evaluated for Breeding Soundness

Almost 18 percent of the producers with all 5 cattle handling facility components on their farm did evaluate their bulls for breeding soundness, compared to over 3 percent of the producers with no cattle handling facilities. When tested by the chi square test, the number of cattle handling facility components was significantly related to the evaluation of bulls for breeding soundness. Beef producers with all 5 cattle handling facility components on their farms were more likely than producers with no cattle handling facilities to evaluate their bulls for breeding soundness.

Number of Cattle Handling Facility Components and Cows/Heifers Pregnancy Checked

Over 17 percent of the producers with complete cattle handling facilities on their farm did pregnancy check their cows or heifers, compared to 1.5 percent of the producers with not any cattle handling facilities. When tested by the chi square test, the number of cattle handling facility components was significantly related to the pregnancy checking beef females. Beef producers with all five cattle handling facility components were more likely than producers with no cattle handling facility components to pregnancy check cows and heifers.

Number of Cattle Handling Facility Commponents and Number of Cows/Heifers Bred by Artificial Insemination

Almost 17 percent of the producers with all five cattle handling facility components did breed cows or heifers by artificial insemination

compared to just 6 percent of the producers with no cattle handling facilities. When tested by the chi square test, the number of cattle handling facility components on the farm was significantly related to the use of artificial insemination. Beef producers with all five cattle handling facility components on their farms were more likely than producers with no components to breed their cows and heifers by artificial insemination.

Table Summary

The number of cattle handling facility components present on the farms of Tennessee beef producers was significantly related to all 15 of the selected management practices.

Beef producers with all 5 cattle handling facility components on their farms were more likely than producers with no handling facilities to vaccinate cows/heifers for leptospirosis, vaccinate cows/calves for respiratory disease complex, vaccinate calves for blackleg, implant calves one or more times, deworm cows/bulls, deworm calves, castrate male calves, dehorn horned cattle, permanently identify animals, use one or more methods to control horn and face flies, treat cattle for grubs and/or lice, to vaccinate replacement heifers for brucellosis, evaluate bulls for breeding soundness, pregnancy check cows/heifers, and breed cows/heifers by artificial insemination.

CHAPTER IV

SUMMARY OF MAJOR FINDINGS

I. PURPOSE AND SPECIFIC OBJECTIVES

Purpose

The purpose of this study was to characterize the Tennessee beef cattle producers who did not construct or repair any cattle handling facility components during the implementation of the CATCH FOUR program in order to identify program content, target audiences and delivery methods to emphasize in future Extension beef cattle programs. An analysis of the relationships between those selected beef producers personal and farm characteristics and the number of cattle handling facility components present on their farm was used to accomplish this purpose.

Specific Objectives

The specific objectives included in this study are:

1. To characterize beef cattle producers in Tennessee that did not participate in Extension's CATCH FOUR program as to their farm operation, the availability of cattle handling facility components, the rating of reasons for or not constructing cattle handling facilities, the rating of sources of information about Extension's CATCH FOUR program, number and type of Extension contacts, and the use of selected management practices.

2. To determine relationships between Tennessee beef cattle producers' personal and farm characteristics, Extension contacts, and the number of cattle handling facility components present on their farms.

3. To determine relationships between selected beef cattle producers rating of reasons for constructing or not constructing cattle handling facilities and the number of cattle handling facility components on their farm.

4. To determine relationships between selected beef cattle producers' number of cattle handling facility components present on the farm and the rating of information sources of Extension's CATCH FOUR program.

5. To determine relationships between selected Tennessee beef cattle producers' number of cattle handling facility components present on their farm and their use of selected management practices.

II. METHOD OF INVESTIGATION

The population of this study was the Tennessee beef cattle producers that did not construct or repair any cattle handling facility components from January 1, 1985 to the fall of 1987. The producers were from 73 Tennessee counties and had at least 25 beef cows of breeding age. To identify the producers, Extension agents used an up-to-date mailing list of beef cattle producers to select a stratified random sample by applying the n^{th} number technique. The Extension agents were instructed to select 10 producers who since the beginning of the CATCH FOUR program had either constructed new or remodeled one or more components for handling cattle. If 10 producers

were not available, the agents were to survey all producers who did something to their cattle handling facilities since January 1, 1985. Secondly, the Extension agents were to select 15 other producers who had not constructed new or repaired any component of their cattle handling facilities since the beginning of the CATCH FOUR program. These producers may or may not have cattle handling facilities.

