

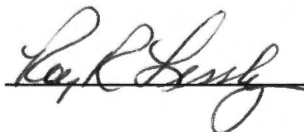
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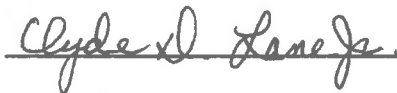
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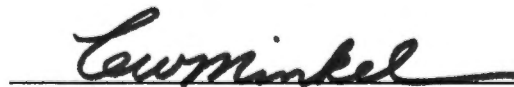

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RELATIONSHIPS BETWEEN SELECTED TENNESSEE BEEF PRODUCERS' PERSONAL
AND FARM CHARACTERISTICS AND THE AVAILABILITY OF THE
COMPONENTS OF BEEF CATTLE HANDLING FACILITIES
DURING THE "CATCH FOUR" EXTENSION
EDUCATION PROGRAM

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

Joseph Brian Signaigo

May 1990

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Thesis
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DEDICATION

This thesis is dedicated to my wife, Donna, and my daughter, Sara. For without their encouragement, support and patience, this study would not have been possible. Thus, I dedicate this thesis and express my love to both of them.

ACKNOWLEDGMENTS

The author wishes to express his appreciation for the guidance and assistance given him by Dr. Cecil E. Carter, Jr., graduate committee chairman. Without his help, this study would not have been accomplished. Appreciation is also expressed to the other members of his graduate committee, Dr. Roy R. Lessly and Dr. Clyde D. Lane, for their help in reviewing this thesis.

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Sincere appreciation is also expressed to all the researcher's friends at Golf Range Apartments for their support and encouragement during the entire graduate study.

ABSTRACT

The purpose of this study was to identify clientele for emphasis in future Extension programs in order to bring about improvements in the quality and number of beef cattle handling facilities on farms in Tennessee. To accomplish this, there was a need to determine relationships between the availability of each component of the beef cattle handling facilities and selected Tennessee beef producer and farm characteristics and beef producers' contacts with Extension. Extension agents conducted personal interviews with 1313 beef cattle producers from 73 of the 95 Tennessee counties. The data from that survey were used to compile this study. A stratified random sample of beef producers was selected from current county beef cattle mailing lists using the "nth" number technique. According to the guidelines of the survey, county Extension agents were to: (a) select 10 producers who since the beginning of the CATCH FOUR program (Jan. 1, 1985) had either constructed or remodeled one or more components for handling cattle. If 10 producers were not available, Extension agents surveyed all producers who did something to their cattle handling facilities since January 1, 1985; and, (b) also 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 (Jan. 1, 1985). These producers may or may not have had cattle handling facilities.

The survey provided general information about the producer and their farms as well as information about the availability of beef

cattle handling facilities and the number and types of contacts that producers had with Extension over the previous 12 months.

The data were processed for computer analysis. Computations were made by The University of Tennessee Computing Center. The Chi square test was 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 between variables was considered significant.

Major findings included the following:

1. Almost 40 percent of the beef producers were full-time farmers, almost 46 percent were part-time farmers and just over 14 percent were retired farmers. The mean operator age was 51.9 years. Just over 52 percent of the beef producers were high school graduates, slightly more than 33 percent had some college or technical school while almost 15 percent did not graduate from high school. Regarding the size of operation, just over 48 percent of the beef producers bred 25 to 35 cows and heifers, almost 23 percent bred 36 to 50 head and almost 29 percent bred 51 head or more. The mean number of cows and heifers bred was 50.9 head. The mean number of weaned calves raised was 45.5 and the mean weight of weaned calves sold was 482.2 pounds. Almost 83 percent of the beef producers surveyed had a headgate, 69 percent had a holding chute, almost 63 percent had a working chute, slightly more than 51 percent had a crowding pen and almost 65 percent had a holding pen.

2. Full-time farmers were more likely to have constructed or repaired each component of the beef cattle handling facility during the CATCH FOUR program than either part-time or retired farmers.

3. Younger beef producers (21 to 45 years old) were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen component of the beef cattle handling facility during the CATCH FOUR program than older beef producers (46 years or older).

4. Beef producers with some college or technical school education were more likely to have constructed or repaired each component of the beef cattle handling facility during the CATCH FOUR program than beef producers with less education.

5. Larger beef producers (bred 51 head or more) were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program than smaller beef producers (bred 50 head or less).

6. Beef producers with 9 to 13 Extension contacts were more likely to have constructed or repaired each component of the beef cattle handling facility during the CATCH FOUR program than beef producers who had 8 Extension contacts or less.

Implications and recommendations are also included in this study.

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CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

It has been estimated by Agricultural Extension Agents that no more than 25 percent of Tennessee beef producers have handling facilities in which cattle could be handled. These Extension agents further indicated that the lack of cattle handling facilities was a leading cause of poor management and consequently low returns from beef cattle operations (8)*.

Tennessee's beef industry is basically cow-calf operations, with 1,038,000 beef brood cows on 68,000 beef farms (9). If one-fourth of the state's commercial cow-calf producers have facilities to handle cattle, 17,000 beef producers can handle cattle properly. The average size beef cow herd, based on cow numbers and producers, is estimated to be 15.2 cows. Consequently, only 258,750 cow-calf units have the opportunity to be handled through beef cattle handling facilities.

Why don't more Tennessee cattle producers have cattle handling facilities? There may be several answers to that question, however one reason may be that Tennessee's cattle producers are not aware of the need to perform cattle management practices or the economic benefits that could be realized from a total management program.

*Numbers in parentheses refer to alphabetically numbered references in the bibliography.

Management practices such as vaccinating, castrating, dehorning, implanting, treating cattle for internal and external parasites, pregnancy checking, performance testing, artificial insemination and emergency herd health treatments can be accomplished safer and more efficiently through the use of cattle handling facilities. Cattle handling facilities will reduce costs and labor when handling cattle. Veterinary fees may also be reduced if the cattle can be easily caught and quickly treated (8).

It is easy to visualize that without adequate handling facilities, many of the management practices will not be performed and consequently returns to Tennessee beef producers will suffer. This may be due, in part, to mismanagement or the lack of management of cow-calf units. It would not be realistic to attribute all of these losses to the lack of cattle handling facilities. However, these losses are real and adequate handling facilities could surely help to reduce losses and increase returns to Tennessee's beef industry.

CATCH FOUR is an educational program that was conducted by The University of Tennessee Agricultural Extension Service beginning in January 1985 and continued through the fall of 1987. It was an effort to make Tennessee beef producers aware of the need for beef cattle handling facilities and how to "tailor" them to fit each beef producers' needs. CATCH FOUR stands for Consider Advantages That Cattle Handling Facilities Offer 'Ur Returns. Beef cattle meetings and demonstrations, farm visits and posters are just a few of the methods that Extension used in this educational effort.

II. NEED FOR THE STUDY

Extension agents and specialists work with the people of Tennessee to help them realize the benefit of the use of the resources available to them (in this case, beef cattle and beef cattle handling facilities). Extension agents help beef producers maximize their economic returns through the application of selected management practices. These management practices can be performed more efficiently with the use of beef cattle handling facilities. There was a need to determine relationships between the availability of each component of the beef cattle handling facilities and selected Tennessee beef producer and farm characteristics and beef producers' contacts with Extension. There was also a need to characterize selected Tennessee beef producers, the availability of components of their beef cattle handling facilities and the number and type of contacts beef producers had with Extension. The study findings could be used to target specific clientele to encourage the construction or repair of beef cattle handling facilities by Tennessee beef producers.

III. PURPOSE OF THE STUDY

The Tennessee Agricultural Extension Service is obligated and committed to providing research based information to beef producers in Tennessee. The purpose of this study was to identify clientele for priority emphasis in future Extension programs in order to help bring about improvements in quality and number of beef cattle handling facilities on farms in Tennessee. It was believed the information would

be useful to Extension administrators and specialists in making decisions regarding priority clientele for future beef cattle programs.

One objective of this study was to characterize selected Tennessee beef producers and their farm operation, to determine the availability of the various components of the beef cattle handling facilities on farms in Tennessee and identify contacts these producers had with Extension agents. Other specific objectives were to determine the relationships between the availability of the components of the beef cattle handling facilities on the farm and the beef producers' farming status, the age of the beef producer, the beef producers' education level, the beef producers' herd size, and the beef producers' contacts with Extension.

