To The Graduate Council:

I am submitting herewith a thesis written by Warka O. Mohamad entitled "Some Characteristics and Management Practices of Selected Tennessee Cow-Calf Producers in 1976-1977." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

Robert S. Dotson, Major Professor

We have read this thesis and recommend its acceptance.

Cecil E. Curtis Jr.

Accepted for the Council:

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SOME CHARACTERISTICS AND MANAGEMENT PRACTICES OF SELECTED TENNESSEE COW-CALF PRODUCERS IN 1976-1977

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Warka O. Mohamad

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ABSTRACT

This survey-type study concerned some characteristics and management practices of selected Tennessee cow-calf producers in 1976-1977. It was conducted: (a) To determine some of the characteristics of selected Tennessee cow-calf producers by size of herd categories; (b) To find which research-verified management practices, the producers were using and not using in size of herd categories; (c) To study Extension contacts by means of which producers got their information; and (d) To study relationship between producer use of recommended beef and pasture practices and contacts with Extension. The beef producers interviewed were divided into three production groups according to size of herd categories: 114 Large producers in 10 counties; 567 Medium producers in 29 counties, and 274 Small producers in 18 counties. Main comparisons of data were made between Large and Small production groups.

Characteristics of producers and their herds in 57 counties included the following: (1) Producers averaged 21.1 years of beef production on their farms; (2) They were 50.2 years of age; (3) They had 47.6 breeding cows in the herd; (4) They kept 2.2 bulls in the herd; (5) They had raised 43.6 calves; (6) They had 129.1 farm acres; (7) They kept 48.8 breeding females in the herd; and (8) They had 43.8 cows weaning calves, 1976-1977. Large producers averaged more than Small producers except on age of respondent.

Regarding management practices, most producers were: (1) Vaccinating calves for blacklet and malignant edema. (2) Allowing cows free access to mineral mixture. (3) Providing cows with magnesium oxide

to prevent grass tetany; (4) Stockpiling fescue; (5) Using grub/lice control; (6) Maintaining adequate working facilities; (6) Waiting until heifers were more than 15 months when breeding; (7) Waiting until heifers were more than 650 pounds before breeding; (8) Checking their cows more than once daily; (9) Castrating calves before four months; and (10) Worming cows at least once a year. On most practices, Large producers had higher percents using them than Small producers excepting on stockpiling of fescue.

With regard to Extension contacts by which producers got their information, producers averaged 19 total Extension contacts consisting of six telephone calls to the Extension office, four visits to the Extension office, four Extension general meetings attended, four farm visits by the Extension agents, and one beef Extension meeting attended the previous year. Little difference was found between Large and Small producers.

Thirteen of 14 recommended beef production practices and 17 of 18 pasture practices were found to be significantly related to one or more kind of Extension contact.

Eleven weak practices needing educational program emphasis were identified for Large and 14 for Small producers needing educational program emphasis. Recommendations for use of findings and further study were included.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	The Study Area	1
	Purposes of the Study	3
II.	REVIEW OF RELATED LITERATURE	4
	Characteristics of Beef Producers and their Herds.	4
	Research-Verified Management Practices	7
	Extension Contacts and Other Factors Influencing the Adoption of Practices	11
III.	METHODS AND PROCEDURE	14
	Population and Sample	14
	Interview Schedule	14
	Handling and Interpretation	15
IV.	FINDINGS OF THE STUDY	16
	Characteristics of Cow-Calf Producers	16
	Years of Beef Production	16
	Age of Producers	16
	Number of Breeding Cows in Herd	16
	Number of Bulls Used	16
	Number of Calves Raised	24
	Acres of Beef Pasture	24
	Length of Breeding Season	24
	Age of Heifers Bred	24
	Weight of Heifers When Bred	25