The 1987 Beef Cattle Handling Facilities Survey developed by the University of Tennessee Agricultural Extension Service Animal Science and Extension Education Specialist staffs were used to collect the data. The surveys were conducted by Extension agents through personal interviews in 1987.

Following the completion of the surveys, the data were coded and processed for computer analysis. Computations were made by the University of Tennessee Computing Center. The F-ratio analysis of variance test and the chi square statistical test were used to determine the strength of the relationship between the independent and dependent variables. The .05 probability level was the point at which a relationship was considered significant.

In this study the independent variables include selected Tennessee beef cattle producers' personal and farm operation characteristics, their number and type of Extension contacts, their rating of reasons for constructing or not constructing cattle handling facilities, and the number of cattle handling facility components present on their farms. The dependent variables include the number of cattle handling facility components on the farm, the rating of information sources of Extension's CATCH FOUR program, and the beef producers use of selected management practices.

III. MAJOR FINDINGS

The major findings of this study are presented here in five subsections. The first subsection presents findings regarding the characteristics of the Tennessee beef cattle producers who did not construct or repair any cattle handling facility components during the CATCH FOUR program. The second subsection presents the findings regarding the relationships between selected Tennessee beef cattle producers' personal and farm characteristics, Extension contacts and the number of cattle handling facility components present on their farms. The third subsection presents the findings regarding the relationships between selected beef cattle producers' rating of reasons for constructing or not constructing cattle handling facilities and the number of cattle handling facility components on their farms. The fourth subsection presents the findings regarding the relationships between selected beef cattle producers' number of cattle handling facility components present on the farm and the rating of information sources of Extension's CATCH FOUR program. The fifth subsection presents the findings regarding the relationships between selected Tennessee beef cattle producers' number of cattle handling facility components present on their farms and their use of selected management practices.

Characteristics of Tennessee Beef Cattle Producers Who Did Not Construct or Repair Any Cattle Handling Facility Components During the CATCH FOUR Program

This subsection presents the findings regarding the characteristics of the Tennessee beef cattle producers who did not construct or repair

any cattle handling facility components during the CATCH FOUR program as to their farm operation, the availability of cattle handling facility components, the rating of reasons for or not constructing cattle handling facilities, the rating of sources of information about Extension's CATCH FOUR program, number and type of Extension contacts and the use of selected management practices.

Personal and farm characteristics of beef producers. Almost 42 percent of the producers were 46 to 60 years of age with a mean age of 53 years. Over 53 percent of the producers were high school graduates, 47 percent were part-time farmers, and over 50 percent reported the sale of feeder calves as their major source of farm income.

Almost 52 percent of the beef producers studied exposed 25 to 35 cows and heifers to bulls, over 57 percent raised 17 to 35 calves to weaning, and almost 63 percent sold calves weighing 401 to 500 pounds.

Handling facility components on farm prior to January 1985. Of the beef producers studied, almost 75 percent had a headgate, over 61 percent had a holding chute, over 53 percent had a working chute, over 48 percent had crowding pens, and almost 60 percent had holding pens. In regard to the type of handling facilities on the farm prior to January 1985, almost 36 percent of the producers had all 5 components, over 18 percent had no components, and 45 percent had 1 to 4 components. The mean number was 2.7 components.

Reasons for constructing cattle handling facilities. Over 80 percent of the producers reported economic benefits, safety and

labor saving were important reasons for constructing cattle handling facilities.

Reasons for not constructing cattle handling facilities. Over 74 percent of the beef cattle producers rated cost as an important reason for not constructing cattle handling facilities. Over 54 to 64 percent of the producers rated not enough time, not economical, too few animals, don't have available labor, and just haven't gotten around to building as important reasons for not constructing cattle handling facilities.

Sources of information about CATCH FOUR program. Beef producers reported, at a range of 52.5 percent to 63.2 percent, that beef cattle demonstrations, Extension meetings, Extension newsletters, and Extension visits were helpful sources of information about Extension's CATCH FOUR program. Less than 50 percent, but greater than 40 percent, of the producers indicated newspaper articles, Extension office visits, telephone calls to Extension office, and telephone calls from Extension office as helpful sources of information.