IV. LIMITATIONS OF THE STUDY

This study was limited to the analysis of the data available from the 1987 Beef Cattle Handling Facilities Survey. Those producers who reported that they had either constructed or repaired one or more components of their beef cattle handling facility from January 1985 to the fall of 1987 were surveyed. Tennessee beef producers that reported having 0 to 4 components of the beef cattle handling facilities before January 1985 also were included in this study. Producers who reported having all five components of the beef cattle handling facility before January 1985 were not included in this study. This study was also limited to beef producers who had herds of at least 25 beef cows of breeding age. The data were obtained by Extension agents through personal interviews. Producers in 73 of the 95 Tennessee

counties were surveyed. The study included data from 1313 beef producers.

V. METHODS AND PROCEDURES

Development of the Survey Instrument

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

Section of Sample

The Extension agents were instructed to select a stratified random sample from their current county listing of beef producers using the "nth" number technique. The Extension agents were instructed to:

(a) select 10 beef producers who had either constructed or repaired one or more components for handling cattle since January 1985. If 10 beef producers were not available, Extension agents surveyed all producers who did something to their cattle handling facilities since January 1985; and, (b) select 15 other beef producers who have not constructed or repaired any component of their cattle handling facilities since January 1985. These producers may or may not have had beef cattle handling facilities.

Conducting the Survey

The data were obtained from the beef producers by personal interview. Extension agents conducted the survey as per the survey instructions. The interview schedule was designed to obtain data

on size of herd, availability of beef cattle handling facilities, general farm operation characteristics and the number and type of contacts beef producers had with county Extension agents over the past 12 months.

Method of Analysis

The data were processed for computer analysis. Computations were made by the University of Tennessee Computing Center. The Chi square statistic was used to determine the strength of the relationship between dependent and independent variables. The independent variables studied were selected beef producer and farm operation characteristics and the number of contacts that producers had with Extension over the past 12 months. The dependent variables were the availability of each component of the beef cattle handling facility. The .05 probability level was the point at which a relationship between variables was considered significant.

VI. DEFINITION OF TERMS

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

1. Beef Producer--a farmer who produces beef through various avenues of production (cow-calf, backgrounder, feedlot, etc.) and who realizes income from the sale of beef cattle.

2. Beef Cattle Handling Facilities--"tools" used by beef producers that hold and restrain cattle while they are being worked. Cattle handling facilities include one or more of the following components: headgate, working chute, holding chute, crowding pen, holding pen.

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

4. Holding Chute--usually used in conjunction with the headgate, this component keeps the animal from moving side to side or turning around.

5. Working Chute--a narrow alley, usually behind and connected to the holding chute, that keeps the animals behind one another in readiness to enter the holding chute.

6. Crowding Pen--a small pen that holds just a few animals that "crowds" them into the working chute.

7. Holding Pen--a pen that "holds" the animals in close proximity to the area in which they will be worked.

8. Extension Contact--one of the various methods, such as a farm visit, phone call or letter, by which Extension agents provide agricultural information to producers on subject matter of interest to the producer.

9. CATCH FOUR--a program name used by the University of Tennessee's Agricultural Extension Service to promote the importance of the use of beef cattle handling facilities. It stands for "Consider Advantages That Cattle Handling Facilities Offer 'Ur Returns."

CHAPTER II

REVIEW OF RELATED STUDIES

There is a tremendous amount of literature available on beef production. Because of the focus on technical subject matter in beef production, most of these are only indirectly related to this study.

However, there have been several studies that relate the characteristics of Tennessee beef producers and their farm operations with the adequacy of their beef cattle handling facilities and their contacts with Extension. From these studies, pertinent findings will be reported in this review. In this chapter, studies cited are reported under the following headings: (1) personal and farm operation characteristics of Tennessee's beef producers, (2) adequacy of their beef cattle handling facilities, and (3) the beef producers' contacts with Extension.

I. PERSONAL AND FARM OPERATION CHARACTERISTICS

In Keyes' (3) 1966 survey of 36 Campbell county beef producers who had 15 or more cows in 1964, he found that 67 percent of the respondents were full-time farmers and almost 45 percent of the beef producers were under 50 years of age. The average age of all the beef producers was 52. Of these 36 beef producers, 47 percent were not high school graduates compared to 33 percent who did graduate high school. Almost 3 percent of the beef producers had some college or technical school education while 17 percent were college graduates.

Slightly more than 91 percent of the beef producers had 40 cows or less in their herds. The average herd size for all beef producers was 29 head.

Matthews' (5) 1968 study of 74 Lawrence county beef producers showed that almost 30 percent were retired compared to 27 percent full-time and 3 percent part-time farmers (this does not total 100 percent due to other major occupations that are not listed). Almost 52 percent of the beef producers were 54 years of age or younger. The average age for all beef producers was 55.2 years. Only 8 percent of these beef producers said beef was their major source of farm income, while 20 percent reported retirement income, 24 percent reported row crop, and 31 percent responded as "wage earners" as their major source of farm income. Almost 59 percent of these beef producers had less than a high school education while 37 percent were high school graduates and 4 percent had some college education. Their average education level was 8.9 years of school. Almost 92 percent of the beef producers had herd sizes of 44 cows or less. The average herd size was 18.3 cows per herd.

In 1971, Barnes' (1) study of 38 beef producers in Claiborne County who sold 6-15 calves in a graded feeder calf sale showed that 60 percent of the beef producers were full-time farmers compared to 34 percent being part-time farmers. Almost 3 percent were in other business and just over 3 percent were retired. Just over 18 percent of the beef producers reported beef as their major source of income while almost 53 percent and slightly more than 29 percent reported tobacco and other business as their major source of income,

respectively. Just over 89 percent of the beef producers had less than a high school education compared to slightly more than 10 percent who graduated high school. The average grade level for all respondents was 8. Almost 87 percent of the beef producers maintained 31 or less cows in their herds. The average herd size was 25.3 cows.

In a 1972 study of 40 Marshall County beef producers, Brewer (2) found that 58 percent were full-time farmers, 8 percent were retired and 27 percent were part-time farmers. Of these beef producers, 60 percent were 54 years of age or less. The average age of the respondents was 53.6 years of age. Almost 48 percent of the beef producers reported beef as their major source of farm income. Horses and swine were reported as the major source of farm income by 2 percent of these beef producers. Just over 5 percent of the beef producers were college graduates while almost 23 percent had some college and slightly over 72 percent had less than a high school education. The average education level for all beef producers was 12 years. Of the 40 Marshall County beef producers, 75 percent had herd sizes of 45 or less. The average herd size was 35.2 cows.

Mohamad's (6) 1979 study of 955 beef producers in 57 Tennessee counties showed that the beef producers' average age was 50.2 years old and the average number of breeding cows in their herds was 47.6 head.

In Rutter's (7) 1982 survey of 1047 beef cow-calf producers from 58 Tennessee counties, he found that just over 53 percent of the beef producers were full-time farmers compared to almost 47 percent part-time farmers. Of the 1024 beef producers who gave their age,

almost 57 percent were 50 years old or older. Of the 1033 beef producers who responded in this category, slightly more than 75 percent reported livestock as their major agricultural enterprise. Other major agricultural enterprises reported were just over 21 percent row crop and almost 4 percent other. Slightly over 91 percent of the beef producers considered beef production as their major livestock enterprise.

Killgore's (4) 1988 study of 1813 beef cow-calf producers in 85 Tennessee counties who had at least 25 cows of breeding age showed that 58 percent of the beef producers were full-time farmers. Almost 42 percent of the beef producers were under 50 years old. The mean age of all beef producers was 51 years of age. Almost 52 percent of the beef producers reported beef cattle as their major source of farm income while 48 percent reported row crop as their major source of farm income.

II. ADEQUACY OF BEEF CATTLE HANDLING FACILITIES

Keyes' (3) 1966 study showed that 58 percent of the beef producers in Campbell County did not have any components of the beef cattle handling facility. Just over 30 percent had a squeeze chute and slightly more than 11 percent of the beef producers had a squeeze chute and a headgate.

Matthews (5) reported in his 1968 study that almost 23 percent of the producers in Lawrence County did not have any components of the beef cattle handling facility. Almost 49 percent of the beef producers only had a loading chute and 15 percent reported having a loading

chute, corral and headgate. Just over 12 percent of the beef producers had a loading chute and headgate and 1 percent had a loading chute and corral.