CHAPTER PAGE

IV. (Continued)

Number of Times Per Day Cows Were Checked at Breeding Time 25
Number of Times Per Day Cows Were Checked During Calving Season 25
Number of Times Per Day Heifers Were Checked During Calving Season 25
Age of Calves When Castrated 26
Number of Times Cows Wormed 26
Number of Animal Units Grazed 26
Number of Breeding Females Kept. 26
Number of Cows Weaning Calves 26
Pounds of Calves Sold 27
Pounds of Calves Kept for Replacements . . . 27
Pounds of Calves Kept for Consumption 27
Acres of Orchardgrass-White Clover 27
Acres of Fescue-White Clover 28
Acres of Bluegrass-White Clover 28
Acres of Bermudagrass-White Clover 28
Acres of Fescue-Lespedeza 28
Acres of Bermudagrass-Lespedeza 29
Acres of Orchardgrass 29
Acres of Fescue 29
Acres of Bluegrass 29

CHAPTER PAGE

IV. (Continued)

Acres of Bermudagrass 29

Acres of Lespedeza Reseeded 30

Acres of Sericea 30

Acres of Temporary Pasture-Wheat 30

Acres of Temporary Pasture-Oats 30

Acres of Temporary Pasture Barley 31

Acres of Temporary Pasture Rye 31

Acres of Temporary Pasture-Ryegrass 31

Acres of Temporary Pasture-Crimson Clover . . 31

Acres of Temporary Pasture-Sudangrass 32

Acres of Temporary Pasture-Sudangrass/Sorghum Hybrid 32

Acres of Temporary Pasture-Pearlmillets . . . 32

Acres of Temporary Pasture-Annual Lespedeza . 32

Acres of Temporary Pasture-Other 32

Tons of Corn Silage 33

Tons of Sorghum Silage 33

Tons of Other Silage 33

Tons of Fescue Hay 33

Tons of Orchardgrass Hay 34

Tons of Timothy Hay 34

Tons of Annual Lespedeza Hay 34

Tons of Small Grain Hay 34

CHAPTER PAGE

IV. (Continued)

Tons of Red Clover Hay 34

Tons of Alfalfa Hay 35

Tons of Other Hay 35

Method of Disposition of Calves 35

Backgrounding Cattle 37

Number of Calves Backgrounded 37

Percent of Calves Backgrounded That Were Home Reared 39

Percent of Backgrounded Calves That Were Steers 39

Percent of Backgrounded Cattle That Were Sold at Local Auctions 39

Percent of Backgrounded Cattle That Were Sold at Organized Yearling Sales 39

Percent of Backgrounded Cattle Sold to Order Buyers 40

Percent of Backgrounded Cattle Sold Direct to Feeders 40

Management Practices 40

Breeding Practices 43

Herd Health Practices 44

Growth Stimulants Practice 44

Feeding and Pasturing Practices 44

CHAPTER PAGE

IV. (Continued)

Parasite Control Practice 45

Working Facilities Practice 46

Brief Summary of Use of Management Practices . 46

Other Management Practices Indirectly Reported 46

Types of Extension Contacts 49

Relations of Mean Numbers of Selected Extension Contacts Reported in 1976-1977 by Producers and Use of Recommended Beef Production Practices 51

Beef Practice #1, Used Performance Tested Bulls 51

Beef Practice #2, Bulls Met Minimum Requirements PTBS 55

Beef Practice #3, Herd Enrolled TBCIP 55

Beef Practice #4, Cows Pregnancy Checked Following Breeding Season 55

Beef Practice #5, Calves Vaccinated for Blackleg and Malignant Edema 56

Beef Practice #6, Used Growth Stimulants . . . 56

Beef Practice #7, Mineral Fed Free Access . . 56

Beef Practice #8, Fed Cows Magnesium Oxide to Prevent Grass Tetany 57

Beef Practice #9, Stockpiled Fescue 57

CHAPTER PAGE

IV. (Continued)

Beef Practice #10, Gave Needy Cows Special Treatment 57

Beef Practice #11, Used Protein With Roughages 58

Beef Practice #12, Used Grub-Lice Control . 58

Beef Practice #13, Vaccinated for Leptospirosis 58

Beef Practice #14, Working Facilities Adequate 59

Relations of Mean Numbers of Selected Extension Contacts Reported in 1976-1977 by Producers and Use of Recommended Pasture Production Practices. 59