Contacts with Extension. Over 55 percent of the producers attended one or more Extension beef cattle meeting, just over 44 percent had attended a beef cattle demonstration, over 68 percent visited the Extension office one or more times, almost 77 percent made one or more calls to the Extension office, over 66 percent received one or more telephone calls from the Extension office, and almost 78 percent had been visited by an Extension agent.

Recommended Management Practices. Of the 15 recommended management practices, 77 percent of the beef producers vaccinated calves for blackleg, 77 percent dewormed cows/bulls in the past 12 months, 73.1 percent dewormed calves, 88.3 percent castrated male calves, 91.3 percent used horn/face fly control, 67 percent dehorned horned cattle, 45 percent vaccinated cows and heifers for leptospirosis, 33 percent vaccinated cows and calves for respiratory disease complex, 28 percent vaccinated for brucellosis, 41.3 percent implanted calves, 44.1 percent permanently identified animals, 34.3 percent treated cattle for grubs and/or lice, 11.1 percent evaluated bulls for breeding soundness, 10.9 percent pregnancy checked females, and 10.5 percent bred females by artificial insemination.

Relationships Between Selected Tennessee Beef Cattle Producers' Personal and Farm Characteristics, Extension Contacts and the Number of Cattle Handling Facility Components Present on Their Farms

The number of cattle handling facility components present on the beef cattle producers' farms were significantly related to the four personal characteristics of the beef producers. Those personal characteristics were age of beef producer, education level of beef producers, farming status of beef producers, and major source of farm income. Beef producers ranging in age from 21 to 45 years had a greater number of cattle handling facility components on their farms than producers 46 or older. Beef producers with college or technical school training had a greater number of cattle handling facility components

on their farms than producers with less education. Full-time farmers had a greater number of cattle handling facility components on their farms than part-time or retired producers. Producers with row crops as their major source of farm income had a greater number of cattle handling facility components on their farms than producers with feeder calves as their major source of income.

There was a significant relationship between the number of cattle handling facility components present on the beef cattle producers' farms and the three farm characteristics. Those farm characteristics are number of cows/heifers exposed to bulls, number of calves weaned, and average weight of calves sold at weaning. Those producers that exposed 25 to 35 cows/heifers to bulls, weaned 17 to 35 calves and sold calves at an average weight range of 501 or more pounds had a greater number of cattle handling facility components on their farms than producers who exposed 36 or more females, weaned 36 or more calves and sold calves that weighed less than 500 pounds at weaning.

The number of cattle handling facility components present on the beef producers' farms were significantly related to seven types of Extension contacts. Those Extension contacts were Extension beef meetings attended, beef demonstrations attended, visits to Extension office, telephone calls to Extension office, telephone calls from Extension office, farm visits from Extension agent, and the total number of Extension contacts. Those producers that attended no Extension beef meetings, attended one or more beef demonstrations, did not visit the Extension office, received 3 or more telephone calls from the Extension

office, received 3 or more farm visits from the Extension agent, and had 9 to 13 total Extension contacts had a greater number of cattle handling facility components on their farms than the producers who attended one or more beef meetings, not any beef demonstrations, visited the Extension office one or more times, called the Extension office less than 3 times, received less than 3 calls from the Extension office, received less than 3 farm visits, and had fewer than 9 total Extension contacts.

Relationship Between Selected Tennessee Beef Cattle Producers' Rating of Reasons for Constructing or not Constructing and the Number of Cattle Handling Facility Components on Their Farms

The number of cattle handling facility components present on the beef cattle producers' farms were significantly related to 7 of the 10 reasons for constructing cattle handling facilities. Those reasons were economic benefit, safety, labor saving, pride of ownership, have good location, recommended by Extension, and recommended by veterinarian. Beef cattle producers who rated economic benefit, safety, labor saving, pride of ownership, have good location, recommended by Extension, and recommended by veterinarian as important reasons for constructing cattle handling facilities had a greater number of cattle handling facility components on their farms than producers who rated the reasons as not important.

The number of cattle handling facility components present on the beef cattle producers' farm were significantly related to 6 of the 11 reasons for not constructing cattle handling facilities. Those reasons

were time, not economical, no suitable location, no available materials, no plans available, and no Extension help. The beef producers who indicated time, not economical, no suitable location, no materials, no plans available, and no Extension help as important reasons for not constructing facilities had a fewer number of cattle handling facility components present on their farms than the producers who felt the reasons were not important.