Barnes' (1) study in 1971 showed that just over 13 percent of the beef producers in Claiborne County had chutes, corrals and/or head-gates.

In 1972, Brewer's (2) study found that almost 43 percent of the beef producers in Marshall County had chutes and corrals compared to 70 percent who reported having a headgate and 15 percent had a squeeze chute (percentages do not total 100 due to beef producers responding to more than one category).

Mohamad's (6) 1979 study showed that almost 66 percent of the Tennessee beef producers reported having adequate beef cattle handling facilities.

In Rutter's (7) 1982 study, he reported that almost 65 percent of the Tennessee beef producers had adequate beef cattle handling facilities.

In Killgore's (4) 1988 study, he reported that almost 9 percent of the Tennessee beef producers did not have any components of a beef cattle handling facility compared to just over 29 percent who reported having all 5 components of a beef cattle handling facility. Beef producers that had all 5 components of a beef cattle handling facility available were more likely to be using each of the 11 management practices studied than were producers who had no facilities.

III. TYPE OF EXTENSION CONTACT

Keyes (3) stated in his 1966 study that just over 72 percent of the Campbell County beef producers sought advice from the "county agent" compared to almost 39 percent who sought advice from the "assistant or special agent". Almost 6 percent of the beef producers were advised by the "Extension animal husbandman".

In Matthews' (5) 1968 study of Lawrence County beef producers, almost 34 percent sought advice from Extension personnel, just over 93 percent sought advice from their neighbors or friends and almost 76 percent relied on their veterinarian for advice.

Barnes' (1) 1971 study revealed that almost 95 percent of the Claiborne County beef producers went to the "county agent" for advice compared to slightly more than 5 percent who sought advice from the "special agent". All beef producers that sought advice from the county agent participated in organized feeder sales compared to almost 89 percent that did not participate in organized feeder sales.

Brewer's (2) 1972 study showed that 87 percent of the Marshall County beef producers that sought advice from the county agent were in the high category (based on number of pounds of beef sold per cow).

In 1979, Mohamad (6) found that almost 6 percent of the Tennessee beef producers called the Extension office concerning beef production. Just over 4 percent of the beef producers had visited the Extension office, slightly more than 1 percent had attended a beef meeting and the Extension agent had visited almost 4 percent of the beef producers. The average number of contacts that the beef producers

had with Extension was 19.2. Of the 14 recommended beef production practices, 6 of them (including adequate working facilities) were significantly related to the 5 Extension contacts used in this study. These Extension contacts were Extension meetings attended, beef production meetings attended, number of visits to the Extension office, number of phone calls to the Extension office and the number of farm visits from the Extension agent.

Rutter (7) found in his 1982 study that almost half (49.7 and 47.9 percent) of the beef producers attended 1 or 2 Extension beef meetings and was visited by their Extension agent 3 or more times, respectively. Just over 51 percent of the beef producers visited the Extension office 3 or more times and almost 65 percent of the beef producers called the Extension office 3 or more times. TBCIP (Tennessee Beef Cattle Improvement Program) participants had more total contacts than non-participating producers.

Killgore's (4) 1988 study showed that almost 43 percent of the Tennessee beef producers attended no Extension beef meetings while 9 percent of them attended 3 or more. The mean number of meetings attended was 1. By visiting the Extension office, just over 36 percent of the beef producers made contact with Extension, compared to 39 percent who visited the Extension office 1 or 2 times and 25 percent who visited the Extension office 3 or more times. The mean number of visits to the Extension office was 2.

The Extension office was called by 35 percent of the beef producers 1 or 2 times, 38 percent called 3 times or more and almost 28 percent did not call the Extension office. The Extension agent

visited just over 30 percent of the beef producers 3 or more times, almost 44 percent of the beef producers 1 or 2 times and made no visits to slightly more than 26 percent of the beef producers. The mean number of Extension agent visits to the beef producers was 2. Beef producers who attended 1 or more Extension meetings, those who made 1 or more office visits, those that made 1 or more phone calls and those that received 1 or more farm visits from the Extension agent were more likely than those who did not to have all 5 components of the beef cattle handling facility.

CHAPTER III

DESCRIPTION OF AND RELATIONSHIPS BETWEEN CHARACTERISTICS OF SELECTED BEEF PRODUCERS AND THEIR FARM OPERATIONS AND THE AVAILABILITY OF COMPONENTS OF BEEF CATTLE HANDLING FACILITIES

Findings are presented in this chapter regarding the relationships between the availability of the five components of the beef cattle handling facilities (dependent variable) and selected farm and producer characteristics (independent variable). The five components of the beef cattle handling facility used in the analysis of the data were: headgate, holding chute, working chute, crowding pens and holding pens. Data were analyzed in terms of whether or not producers had constructed each component since January 1985, repaired each component since January 1985, had the component prior to 1985 or component was not available. The farm and producer characteristics studied included farming status, age, education level, number of cows or heifers bred (herd size) and number of Extension contacts. Data were summarized and reported in six tables. Findings reported in each table are organized and discussed in separate sections.

Section I presents findings regarding characteristics of selected Tennessee beef cattle producer and farm characteristics and the availability of beef cattle handling facilities on their farms.

Section II presents findings regarding the relationships between the beef producers' farming status and components of the beef cattle handling facilities available on the farm.

Section III presents findings regarding the relationships between the age of the beef producers and components of the beef cattle handling facilities available on the farm.

Section IV presents findings regarding the relationships between the beef producers' education level and components of the beef cattle handling facilities available on the farm.

Section V presents findings regarding the relationships between the number of cows and heifers bred and components of the beef cattle handling facilities available on the farm.

Section VI presents findings regarding the relationships between the number of contacts that beef producers had with Extension and components of the beef cattle handling facilities available on the farm.

I. DESCRIPTION OF SELECTED TENNESSEE BEEF CATTLE PRODUCERS AND THEIR FARM OPERATIONS, THEIR BEEF CATTLE HANDLING FACILITIES AND THEIR CONTACTS WITH EXTENSION

This section presents findings that describe the beef producers, their beef cattle handling facilities and their contacts with Extension. Frequencies (numbers of producers) and percentages were used to summarize the findings presented in Table I.

Beef Producer Characteristics

The beef producers' personal characteristics studied included farming status, age and education level.

Table I. Characteristics of Selected Tennessee Beef Cattle Producers, Availability of Beef Cattle Handling Facilities and Their Contacts With Extension, 1987

Beef Producer and Farm Characteristics	Number of Producers	Valid Percent of Respondents
<u>Beef Producer Characteristics</u>		
Farming Status		
Full-time	512	39.7
Part-time	592	45.9
Retired	186	14.4
TOTAL	1290	100.0
Operator Age		
21-45	429	32.7
46-60	533	40.6
61-over	350	26.7
TOTAL	1312	100.0
Mean = 51.87		
Operator Education Level		
Less than High School	187	14.5
High School Graduate	675	52.3
College or Technical School	429	33.2
TOTAL	1291	100.0
<u>Farm Characteristics</u>		
Major Source of Farm Income		
Feeder Calves	623	48.4
Row Crop	280	21.7
Other	386	29.9
TOTAL	1289	100.0
Total Number of Cows-Heifers Bred		
25-35	636	48.4
36-50	298	22.7
51-over	379	28.9
TOTAL	1313	100.0
Mean = 50.87		
Number of Calves Raised to Weaning		
17-35	710	54.5
36-50	266	20.4
51-over	327	25.1
TOTAL	1303	100.0
Mean = 45.50		
Average Weight of Weaned Calves Sold		
225-400	131	10.0
401-500	801	61.0
501-over	381	29.0
TOTAL	1313	100.0
Mean = 482.22		
<u>Beef Cattle Handling Facilities</u>		
Have Headgate		
No	224	17.1
Yes	1089	82.9
TOTAL	1313	100.0
Have Holding Chute		
No	407	31.0
Yes	906	69.0
TOTAL	1313	100.0

Table I (Continued)