Pasture Practice #1, Pasture was 30-50% Clover 66

Pasture Practice #2, Used Rotation of Pastures 66

Pasture Practice #3, Had Soil Tested 67

Pasture Practice #4, Used Soil Test Recommendations When Establishing Pastures 67

Pasture Practice #5, Soil Tested Established Pastures 67

Pasture Practice #6, Applied Lime and Fertilizer on Established Pastures 68

Pasture Practice #7, Seeded on Firm, Moist Seedbed 68

CHAPTER PAGE

IV. (Continued)

Pasture Practice #8, Used Recommended Varieties 68

Pasture Practice #9, Used Recommended Seeding Dates on Permanent Pasture 69

Pasture Practice #10, Used Recommended Seeding Rates 69

Pasture Practice #11, Properly Inoculated Legume Seeds 69

Pasture Practice #12, Stockpiled Fescue and Fescue-Clover Pastures 70

Pasture Practice #13, Grazed or Clipped Fescue Clover Pastures to Maintain Clover . . 70

Pasture Practice #14, Grazed Bermudagrass to Desired Height 70

Pasture Practice #15, Cut Hay from Pastures . 71

Pasture Practice #16, Clipped Pasture Weeds . 71

Pasture Practice #17, Cut Hay-Silage from Excess Pastures 72

Pasture Practice #18, Renovated Pastures . . 72

V. SUMMARY AND IMPLICATIONS 73

Major Study Findings 74

Characteristics of Producers and their Herds. 74

Management Practices of Cattlemen 78

Extension Contacts Reported by Cattlemen . . 82

Relations of Practice Use and Extension Contacts 82

CHAPTER PAGE

V. (Continued)

Implications 85

Recommendations 86

Regarding Use of Findings 86

Regarding Further Study 86

BIBLIOGRAPHY 87

APPENDICES 90

Appendix A 91

Appendix B 93

VITA 105

LIST OF TABLES

TABLE PAGE

I. Some Characteristics of Selected Tennessee Cow-Calf Producers, Their Farms, and Herds in 57 Counties by Size of Herd Categories in Average Numbers of Producers Reporting . 17

II. Disposition of Calves of Selected Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories in Average Percents of Calves Sold 36

III. Numbers and Percents of Calves Backgrounded and Marketing Methods as Reported by Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories 38

IV. Management Practices Used by Selected Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories in Average Percents of Producers Using Them in 1976-1977 . . . 41

V. Other Management Practices Indirectly Reported on by Selected Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories According to Response 47

VI. Kinds of Contacts with Extension Reported by Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories in Average Number of Contacts, 1976-1977. 50

VII. Relations of Mean Numbers of Selected Extension Contacts Reported in 1976-1977 by Producers and Use of Recommended Beef Production Practices 52

VIII. Relations of Mean Numbers of Selected Extension Contacts Reported in 1976-1977 by Producers and Use of Recommended Pasture Production Practices 60

CHAPTER I

INTRODUCTION

I. THE STUDY AREA

In recent years, Tennessee has rapidly grown in the production of beef cows, the number of beef cows on farms in 1976 being 1,268,000. This increased to 1,300,000 in 1977 (17:41).*

Tennessee has a lot of land that can grow only pasture and hay crops. Beef cattle need pasture and hay. This fact has helped to make Tennessee an important beef producing state. The beef herd also fits well on most row-crop farms since there is usually some cropland that should be rotated with pasture. The most common breeds of beef cattle in Tennessee Steer Shows have been Hereford, Angus, Shorthorn, and Crossbreds (4:3-4).

Under provisions of the Smith Lever Act, the Cooperative Extension Service exists to diffuse among people of the United States useful and practical information on subjects relating to agriculture (e.g., beef) and home economics, and to encourage them to apply the information (11:3). To perform this function, the University of Tennessee Agricultural Extension Service has made an attempt to identify the needs, problems, and suitable information relative to cow-calf production.