Relationships Between Selected Tennessee Beef Cattle Producers' Number of Cattle Handling Facility Components Present on Their Farms and the Rating of Information Sources About Extension's CATCH FOUR Program

The number of cattle handling facility components present on the farms of beef producers was significantly related to 10 of the sources of information about Extension's CATCH FOUR program. The sources of information include Extension meetings, beef cattle demonstrations, newspaper articles, Extension newsletters, visits from Extension agents, visits to Extension office, telephone calls to Extension office, telephone calls from Extension agent, other family member contacts, and contacts with friends and/or neighbors. Beef producers with all 5 cattle handling facility components were more likely than producers with no handling facilities to rate Extension meetings, beef cattle demonstrations, newspaper articles, Extension newsletters, visits from Extension agents, visits to Extension office, and telephone calls to Extension office as helpful sources of information about Extension's CATCH FOUR program. On the other hand, beef producers with no cattle

handling facilities were more likely than producers with all 5 components to rate telephone calls from Extension agent, other family member contacts and contacts with friends and/or neighbors as not helpful sources of information about Extension's CATCH FOUR program.

Relationships Between Selected Tennessee Beef Cattle Producers' Number of Cattle Handling Facility Components Present on Their Farm and Their use of Selected Management Practices

The final sections presents findings regarding the relationships between selected Tennessee beef producers' number of cattle handling facility components present on their farms and their use of selected management practices.

The number of cattle handling facility components present on the farms of Tennessee beef producers was significantly related to the use of all 15 of the selected management practices. Those management practices include vaccinating cows/heifers for leptospirosis, vaccinating cows/calves for respiratory disease complex, vaccinating calves for blackleg, vaccinating replacement heifers for brucellosis, implanting calves, deworming cows/bulls, deworming calves, castrate male calves, dehorn horned cattle, permanently identify animals, control horn and face flies, treat cattle for grubs and/or lice, evaluate bulls for breeding soundness, pregnancy check cows/heifers, and breed cows/heifers by artificial insemination. Beef producers with all 5 cattle handling facility components on their farms were more likely than producers with no handling facilities to vaccinate cows/heifers for leptospirosis, vaccinate cows/calves for respiratory disease complex, vaccinate calves

for blackleg, implant calves one or more times, deworm cows/bulls, deworm calves, castrate male calves, dehorn horned cattle, permanently identify animals, use one or more methods to control horn and face flies, treat cattle for grubs and/or lice, to vaccinate replacement heifers for brucellosis, evaluate bulls for breeding soundness, pregnancy check females, and breed cows/heifers by artificial insemination.

IV. IMPLICATIONS AND RECOMMENDATIONS

Findings from this study indicate that beef producers age, education level, farming status, and major source of farm income were all significantly related to the number of cattle handling facility components present on the producers' farms. Beef producers ranging in age from 21 to 45 years, with college or technical school training, who were full-time farmers, and listing row crops as their major source of farm income had a greater number of cattle handling facility components on their farms than the producers who were 46 or older, had less education, were part-time farmers, or retired, and listed feeder calves as their major source of farm income. This would imply that Extension service beef programs should be adjusted to meet the needs of the target audience made up of producers who were 46 or older, had less than a college education, were part-time farmers, or retired, and listed feeder calves as their major source of income.

Findings indicated that beef producers with farm characteristics such as number of cows/heifers exposed to bulls, number of calves weaned, and average weight of calves sold at weaning were significantly related to the number of cattle handling facility components present on the beef cattle producers' farms. Beef producers that exposed 25 to 35 cows/heifers to bulls, weaned 17 to 35 calves, and sold calves at an average weight range of 501 or more pounds had a greater number of cattle handling facility components on their farms than producers who exposed 36 or more females, weaned 36 or more calves, and sold calves that weighed less than 500 pounds at weaning. It is recommended that beef cattle handling facility programs be adjusted to encourage the participation of the producers who expose 36 or more females, wean 36 or more calves, and sell calves that weigh less than 500 pounds.