Beef Producer and Farm Characteristics	Number of Producers	Valid Percent of Respondents
Have Working Chute		
No	491	37.4
Yes	822	62.6
TOTAL	1313	100.0
Have Crowding Pens		
No	638	48.6
Yes	675	51.4
TOTAL	1313	100.0
Have Holding Pens		
No	463	35.3
Yes	850	64.7
TOTAL	1313	100.0
<u>Beef Cattle Handling Facility Component</u>		
<u>Constructed or Repaired Since January 1985</u>		
Headgate		
Do Not Have	230	17.5
Constructed	412	31.4
Repaired	245	18.7
Had Prior to January 1985	426	32.4
TOTAL	1313	100.0
Holding Chute		
Do Not Have	411	31.3
Constructed	353	26.9
Repaired	282	21.5
Had Prior to January 1985	267	20.3
TOTAL	1313	100.0
Working Chute		
Do Not Have	497	37.8
Constructed	333	25.4
Repaired	285	21.7
Had Prior to January 1985	198	15.1
TOTAL	1313	100.0
Crowding Pens		
Do Not Have	648	49.4
Constructed	279	21.2
Repaired	230	17.5
Had Prior to January 1985	156	11.9
TOTAL	1313	100.0
Holding Pens		
Do Not Have	475	36.1
Constructed	287	21.9
Repaired	289	22.0
Had Prior to January 1985	262	20.0
TOTAL	1313	100.0
Number of Five Beef Cattle Handling Facilities Constructed or Repaired Since January 1985		
0	509	38.8
1	74	5.6
2	101	7.7
3	155	11.8
4	116	8.8
5	358	27.3
TOTAL	1313	100.0

Mean = 2.28

Table I (Continued)

Beef Producer and Farm Characteristics	Number of Producers	Valid Percent of Respondents
<u>Contacts With Extension</u>		
Beef Meetings Attended		
Not Any	471	36.9
One	477	37.5
2-7	327	25.6
TOTAL	1275	100.0
Mean = 1.10		
Beef Demonstrations Attended		
Not Any	620	48.5
One	484	37.8
2 or more	175	13.7
TOTAL	1279	100.0
Mean = 0.70		
Visits to Extension Office		
Not Any	305	23.8
1-2	528	41.2
3 or more	448	35.0
TOTAL	1281	100.0
Mean = 2.45		
Phone Calls to Extension Office		
Not Any	265	20.6
1-2	446	34.8
3-5	388	30.2
6 or more	185	14.4
TOTAL	1284	100.0
Mean = 3.11		
Phone Calls From Extension Office		
Not Any	369	29.0
1-2	539	42.3
3 or more	366	28.7
TOTAL	1274	100.0
Mean = 2.24		
Farm Visit From Extension Agent		
Not Any	241	18.9
1-2	656	51.4
3 or more	379	29.7
TOTAL	1276	100.0
Mean = 2.25		
Extension Newsletter Received		
Not Any	137	10.7
1-6	686	53.8
7 or more	452	35.5
TOTAL	1275	100.0
Mean = 7.23		
Total Number of Extension Contacts		
0-4	429	34.1
5-8	504	40.1
9-13	325	25.8
TOTAL	1258	100.0
Mean = 11.81		

Almost 40 percent of the beef producers were full-time farmers, compared to almost 46 percent part-time farmers and slightly more than 14 percent of the beef producers were retired.

Regarding ages of the beef producers, almost 33 percent were between the ages of 21 and 45, compared to almost 41 percent that were from 46 to 60 years old and almost 27 percent were 61 years old or older. The mean age for all beef producers was 51.9 years.

Almost 15 percent of the beef producers had less than a high school education, compared to slightly over 52 percent who graduated high school and just over 33 percent who had some college or technical school education.

Farm Characteristics

Four variables pertaining to the beef producers' farm operation were major source of farm income, total number of cows and heifers bred, number of calves raised to weaning and average weight of weaned calves sold.

Findings indicated that just over 48 percent of the beef producers reported feeder calves as their major source of farm income, while almost 22 percent reported row crop and almost 30 percent reported other.

Regarding size of operation, findings indicated that slightly over 48 percent of the beef producers bred 25 to 35 cows and heifers, compared to almost 23 percent who bred 36 to 50 cows and heifers and almost 29 percent who reported 51 or more cows and heifers bred. The mean number of cows and heifers bred was 50.9.

As indicated in Table I, almost 55 percent of the beef producers raised 17 to 35 calves to weaning, slightly more than 20 percent raised 36 to 50 and just over 25 percent that raised 51 or more. The mean number of calves weaned was 45.5.

Regarding average weight of calves sold at weaning, 10 percent of the beef producers sold calves that weighed 225 to 400 pounds, 61 percent sold 401 to 500 pound calves and 29 percent sold calves at 501 or more pounds. The mean weight of the weaned calves sold was 482.2 pounds.

Beef Cattle Handling Facilities

This subsection reports findings regarding the components of beef cattle handling facilities available on farms. These components were headgate, holding chute, working chute, crowding pens and holding pens.

Almost 83 percent of the beef producers surveyed had a headgate, 69 percent had a holding chute, almost 63 percent had a working chute, just over 51 percent had crowding pens and almost 65 percent had holding pens. Therefore, producers surveyed were more likely to have headgates and holding chutes and least likely to have holding pens, working chutes and crowding pens.

Beef Cattle Handling Facility Component Constructed or Repaired Since January 1985

This subsection presents findings regarding components of the beef cattle handling facility constructed or repaired after the beginning of the CATCH FOUR program. Each of these components were categorized as

follows: do not have, constructed, repaired or had prior to January 1985. The number of five beef cattle handling facilities constructed or repaired since January 1985 was categorized as follows: 0, 1, 2, 3, 4 and 5.

Availability, construction or repair of each beef cattle handling facility component. During the CATCH FOUR program, a higher percent of producers (50.1) had constructed or had repaired their headgate than any other component of the beef cattle handling facility. Beef producers (49.4 percent) were less likely to have had crowding pens than the headgate (17.5 percent), holding chute (31.3 percent), working chute (37.8 percent) or holding pen (36.1 percent) components of the beef cattle handling facility. A higher percent of producers (32.4) had the headgate prior to the beginning of the CATCH FOUR educational program (January 1985) than any other component of the beef cattle handling facility.

The data in Table I indicates that almost 39 percent of the beef producers did not construct or repair any of the beef cattle handling facilities, compared to almost 34 percent that constructed or repaired 1 to 4 components of the beef cattle handling facility and slightly over 27 percent that constructed or repaired all 5 beef cattle handling facility components. The mean number of 5 beef cattle handling facility components constructed or repaired during the CATCH FOUR program was 2.3.

Contacts With Extension

Findings presented in this subsection pertain to the number and type of contact that the beef producers had with Extension over a 12 month time period. The types of contacts studied included beef meetings, beef cattle demonstrations, visits to the Extension office, phone calls to the Extension office, phone calls from the Extension office, farm visits from Extension agents, Extension newsletters received and total number of Extension contacts. Producers reported the estimated number of each type of contact made during the past 12 months.

A higher percent (89.3) of beef producers surveyed had contact with Extension through newsletters than any other type of Extension contact. Slightly more than 81 percent of the beef producers received 1 or more farm visits from the Extension agent, just over 79 percent called the Extension office 1 or more times and slightly more than 76 percent visited the Extension office 1 time or more during the past 12 months. Over 51 percent of the beef producers made contact with Extension by receiving 1 or more phone calls from the Extension office, attending 1 or more beef meetings and attending 1 or more beef demonstrations. Of beef producers that had no contact with Extension, a higher percent (48.5) attended no beef demonstrations than any other type of contact with Extension. The mean total number of contacts that producers had with Extension was 11.8.

II. RELATIONSHIPS BETWEEN SELECTED BEEF PRODUCERS'
FARMING STATUS AND COMPONENTS OF BEEF CATTLE
HANDLING FACILITIES AVAILABLE ON FARM

This section reports findings regarding relationships between the beef producers' farming status and components of beef cattle handling facilities available on their farms. Producers reported their farming status as full-time farmer, part-time farmer or retired. Each of the following five subsections present findings regarding relationships between the beef producers' farming status and the availability of the headgate, holding chute, working chute, crowding pen and holding pen component of the beef cattle handling facility.

Farming Status and Availability of Headgate

Data in Table II indicates that just over 55 percent of the beef producers who were full-time farmers constructed or repaired a headgate during the CATCH FOUR program, compared to slightly more than 48 percent of the part-time farmers and almost 42 percent of those who were retired. When tested by the χ^2 test, the producers' farming status was significantly related to the availability of the headgate component of the beef cattle handling facilities. Full-time farmers were more likely than part-time farmers and retired farmers to have constructed or repaired the headgate during the CATCH FOUR Extension program.