In the last several years, there has been a steady increase in the production of beef cattle in Tennessee. One reason for the absolute expansion of the beef cattle industry in Tennessee may be the weather

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

which makes possible a 240-day grazing season. Weather conditions allow cattle to be grown at a lower cost to beef cattle producers as less feed is required to maintain the cattle through the winter season.

The second important reason for the increase in beef cattle numbers is that Tennessee has a large amount of submarginal land which is suited for pasture. With suitable land and grazing season, a relatively large cow-calf industry has developed in Tennessee. The existence of this type operation makes available a large number of feeder cattle which could be fed out by feed lots for the fat cattle market (13:1).

The sale of cattle and calves is the most important single source of farm income in Tennessee, although the net return from the beef enterprise is low compared to several others. The beef cow-calf enterprise fits into many farming situations - part-time farms, part-retirement farms, and commercial farms with set-aside acres, land not suited to row crops or small grain production or cropland that must be used in rotation with a sod crop. Thus, this enterprise provides Tennessee farmers an opportunity to harvest and sell the production from some of their land that would not otherwise be readily marketable (18).

Beef cattle programs are needed to improve the feeding of beef cows and their calves by producing higher quality forage and utilizing that forage more efficiently through improved forage and cattle management practices; to improve the reproductive efficiency by raising the percentage of calves weaned per cow maintained through improved nutrition, management and herd health practices; to improve the breeding stock through performance testing and other breeding programs; to increase the

backgrounding and finishing programs; to improve and develop new marketing techniques; to improve the efficiency of resource utilization, and to meet the changing industry demand (5:2).

Prior thesis studies concerning cow-calf producers, their characteristics and practices, had been conducted in Tennessee, but none like the present were found dealing with a relatively large number of counties.

II. PURPOSES OF THE STUDY

The purposes of the study, then, were to:

a. To study some of the characteristics of selected Tennessee cow-calf producers, 1976-1977, by size of herd categories.

b. To determine which research-verified management practices the producers were using and not using in size of herd categories.

c. To study Extension contacts by means of which producers got their information.

d. To study relationships between producer use of recommended beef and pasture practices and contacts with Extension.

CHAPTER II

REVIEW OF RELATED LITERATURE

A number of relevant studies connected with beef production and management practices was found to be available. This chapter, then, contains literature related to: (1) some of the characteristics of selected Tennessee cow-calf producers, by size of herd categories; (2) research verified management practices they used, and (3) factors influencing their adoption of recommended beef production practices.

Considerable information was available relative to cow-calf production practices as a result of research conducted at the University of Tennessee. Such practices have been identified in the areas of beef management, breeding, and feeding, those recognized as being the important phases of the cow-calf program.

I. CHARACTERISTICS OF BEEF PRODUCERS AND THEIR HERDS

A study purpose was to study some characteristics of cow-calf producers and their operations.

Ranney found in 1964 that the average number of brood cows on 7,500 farms in South Central Tennessee was seventeen. Fifty-seven percent of the farms had Hereford cows and 70 percent had Hereford sires, while 15 percent had Angus cows and 24 percent had Angus sires. The average price of calves sold and weaned was $82.00 per cow bred. Most of these calves were sold at weekly auctions, a small number was sold at organizational sales, and a considerable number was sold on the farm (14:7).

Keyes, in a study of production and management practices of beef cattle producers in Campbell County, Tennessee in 1966, interviewed 36 cow-calf producers who were divided into high, medium, and low third production groups according to pounds of beef weaned per cow. He found them on the average to have completed 10.5 years of formal school education, 12 high producers having a higher educational level than 12 low, the average age of producers was 52 years. They owned 142 farm acres and had 113 cropland acres, low producers having more farm and cropland acres than high. They averaged having a herd size of about 29 cows each (8:96).

A study of beef producers in Macon County by Luck in 1966 showed the average educational grade there to be 9.7 years, and the average age of producers was 51 years. The average farm size was found to be 187 acres, the cropland average being 126 acres (9:17).