Findings indicate that Extension contacts such as beef meetings, beef demonstrations, visits to Extension office, telephone calls to Extension office, telephone calls from Extension office, farm visits, and total Extension contacts were significantly related to the number of cattle handling facility components present on the beef producers' farms. Beef producers who attended no Extension beef meetings, attended one or more beef demonstrations, did not visit the Extension office, received 3 or more farm visits from the Extension agent, and had 9 to 13 total Extension contacts had a greater number of cattle handling facility components on their farms than the producers who attended one or more beef meetings, not any beef demonstrations, visited the Extension office one or more times, called the Extension office less than 3 times, received less than 3 calls from the Extension office,

received less than 3 farm visits, and had fewer than 9 total Extension contacts. This tends to imply that the Extension service should place special emphasis on the delivery methods that are found to be the most effective (i.e., Extension beef demonstrations, telephone calls from the Extension office, farm visits from the Extension agent, and 9 to 13 total Extension contacts).

Findings indicated that beef producers who rated economic benefit, safety, labor saving, pride of ownership, have good location, recommended by Extension, and recommended by veterinarian as important reasons for constructing cattle handling facilities had a greater number of cattle handling facility components on their farms than producers who rated the reasons as unimportant. This would imply that Extension programs should place special emphasis on the economic benefit, safety, and the labor saving aspects of having adequate cattle handling facilities.

Findings from this study indicated that the number of cattle handling facility components present on the farms of Tennessee beef producers were significantly related to the use of selected management practices. Those beef producers with all 5 cattle handling facility components on their farms were more likely than producers with no handling facilities to vaccinate cows/heifers for leptospirosis, vaccinate cows/calves for respiratory disease complex, vaccinate calves for blackleg, implant calves one or more times, deworm cows/bulls, deworm calves, castrate male calves, dehorn horned cattle, permanently identify animals, use one or more methods of face and horn fly control,

and treat cattle for grubs and/or lice. These findings would tend to imply that the Extension service should continue to stress the need for cattle handling facilities and emphasize to the beef producers the economic benefits they can receive from following the recommended management practices.

V. RECOMMENDATIONS FOR FURTHER STUDY

Similar studies should be made periodically to determine to what extent beef cattle handling facilities are being constructed or repaired on Tenneseee beef cattle farms. By doing so, the Extension service would characterize the Tennessee beef cattle producer and be able to meet their needs by adjusting program content and delivery methods.

Efforts should be made to continue to improve the survey instruments and the procedures used to collect the data to be studied. Extension agents should be made aware of the importance of collecting the data accurately. The survey instrument used for future studies should be designed so the beef producers can be categorized more easily to the number and type of cattle handling facilities they have on their farms.

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APPENDIX

AEE INFO-41

Tennessee Agricultural Extension Service

1987 Beef Cattle Handling Facilities Survey

(See instructions on the last page)



Card No. 1 (1)

Respondent No. 0 (2) 0 (3)

Co. Temis No. (4) (5) (6)

Part I. BEEF CATTLE HANDLING FACILITIES

1. Does your beef cattle handling facility presently include the following components:

(7) _____ a. Headgate? (1 = no; 2 = yes)

(8) _____ b. Holding chute? (1 = no; 2 = yes)

(9) _____ c. Working chute? (1 = no; 2 = yes)

(10) _____ d. Crowding pens? (1 = no; 2 = yes)

(11) _____ e. Holding pens? (1 = no; 2 = yes)

2. Was each beef cattle handling facility component constructed new or was it repaired since Jan. 1, 1985:
(1 = Constructed new since Jan. 1, 1985; 2 = repaired since Jan. 1, 1985; 3 = Do have the component but it was not constructed new and has not been repaired since Jan. 1, 1985; 4 = Do not have this component on my farm.)

(12) _____ a. Headgate?

(13) _____ b. Holding chute?

(14) _____ c. Working chute?

(15) _____ d. Crowding pens?

(16) _____ e. Holding pens?

3. Do you plan to construct new or to repair the following beef cattle handling facility components within the next 12 months:
(1 = no, do not have plans to construct or repair this component; 2 = no, not during the next 12 months but plan to at a later date; 3 = yes, do plan to construct this new component within a year; 4 = yes, plan to remodel this existing component within a year.)

(17) _____ a. Headgate?

(18) _____ b. Holding chute?

(19) _____ c. Working chute?