Farming Status and Availability of Holding Chute

As indicated in Table II, almost 56 percent of the full-time farmers compared to about 46 percent of the part-time farmers and just

Table II. Relationships Between Selected Beef Producers' Farming Status and Components of Beef Cattle Handling Facilities Available on Farm, 1987

Availability of Components	Farming Status					
	Full-Time		Part-Time		Retired	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Headgate						
Constructed Since January 1985	169	33.0	189	31.9	47	25.3
Repaired Since January 1985	114	22.3	97	16.4	31	16.6
Had Prior to 1985	170	33.2	188	31.8	61	32.8
Component Not Available	59	11.5	118	19.9	47	25.3
TOTAL	512	100.0	592	100.0	186	100.0
Statistical test $\chi^2 = 27.45$; DF = 6; p < 0.01						
Holding Chute						
Constructed Since January 1985	149	29.1	158	26.7	40	21.5
Repaired Since January 1985	135	26.4	111	18.8	33	17.7
Had Prior to 1985	106	20.7	118	19.9	37	19.9
Component Not Available	122	23.8	205	34.6	76	40.9
TOTAL	512	100.0	592	100.0	186	100.0
Statistical test $\chi^2 = 28.61$; DF = 6; p < 0.01						
Working Chute						
Constructed Since January 1985	145	28.4	142	24.0	39	21.0
Repaired Since January 1985	140	27.3	113	19.1	30	16.1
Had Prior to 1985	86	16.8	86	14.5	24	12.9
Component Not Available	141	27.5	251	42.4	93	50.0
TOTAL	512	100.0	592	100.0	186	100.0
Statistical test $\chi^2 = 42.21$; DF = 6; p < 0.01						
Crowding Pens						
Constructed Since January 1985	132	25.8	115	19.4	28	15.1
Repaired Since January 1985	114	22.3	86	14.5	28	15.1
Had Prior to 1985	71	13.8	57	9.6	28	15.1
Component Not Available	195	38.1	334	56.5	102	54.7
TOTAL	512	100.0	592	100.0	186	100.0
Statistical test $\chi^2 = 45.43$; DF = 6; p < 0.01						
Holding Pens						
Constructed Since January 1985	133	26.0	115	19.4	31	16.7
Repaired Since January 1985	137	26.8	113	19.1	37	19.9
Had Prior to 1985	109	21.2	105	17.7	41	22.0
Component Not Available	133	26.0	259	43.8	77	41.4
TOTAL	512	100.0	592	100.0	186	100.0
Statistical test $\chi^2 = 43.42$; DF = 6; p < 0.01						

over 39 percent of the retired farmers constructed or repaired a holding chute during the CATCH FOUR program. The χ^2 test indicated that the producers' farming status was significantly related to the availability of the holding chute component of the beef cattle handling facilities. Full-time farmers were more likely to have constructed or repaired a holding chute during the CATCH FOUR program than either part-time or retired farmers.

Farming Status and Availability of Working Chute

Data in Table II indicates that almost 56 percent of the full-time farmers had constructed or repaired a working chute during the CATCH FOUR program, compared to just over 43 percent part-time and slightly more than 37 percent retired farmers. When tested by the χ^2 test, producers' farming status was significantly related to the availability of the working chute component of the beef cattle handling facilities. Full-time farmers were more likely to have constructed or repaired a working chute during the CATCH FOUR program than either part-time or retired farmers.

Farming Status and Availability of Crowding Pens

Just over 48 percent of the full-time farmers compared to almost 34 percent of the part-time farmers and slightly more than 30 percent of the retired farmers constructed or repaired a crowding pen during the CATCH FOUR program. When tested by the χ^2 test, the producers' farming status was significantly related to the availability of the crowding pen component of the beef cattle handling facilities.

Full-time farmers were more likely to have constructed or repaired a crowding pen during the CATCH FOUR program than either part-time or retired farmers.

Farming Status and Availability of Holding Pens

Almost 53 percent of the full-time farmers constructed or repaired a holding pen during the CATCH FOUR program, compared to almost 39 percent part-time and almost 37 percent retired farmers. The χ^2 test indicates that the producers' farming status was significantly related to the availability of the holding pen component of the beef cattle handling facilities. Full-time farmers were more likely to have constructed or repaired a holding pen during the CATCH FOUR program than either part-time or retired farmers.

Table Summary

Farming status was significantly related to the availability of each of the five components of the beef cattle handling facilities on producers' farms.

Full-time farmers were more likely to have constructed or repaired each beef cattle handling facility component during the CATCH FOUR program than either the part-time or the retired farmers.

III. RELATIONSHIPS BETWEEN AGE OF SELECTED BEEF PRODUCERS AND COMPONENTS OF BEEF CATTLE HANDLING FACILITIES AVAILABLE ON FARM

This section presents findings regarding relationships between the ages of the beef producers and components of the beef cattle handling

facilities available on their farms. Producers were classified and analyzed in terms of these age groups; 21 to 45, 46 to 60, and 61 and over. Findings were organized and are presented in terms of the availability of each of the five beef cattle handling facility components on producers' farms.

Age and Availability of Headgate

Data in Table III indicates that just over 59 percent of the 21 to 45 year old beef producers constructed or repaired a headgate during the CATCH FOUR program, compared to almost 48 percent of the 46 to 60 year old and almost 43 percent of the 61 years and older beef producers. When tested by the χ^2 test, the producers' age was significantly related to the availability of the headgate component of the beef cattle handling facilities. Younger beef producers (21 to 45 years old) were more likely to have constructed or repaired a headgate during the CATCH FOUR program than those producers in the 46 to 60 and the 61 and older age groups.

Age and Availability of Holding Chute

Data in Table III indicates that almost 55 percent of the 21 to 45 year old beef producers had constructed or repaired a holding chute during the CATCH FOUR program, compared to almost 49 percent of the 46 to 60 age group and just over 40 percent of the beef producers who were 61 years old or older. The χ^2 test indicated a significant relationship between the age of the beef producer and the availability of the holding chute component of the beef cattle handling facilities. Younger beef producers (age 45 or less) were more likely

to have constructed or repaired a holding chute during the CATCH FOUR program than older beef producers (46 years or older).

Age and Availability of Working Chute

As indicated in Table III, slightly over 54 percent of the younger producers (21 to 45 years old) had constructed or repaired a working chute during the CATCH FOUR program, compared to almost 48 percent of the beef producers in the 46 to 60 age group and 38 percent of the beef producers who were 61 years old or older. The χ^2 test indicated a significant relationship between the age of the beef producers and the availability of the working chute component of the beef cattle handling facilities. Younger beef producers (21 to 45 years old) were more likely to have constructed or repaired a working chute during the CATCH FOUR program than older beef producers (46 years or older).

Age and Availability of Crowding Pens

From Table III, 47 percent of the 21 to 45 year old beef producers had constructed or repaired a crowding pen during the CATCH FOUR program, compared to just over 39 percent of the 46 to 60 year old group and 28 percent of the older beef producers (61 years old or more). When tested by the χ^2 test, the age of the beef producer was significantly related to the availability of the crowding pen component of the beef cattle handling facilities. Younger beef producers (21 to 45 years old) were more likely to have constructed or repaired a crowding pen during the CATCH FOUR program than beef producers that were over 45 years old.

Age and Availability of Holding Pens

Data in Table III indicates that slightly more than 49 percent of the younger beef producers (21 to 45 years old) had constructed or repaired a holding pen during the CATCH FOUR program, compared to almost 44 percent of the beef producers that were 46 to 60 years old and almost 38 percent of the older beef producers (61 years or older). The χ^2 test indicates a significant relationship between the age of beef producer and availability of the holding pen component of the beef cattle handling facilities. Younger beef producers (21 to 45 years old) were more likely to have constructed or repaired a holding pen during the CATCH FOUR program than older beef producers (46 years and older).

Table Summary

Age of the beef producers was significantly related to the availability of each of the beef cattle handling facility components.

Younger beef producers (21 to 45 years old) were more likely to have constructed or repaired the headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program than beef producers who were 46 years old or older.