(20) _____ d. Crowding pens?

(21) _____ e. Holding pens?

(22) _____ Where did you obtain plans and/or information about constructing beef cattle handling facilities ?
(1 = Extension Service only; 2 = Extension Service and other sources; 3 = sources other than Extension only; 4 = no plans were used; 5 = have not constructed beef cattle handling facilities.)

5. How important do you feel is each of the following in terms of causing you or other farmers to decide to construct beef cattle handling facilities on their farm:
(1 = not important at all; 2 = not very important; 3 = important; 4 = very important.)

(23) _____ a. Economic benefits?

(24) _____ b. Safety reasons?

(25) _____ c. Labor saving reasons?

(26) _____ d. Have materials available?

(27) _____ e. Pride of ownership?

(28) _____ f. Neighbor has handling facility?

(29) _____ g. Good locations available?

(30) _____ h. Recommended by Extension?

(31) _____ i. Recommended by veterinarian?

(32) _____ j. Recommended by agribusiness?

6. Likewise, how important do you feel is each of the following in terms of causing you or other farmers to decide not to construct beef cattle facilities on their farm:
(1 = not important at all; 2 = not very important; 3 = important; 4 = very important.)

(33) _____ a. Initial cost is too great?

(34) _____ b. Not enough time to construct holding facilities?

(35) _____ c. Cannot economically justify the expense involved?

(36) _____ d. Do not have enough animals?

(37) _____ e. Do not have available labor to construct holding facilities?

(38) _____ f. Do not have a good location on farm to construct holding facilities?

(39) _____ g. Do not have materials needed to construct holding facilities?

(40) _____ h. Too old to justify the investment in holding facilities?

(41) _____ i. Do not have plans needed to construct holding facilities?

(42) _____ j. Cannot get assistance from Extension?

(43) _____ k. Just haven't gotten around to building cattle holding facilities?

Part II. SOURCES OF INFORMATION

1. How important was each of the following sources in helping to make you aware of Extension's "CATCH FOUR" program:
(1 = not aware of the program; 2 = not helpful at all; 3 = not very helpful; 4 = helpful; 5 = very helpful.)

(44) _____ a. Extension meetings?

(45) _____ b. Beef cattle demonstrations?

(46) _____ c. Radio programs?

(47) _____ d. Television programs?

(48) _____ e. Newspaper articles?

(49) _____ f. Extension newsletters?

(50) _____ g. Posters?

(51) _____ h. Bumper sticker?

(52) _____ i. Visits from Ext. Agents?

(53) _____ j. Visits to Ext. office?

(54) _____ k. Telephone calls to Extension office?

(55) _____ l. Telephone calls from Extension Agent?

(56) _____ m. Contacts with agribusiness?

(57) _____ n. Contacts with family members?

(58) _____ o. Contacts with friends and/or neighbors?

2. During the past 12-months, how many contacts of various types do you estimate you have had with Extension Agents: (Record estimated number)

(59-60) _____ _____ a. Extension beef cattle meetings?

(61-62) _____ _____ b. Extension beef cattle demonstrations?

(63-64) _____ _____ c. Visits made to Extension office?

(65-66) _____ _____ d. Telephone calls made to Extension office?

(67-68) _____ _____ e. Telephone call received from Extension office?

(69-70) _____ _____ f. Farm visits received from Extension Agent?

(71-72) _____ _____ g. Extension circular and newsletters received?

Card No. 2 (1)

Respondent No. (2) (3)

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

Part III. BEEF CATTLE MANAGEMENT SITUATION AND PRACTICES
(NOTE: Use the most recently weaned calf crop in reference to questions in Part III.)

(7) _____ 1. Were cows and replacement heifers vaccinated for leptospirosis? (1 = no; 2 = yes)

(8) _____ 2. Were cow and/or calves vaccinated for respitory disease complex, e.g. IBR, BVD, and PI3? (1 = no; 2 = yes, part of cows and calves; 3 = yes, all)

(9) _____ 3. Were calves vaccinated for blackleg? (1 = no; 2 = yes, part of calves; 3 = yes, all)

(10) _____ 4. Were replacement heifers vaccinated for Brucelosis?(1 = no; 2 = yes, part of replacement heifers; 3 = yes, all; 4 = did not keep any replacement heifers)