IV. RELATIONSHIPS BETWEEN SELECTED BEEF PRODUCERS' EDUCATION LEVEL AND COMPONENTS OF BEEF CATTLE HANDLING FACILITIES AVAILABLE ON FARM

This section presents findings regarding the relationship between the beef producers' education level and components of the beef cattle

handling facilities available on their farms. For purposes of this analysis, beef producers' education level was classified as less than high school, high school graduate and some college or technical school. Findings were organized and are presented in terms of the availability of each of the five beef cattle handling facility components on producers' farms.

Education and Availability of Headgate

Data in Table IV indicates that almost 59 percent of the beef producers with some college or technical school education constructed or repaired a headgate during the CATCH FOUR program, compared to almost 49 percent who were high school graduates and slightly more than 36 percent who did not graduate high school. When tested by the χ^2 test, the beef producers' education level was significantly related to the availability of the headgate component of the beef cattle handling facilities. Beef producers who had some college or technical school education were more likely to have constructed or repaired a headgate during the CATCH FOUR program than beef producers with less education.

Education and Availability of Holding Chute

As indicated in Table IV, almost 59 percent of the beef producers who had some college or technical school education constructed or repaired a holding chute during the CATCH FOUR program, compared to just over 46 percent of the high school graduates and slightly more than 33 percent of the beef producers who did not graduate high school.

Table VI. Relationships Between the Number of Extension Contacts and Components of Beef Cattle Handling Facilities Available on Farm, 1987

	Number of Extension Contacts					
	0-4		5-8		9-13	
Availability of Components	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Headgate						
Constructed Since January 1985	90	21.0	181	36.0	125	38.5
Repaired Since January 1985	58	13.5	100	19.8	76	23.4
Had Prior to 1985	153	35.7	175	34.7	82	25.2
Component Not Available	128	29.8	48	9.5	42	12.9
TOTAL	429	100.0	504	100.0	325	100.0
	Statistical test $\chi^2 = 101.01; DF = 6; p < 0.01$					
Holding Chute						
Constructed Since January 1985	73	17.0	148	29.4	116	35.7
Repaired Since January 1985	61	14.2	121	24.0	91	28.0
Had Prior to 1985	107	24.9	100	19.8	51	15.7
Component Not Available	188	43.9	135	26.8	67	20.6
TOTAL	429	100.0	504	100.0	325	100.0
	Statistical test $\chi^2 = 89.25; DF = 6; p < 0.01$					
Working Chute						
Constructed Since January 1985	64	14.9	146	29.0	109	33.5
Repaired Since January 1985	69	16.1	119	23.6	88	27.1
Had Prior to 1985	71	16.6	80	15.9	40	12.3
Component Not Available	225	52.4	159	31.5	88	27.1
TOTAL	429	100.0	504	100.0	325	100.0
	Statistical test $\chi^2 = 83.03; DF = 6; p < 0.01$					
Crowding Pens						
Constructed Since January 1985	59	13.8	117	23.2	91	28.0
Repaired Since January 1985	44	10.2	92	18.3	83	25.5
Had Prior to 1985	57	13.3	62	12.3	35	10.8
Component Not Available	269	62.7	233	46.2	116	35.7
TOTAL	429	100.0	504	100.0	325	100.0
	Statistical test $\chi^2 = 74.26; DF = 6; p < 0.01$					
Holding Pens						
Constructed Since January 1985	63	14.7	117	23.2	91	28.0
Repaired Since January 1985	55	12.8	121	24.0	101	31.1
Had Prior to 1985	92	21.4	99	19.6	59	18.1
Component Not Available	219	51.1	167	33.2	74	22.8
TOTAL	429	100.0	504	100.0	325	100.0
	Statistical Test $\chi^2 = 88.99; DF = 6; p < 0.01$					

The x^2 test indicated that beef producer education level was significantly related to the availability of the holding chute component of the beef cattle handling facilities. Beef producers that had some college or technical school education were more likely to have constructed or repaired a holding chute during the CATCH FOUR program than beef producers with less education.

Education and Availability of Working Chute

From Table IV, just over 59 percent of the beef producers with some college or technical school education constructed or repaired a working chute during the CATCH FOUR program, compared to almost 46 percent who graduated high school and almost 26 percent who had less than a high school education. When tested by the x^2 test, beef producer education level was significantly related to the availability of the working chute component of the beef cattle handling facilities. Beef producers with some college or technical school education were more likely to have constructed or repaired a working chute during the CATCH FOUR program than beef producers with less education.

Education and Availability of Crowding Pens

Data in Table IV indicates that 52 percent of the beef producers with some college or technical school education constructed or repaired a crowding pen during the CATCH FOUR program, compared to just over 36 percent who graduated high school and slightly more than 19 percent with less than a high school education. The x^2 test indicated that beef producer education level was significantly related

to the availability of the crowding pen component of the beef cattle handling facilities. Beef producers with some college or technical school education were more likely to have constructed or repaired a crowding pen during the CATCH FOUR program than beef producers with less education.

Education and Availability of Holding Pens

As indicated in Table IV, just over 56 percent of the beef producers with some college or technical school education had constructed or repaired a holding pen during the CATCH FOUR program, compared to 41 percent of the high school graduates and just over 26 percent who did not graduate high school. When tested by the χ^2 test, the beef producers' education level was significantly related to the availability of the holding pen component of the beef cattle handling facilities. Beef producers with some college or technical school education were more likely to have constructed or repaired a holding pen during the CATCH FOUR program than beef producers with less education.

Table Summary

Data in Table IV indicates a significant relationship exists between the education level of beef producers and the availability of each of the five beef cattle handling facility components.

Beef producers with some college or technical school education were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program than beef producers who had a high school education or less.

V. RELATIONSHIPS BETWEEN THE NUMBER OF COWS AND HEIFERS BRED
AND COMPONENTS OF BEEF CATTLE HANDLING FACILITIES
AVAILABLE ON FARM

This section presents findings regarding the relationship between the number of cows and heifers bred and components of the beef cattle handling facilities available on the farms. Categories for herd size used to classify producers were 25 to 35 head, 36 to 50 head and 51 head or more. Findings were organized and are presented in terms of the availability of each of the five beef cattle handling facility components on producers' farms. These findings are summarized in Table V.

Number of Cows and Heifers Bred and Availability
of Headgate

Almost 60 percent of the beef producers who bred 51 head or more constructed or repaired a headgate during the CATCH FOUR program, compared to slightly over 55 percent who bred 36 to 50 head and almost 42 percent who bred 25 to 35 head. When tested by the χ^2 test, the number of cows and heifers bred was significantly related to the availability of the headgate component of the beef cattle handling facilities. Beef cattle producers who bred 51 head or more were more likely to have constructed or repaired a headgate during the CATCH FOUR program than beef producers who bred less than 50 head.

Table V. Relationships Between the Number of Cows and Heifers Bred and Components of Beef Cattle Handling Facilities Available on Farm, 1987

Availability of Components	Number of Cows and Heifers Bred					
	25-35		36-50		51-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Headgate						
Constructed Since January 1985	172	27.0	99	33.2	141	37.2
Repaired Since January 1985	93	14.6	66	22.1	86	22.7
Had Prior to 1985	202	31.8	105	35.3	119	31.4
Component Not Available	169	26.6	28	9.4	33	8.7
TOTAL	636	100.0	298	100.0	379	100.0
	Statistical test $\chi^2 = 77.75$; DF = 6; $p < 0.01$					
Holding Chute						
Constructed Since January 1985	136	21.4	85	28.6	132	34.8
Repaired Since January 1985	103	16.1	79	26.5	100	26.4
Had Prior to 1985	125	19.7	60	20.1	82	21.6
Component Not Available	272	42.8	74	24.8	65	17.2
TOTAL	636	100.0	298	100.0	379	100.0
	Statistical test $\chi^2 = 87.79$; DF = 6; $p < 0.01$					
Working Chute						
Constructed Since January 1985	127	20.0	78	26.2	128	33.8
Repaired Since January 1985	94	14.8	78	26.2	113	29.8
Had Prior to 1985	90	14.1	49	16.4	59	15.6
Component Not Available	325	51.1	93	31.2	79	20.8
TOTAL	636	100.0	298	100.0	379	100.0
	Statistical test $\chi^2 = 108.94$; DF = 6; $p < 0.01$					
Crowding Pens						
Constructed Since January 1985	99	15.6	58	19.5	122	32.2
Repaired Since January 1985	64	10.1	70	23.5	96	25.3
Had Prior to 1985	81	12.7	27	9.0	48	12.7
Component Not Available	392	61.6	143	48.0	113	29.8
TOTAL	636	100.0	298	100.0	379	100.0
	Statistical test $\chi^2 = 122.36$; DF = 6; $p < 0.01$					
Holding Pens						
Constructed Since January 1985	108	17.0	57	19.1	122	32.2
Repaired Since January 1985	94	14.7	89	29.9	106	28.0
Had Prior to 1985	125	19.7	60	20.1	77	20.3
Component Not Available	309	48.6	92	30.9	74	19.5
TOTAL	636	100.0	298	100.0	379	100.0
	Statistical test $\chi^2 = 114.51$; DF = 6; $p < 0.01$					

Number of Cows and Heifers Bred and Availability of
Holding Chute

Just over 61 percent of the beef producers that bred 51 head or more constructed or repaired a holding chute during the CATCH FOUR program, compared to slightly more than 55 percent who bred 36 to 50 head and almost 38 percent who bred 25 to 35 head. When tested by the χ^2 test, the number of cows and heifers bred was significantly related to the availability of the holding chute component of the beef cattle handling facilities. Beef producers that bred 51 head or more were more likely to have constructed or repaired a holding chute during the CATCH FOUR program than beef producers that bred less than 50 head.

Number of Cows and Heifers Bred and Availability of
Working Chute

Almost 64 percent of the beef producers that bred 51 head or more constructed or repaired a working chute during the CATCH FOUR program, compared to just over 52 percent who bred 36 to 50 head and almost 35 percent who bred 25 to 35 head. When tested by the χ^2 test, the number of cows and heifers bred was significantly related to the availability of the working chute component of the beef cattle handling facilities. Beef producers that bred 51 head or more were more likely to have constructed or repaired a working chute during the CATCH FOUR program than beef producers that bred 50 head or less.

Number of Cows and Heifers Bred and Availability of
Crowding Pens

Almost 58 percent of the beef producers that bred 51 head or more constructed or repaired a crowding pen during the CATCH FOUR program, compared to 43 percent who bred 36 to 50 head and almost 26 percent who bred 25 to 35 head. The χ^2 test indicated a significant relationship between the number of cows and heifers bred and the availability of the crowding pen component of the beef cattle handling facilities. Beef producers who bred 51 head or more were more likely to have constructed or repaired a crowding pen during the CATCH FOUR program than beef producers who bred 50 head or less.

Number of Cows and Heifers Bred and Availability of
Holding Pen

Just over 60 percent of the beef producers that bred 51 head or more constructed or repaired a holding pen during the CATCH FOUR program, compared to 49 percent who bred 36 to 50 head and almost 32 percent who bred 25 to 35 head. The χ^2 test indicates a significant relationship between the number of cows and heifers bred and the availability of the holding pen component of the beef cattle handling facilities. Beef cattle producers who bred 51 head or more were more likely to have constructed or repaired a holding pen during the CATCH FOUR program than beef producers who bred 50 head or less.

Table Summary

Major findings reported in Table V are that the number of cows and heifers bred was significantly related to the availability of

headgates, holding chutes, working chutes, crowding pens and holding pens. Beef producers who bred 51 head or more were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program than beef producers who bred 50 head or less.

VI. RELATIONSHIPS BETWEEN THE NUMBER OF EXTENSION CONTACTS
AND COMPONENTS OF BEEF CATTLE HANDLING FACILITIES
AVAILABLE ON FARM

This section presents findings regarding the relationship between the number of Extension contacts and components of the beef cattle handling facilities available on the farms. Producers were classified into three categories (0 to 4, 5 to 8 and 9 to 13) according to the total number of contacts of all types that they had during the past 12 months with Extension agents. These findings are summarized in Table VI.

Number of Extension Contacts and Availability
of Headgate

Almost 62 percent of the beef producers with 9 to 13 contacts constructed or repaired a headgate during the CATCH FOUR program, compared to almost 56 percent who had 5 to 8 contacts and almost 35 percent who had 0 to 4 contacts. When tested by the χ^2 test, the number of Extension contacts was significantly related to the availability of the headgate component of the beef cattle handling facilities. Beef producers with 9 to 13 contacts were more likely to have

constructed or repaired a headgate during the CATCH FOUR program than beef producers with 8 contacts or less.

Number of Extension Contacts and Availability of
Holding Chute

Almost 64 percent of the beef producers with 9 to 13 contacts constructed or repaired a holding chute during the CATCH FOUR program, compared to just over 53 percent who had 5 to 8 contacts and slightly more than 31 percent who had 0 to 4 contacts. The χ^2 test indicates that there was a significant relationship between the number of Extension contacts and the availability of the holding chute component of the beef cattle handling facilities. Beef producers with 9 to 13 contacts were more likely to have constructed or repaired a holding chute during the CATCH FOUR program than beef producers with 8 contacts or less.

Number of Extension Contacts and Availability of
Working Chute

Almost 61 percent of the beef producers with 9 to 13 contacts constructed or repaired a working chute during the CATCH FOUR program, compared to almost 53 percent who had 5 to 8 contacts and almost 31 percent who had 0 to 4 contacts. The χ^2 test indicated that there was a significant relationship between the number of Extension contacts and the availability of the working chute component of the beef cattle handling facilities. Beef producers with 9 to 13 contacts were more likely to have constructed or repaired a working chute during the CATCH FOUR program than beef producers with 8 contacts or less.

Number of Extension Contacts and Availability of
Crowding Pens

Almost 54 percent of the beef producers with 9 to 13 contacts constructed or repaired a crowding pen during the CATCH FOUR program, compared to almost 42 percent who had 5 to 8 contacts and 24 percent who had 0 to 4 contacts. The x^2 test indicated a significant relationship between the number of Extension contacts and the availability of the crowding pen component of the beef cattle handling facilities. Beef producers with 9 to 13 contacts were more likely to have constructed or repaired a crowding pen during the CATCH FOUR program than beef producers that had 8 contacts or less.

Number of Extension Contacts and Availability of
Holding Pens

Just over 59 percent of the beef producers with 9 to 13 contacts constructed or repaired a holding pen during the CATCH FOUR program, compared to slightly more than 47 percent who had 5 to 8 contacts and almost 28 percent who had 0 to 4 contacts. The x^2 test indicates that there was a significant relationship between the number of contacts producers had with Extension agents and the availability of the holding pen component of the beef cattle handling facilities. Beef producers with 9 to 13 contacts were more likely to have constructed or repaired a holding pen during the CATCH FOUR program than beef producers who had 8 contacts or less.

Table Summary

In summary, findings presented in Table VI indicates a significant relationship between the number of contacts producers had with Extension agents and the availability of each beef cattle handling facility component. Beef producers with 9 to 13 contacts were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program than beef producers with 8 contacts or less.

CHAPTER IV

SUMMARY OF MAJOR FINDINGS

I. PURPOSE AND SPECIFIC OBJECTIVES

Purpose

The purpose of this study was to identify clientele for priority emphasis in future Extension programs to help improve the quality and number of beef cattle handling facilities on farms in Tennessee. To accomplish this purpose, this study was to determine relationships between the availability of the beef cattle handling facility components and selected farm and beef producer characteristics.

Specific Objectives

One objective of this study was to identify the characteristics of the selected beef producers and their farm, determine the availability of the beef cattle handling facility components on their farms, determine the beef cattle handling facility components constructed or repaired during the CATCH FOUR program and determine the number of contacts producers had with Extension.

Other objectives were to determine the relationships between the availability of the components of the beef cattle handling facilities on the farm and (1) the beef producers' farming status, (2) the age of the beef producer, (3) the beef producers' education level, (4) the beef producers' herd size (number of cows and heifers bred), and (5) the beef producers' contacts with Extension.

II. METHOD OF INVESTIGATION

One thousand three hundred and thirteen (1313) beef producers from 73 of the 95 Tennessee counties were included in the study using a stratified random sample technique. Extension agents obtained the data through personal interviews with each producer.

The 1987 Beef Cattle Handling Facilities Survey developed by The University of Tennessee Extension Animal Science and Extension Education Specialists was used to collect the data. The "nth" number technique was used to identify beef producers from county beef cattle producer mailing lists. Extension agents were instructed to: (a) select 10 beef producers who had either constructed or repaired one or more beef cattle handling facility components since January 1985. If 10 beef producers were not available, Extension agents surveyed all beef producers who did something to their beef cattle handling facilities since January 1985; and (b) select 15 beef producers who had not constructed or repaired any component of their beef cattle handling facility since January 1985. These beef producers may or may not have had beef cattle handling facilities.