(11) _____ 5. How many times were calves implanted? (actual number, 0 = not any implanted

(12) _____ 6. How many times were cows and bulls dewormed during the past 12-months? (actual number; 0 = did not deworm)

(13) _____ 7. How many times were calves dewormed (most recent calf crop)? (actual number; 0 = did not deworm)

(14) _____ 8. Were male calves castrated? (1 = no, not any; 2 = yes, part of male calves; 3 = yes, all of male calves)

(15) _____ 9. Were horned cattle dehorned? (1 = no, not any; 2 = yes, part; 3 = yes, all; 4 = not any horned calves)

(16) _____ 10. Were animals permanently identified using ear tags or other methods? (1 = no; 2 = yes)

(17) _____ 11. What was the primary method used to control horn and face flies? (1 = none was used; 2 = backrubbers and/or oilers; 3 = dustbags; 4 = backrubbers with flaps; 5 = oral larvacides; 6 = ear tags)

(18) _____ 12. Were cattle treated for grubs and/or lice? (1 = yes; 2 = no)

(19) _____ 13. Were bulls evaluated for breeding soundness 30 to 45 days before breeding season began? (1 = no; 2 = yes)

(Part III, cont'd)

(20) _____ 14. Were cows or heifers pregnancy checked? (1 = no, not any; 2 = yes, part of them; 3 = yes, all of them)

(21-23) _____ _____ _____ 15. How many cows or heifers were bred by artificial insemination? (actual number; 0 = not any)

Part IV. GENERAL BEEF CATTLE SITUATION

(24-26) _____ _____ _____ 1. How many cows and heifers were exposed to bulls (including artificial insemination) in producing the last calf crop? (actual number exposed)

(27-29) _____ _____ _____ 2. How many calves were raised to weaning in the last calf crop? (actual number weaned)

(30-33) _____ _____ _____ 3. What was the average weight of calves sold at weaning? (estimated weaning weight)

Part V. RESPONDENT AND FARM SITUATION

(34) _____ 1. What is your present farming status? (1 = Full-time farm; 2 = Part-time farm; 3 = Retired)

(35-36) _____ _____ 2. What is the estimated age of the farm operator? (Note: Agent may ask actual age or estimate the age)

(37) _____ 3. What is the estimated highest level of education completed by the farm operator? (1 = less than high school; 2 = high school graduate; 3 = some college or technical school; 4 = college graduate)

(38) _____ 4. What is your major source of farm income: (1 = feeder calves; 2 = row crop; 3 = other)

Part VI. GENERAL SURVEY INSTRUCTIONS

1. Date due - March 1, 1988

2. Disposition - Mail completed survey forms to Associate District Supervisor, Agricultural Programs

3. Counties to be Surveyed - All counties.

4. Survey Population - Producers who have at least twenty-five (25) beef cows of breeding age.

5. Sampling Procedure - Applying the N^{th} number sampling technique and using an up-to-date listing of beef cattle producers:
   a) select 10 producers who since the beginning of the CATCH FOUR program (i.e. Jan. 1, 1985) have either constructed new or remodeled one or more components for handling cattle (i.e. "headgate," "holding chute," "working chute," "crowding pens," or holding pens). If 10 producers are not available, survey all producers who did something to their cattle handling facilities since Jan. 1, 1985.
   b) also, select 15 other producers who have not constructed new or repaired any component of their cattle handling facilities since the beginning of the CATCH FOUR program (Jan. 1, 1985). These producers may or may not have cattle handling facilities.

VITA

Finis Neal Smith was born November 19, 1960 to Mr. and Mrs. Charles W. Smith of Brighton, Tipton County, Tennessee. He grew up in Brighton, Tennessee where he attended Brighton Elementary School and was a graduate from Brighton High School in 1979. He entered the University of Tennessee at Martin in the fall of 1979 and completed the requirements for a Bachelor of Science degree in Agriculture, with a major in Animal Science, in December of 1983.

He was employed as an assistant Extension Agent in Hardin County, Tennessee in October 1984, responsible for youth agriculture programs.

He is married to the former Mary Grace Tipton of Covington, Tennessee.

He is a member of East End Methodist Church in Savannah, a member of the Savannah Lions Club, and a member of TAE4-HW. He was the 1989 recipient of the Outstanding Young Agent award in Tennessee.