The data were processed for computer analysis. Computations were made by The University of Tennessee Computing Center. Chi square was the statistic used to determine the strength of the relationships between dependent (beef cattle handling facility components) and independent variables (selected beef producer and farm characteristics). The .05 probability level was the point at which a relationship between variables was accepted as indicating a significant relationship.

III. MAJOR FINDINGS

The major findings of this study are presented here in two subsections. The first subsection presents findings regarding the description of selected Tennessee beef cattle producers, the availability of their beef cattle handling facilities and their contacts with Extension. The other subsection deals with relationships between selected beef producer and farm characteristics and components of beef cattle handling facilities available on farms.

Description of Tennessee Beef Cattle Producers, Their
Beef Cattle Handling Facilities and Their Contacts
With Extension

This subsection presents findings regarding selected beef producer and farm characteristics, the availability of beef cattle handling facilities, components of beef cattle handling facilities constructed or repaired during the CATCH FOUR program and producers' contacts with Extension agents.

Beef producer and farm characteristics. Almost 46 percent of the beef producers were part-time farmers, almost 41 percent were between 46 and 60 years old and slightly more than 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, slightly more than 48 percent bred 25 to 35 cows and heifers, almost 55 percent raised 17 to 35 calves to weaning and 61 percent sold weaned calves in the 401 to 500 pound range.

Beef cattle handling facilities. Almost 83 percent of the beef producers did have a headgate, 69 percent did have a holding chute, almost 63 percent did have a working chute, just over 51 percent did have a crowding pen and almost 65 percent did have a holding pen.

Beef cattle handling facility component constructed or repaired during the CATCH FOUR program. Slightly more than 50 percent of the beef producers constructed or repaired a headgate, just over 48 percent constructed or repaired a holding chute, just over 47 percent constructed or repaired a working chute, almost 39 percent constructed or repaired a crowding pen and almost 44 percent constructed or repaired a holding pen during the CATCH FOUR program. Also, the mean number of 5 beef cattle handling facility components constructed or repaired during the CATCH FOUR program was 2.3.

Contacts with Extension. A higher percent (89.3) of beef producers surveyed had contact with Extension by receiving 1 or more Extension newsletters than any other type of Extension contact. Over 76 percent of the beef producers received 1 or more farm visits from the Extension agent, called the Extension office 1 or more times and visited the Extension office 1 time or more. Over 51 percent received 1 or more phone calls from the Extension office, attended 1 or more beef meetings and attended 1 or more beef demonstrations. Of the beef producers that had no contact with Extension, a higher percent (48.5) attended no beef demonstrations than any other type of Extension contact. The mean total number of contacts that producers had with Extension was 11.8.

Relationships Between Selected Beef Producer and
Farm Characteristics and Components of Beef Cattle
Handling Facilities Available on Farm

This subsection presents findings that deal with the relationships between the availability of the components of the beef cattle handling facilities and selected beef producers' farming status, age, education level, number of cows and heifers bred and their number of contacts with Extension agents in the past 12 months.

Beef producers' farming status and components of beef cattle
handling facilities available on farm. Farming status was significantly related to the availability of each of the five components of the beef cattle handling facilities on producers' farms. When compared to part-time and retired farmers, full-time farmers were more likely to have constructed or repaired each beef cattle handling facility component during the CATCH FOUR program.

Age of beef producers and components of beef cattle handling
facilities available on farm. The beef producers' age was significantly related to the availability of each of the beef cattle handling facility components. When compared to older beef producers (46 years old or older), younger beef producers (21 to 45 years old) were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program.

Beef producers' education level and components of beef cattle handling facilities available on farm. The beef producers' education level was significantly related to the availability of each of the components of the beef cattle handling facilities. Beef producers with some college or technical school education were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program than beef producers with less education.

Number of cows and heifers bred and components of beef cattle handling facilities available on farm. The number of cows and heifers bred was significantly related to the availability of each of the five beef cattle handling facility components. When compared to smaller producers (50 or less cows and heifers), larger beef producers (51 or more cows and heifers) were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program.

Number of Extension contacts and components of beef cattle handling facilities available on farm. The number of contacts beef producers had with Extension was found to be significantly related to the availability of each of the beef cattle handling facility components. When compared to beef producers with 8 Extension contacts or less, beef producers that had 9 to 13 Extension contacts were more likely to have constructed or repaired a headgate, holding chute, working chute, crowding pen and holding pen during the CATCH FOUR program.

IV. IMPLICATIONS AND RECOMMENDATIONS

Findings indicate that farming status, beef producer age and education level, beef producers' number of cows and heifers bred and the number of contacts that beef producers had with Extension were all significantly related to the availability of each of the five beef cattle handling facility components. Beef producers who were full-time farmers, younger beef producers (21 to 45 years old), those who had some college or technical school education, larger beef producers (bred 51 or more cows and heifers) and those who had 9 to 13 Extension contacts were more likely to have constructed or repaired each of the five beef cattle handling facility components during the CATCH FOUR program than either part-time or retired farmers, older beef producers (46 years or older), beef producers with less education, smaller beef producers (bred 50 cows and heifers or less) and beef producers with 8 Extension contacts or less. It is recommended that Extension agents and specialists adjust their beef cattle handling facility programs to better suit the needs of part-time and retired farmers, older beef producers (46 years and older), beef producers with a high school education or less and smaller beef producers (bred 50 cows and heifers or less).

Extension agents should continue to work with all Tennessee beef producers. However, Extension agents should direct special emphasis toward part-time and retired farmers, older beef producers (46 years and older), beef producers with a high school education or less and smaller beef producers (bred 50 cows and heifers or less). Meeting

times and/or locations might be better scheduled to meet the needs of these clientele. Also, timely newsletters to these producers could be helpful. Some of these beef producers may require personal contacts (farm visits, phone calls, etc.) by Extension agents to encourage them to participate in Extension programs.

V. RECOMMENDATIONS FOR FURTHER STUDY

Over the next few years, a similar study should be conducted to determine the number and quality of the beef cattle handling facilities on beef farms in Tennessee. After doing this, the study should help the Agricultural Extension Service to adjust its program to encourage producers to improve their beef cattle handling facilities.

"A chain is only as strong as its weakest link" is an old but effective adage that can be used here to describe the survey instrument and the interviewer. The survey method of collecting data is only as effective as the person interviewing the respondent. The Extension specialists should continue to improve the survey instruments and provide instruction to the Extension agents gathering survey data. The survey instrument used for a similar study should be designed so that the beef producers who did something to their beef cattle handling facilities can be more easily distinguished from those beef producers who did not construct or repair or did not have beef cattle handling facilities.

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Tennessee Agricultural Extension Service
1987 Beef Cattle Handling Facilities Survey
(See instructions on the last page)



Card No. 1
Respondent No. 0 0
(2) (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? | (52) _____ | i. Visits from Ext. Agents? |
| (45) _____ | b. Beef cattle demonstrations? | (53) _____ | j. Visits to Ext. office? |
| (46) _____ | c. Radio programs? | (54) _____ | k. Telephone calls to Extension office? |
| (47) _____ | d. Television programs? | (55) _____ | l. Telephone calls from Extension Agent? |
| (48) _____ | e. Newspaper articles? | (56) _____ | m. Contacts with agribusiness? |
| (49) _____ | f. Extension newsletters? | (57) _____ | n. Contacts with family members? |
| (50) _____ | g. Posters? | (58) _____ | o. Contacts with friends and/or neighbors? |
| (51) _____ | h. Bumper sticker? | | |

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 respiratory 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 Brucellosis? (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 Nth 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

Joseph Brian Signaigo was born June 12, 1957 to Mr. and Mrs. L. H. Signaigo of Memphis, Shelby County, Tennessee. He began his formal education at Avon Elementary School and graduated from White Station High School in 1975.

He attended The University of Tennessee at Martin from 1976 through 1980. He completed the requirements for a Bachelor of Science degree in Agriculture--Animal Science.

He was employed as Assistant Extension Agent in Fayette County, Tennessee in March 1984 after two years as beef herdsman at S. F. Halcomb and Son and two years as swine manager at Sheri-Wood Farm.

He is married to the former Donna Jo Crawford of Somerville, Tennessee and has one daughter, Sara Katherine.