A study of beef producres in Lawrence County was made by Matthews in 1968. He interviewed 74 cow-calf producers to find out what producers in high, medium and low production third groups, in pounds of beef sold per cow bred, were like. In general, he found them on the average to have completed nine years of school, 25 high producers having a higher educational level than 25 low and to be 55 years of age. They had a gross family income of $8,689, high averaging about $2,840 more gross income than low. Also, the average farm size was 179 acres - 116 acres of which was cropland, the high having 32 more acres of cropland than the low. They kept 18 beef cows, the high keeping 11 more than the low, kept one beef bull, the high using the bull on six more cows each, and the high producers were more often farm owners (10:45).

A study was made by Barnes in 1971 of the beef producers in Claiborne County, Tennessee. Barnes interviewed 38 cow-calf producers to determine what producers in two groups, 19 participants in graded feeder calf sales and 19 non-participants, were like. In general, he found they had a median educational level of 8th grade, had an average farm size of 161.3 acres, participants having larger farms than non-participants, had an average of 89.3 acres of cropland, participants having more acres of cropland than non-participants, and had an average cow herd size of 25.3 cows, larger herds tending to be operated by participants rather than by non-participants (1:148).

A study of beef producers in Marshall County, Tennessee, was made by Brewer in 1972. He interviewed 40 beef producers to determine what 15 high producers in pounds of beef sold per cow, 15 medium, and 10 low producers were like. He found their average educational level to be 12.0 years, high producers having a higher educational level than low, and the average age was 55 years. Farmers had a gross family income of $9,333. The average total acreage per farm was 220.0, high having 79.9 more acres of land than low, and the average acreage of cropland was 139.7. The high kept 11 more beef cows, on the average, and marketed 11.6 more calves than low (3:38).

Taylor found in a 1972 survey of 35 Knox County beef producers that their average educational level was 13.5 years, 11 high producers, in pounds of beef sold per cow, having a slightly higher educational level than 14 low producers, and most of the producers were over 55 years of

age. The average farm size was 214.2 acres with an average of 141.3 acres of cropland, high having a smaller farm than low. The average number of cows kept was 47.8, high having fewer cows, and high were more frequently part-time farmers (16:40).

Bembridge, in a monumental Rhodesian study in 1975 of beef production practice adoption by 121 cattlemen found producer's age to be negatively associated with practice adoption and farming efficiency. Other factors (i.e. education, socio-economic status and situational and economic variables) were positively associated (2:xi).

II. RESEARCH-VERIFIED MANAGEMENT PRACTICES

One purpose of this study was to determine which research-verified management practices, the producers were using and not using in size of herd categories.

Most Tennessee farmers are in the cow-calf business to make a profit. As costs of production continue to increase, it is essential that a cow-calf operation become as efficient as possible in all stages of production: breeding, feeding and management. To be an efficient producer, a cow must: (1) produce a calf every 12 months; and (2) produce a calf that when marketed will produce sufficient return to offset annual costs and produce satisfactory income (12:3). Calf-crop percentage, calf weaning weight, and annual cow costs are the three production factors which influence the cow-calf operation (12:15).

Producers in several studies mentioned below were divided into high, medium and low production groups to find out which of 31 research-verified recommended production practices they were using and not using.

Keyes in a study of Campbell County beef producers, found that high producers were following the recommended practices more than low producers in: (1) use of the free choice method of supplying salt; (2) castrating bulls calves during the first month; (3) practicing dehorning, and (4) using recommended materials to control flies, lice, worms, and grubs (8:98).

Matthews in 1968, found producers in Lawrence County, Tennessee on the average, to be using the following practices: (1) keeping cows on good permanent pasture until late fall and early winter to reduce winter feed bills; (2) checking cattle for possible trouble at least three times per week throughout the year. When high and low were compared, it was seen that the former: (1) operated at higher management levels; (2) had higher ratings on 23 of 31 practices studied; (3) kept more females of breeding age; (4) bred eight more cows per bull; (5) had a 14 percent higher calving percentage; (6) had an eight percent higher weaning percentage; (7) sold calves weighting 206 pounds more; (8) received 1.4 cents more per pound of calf sold; (9) grew larger acreages of various pasture and hay crops; and (10) were more inclined to fertilize pasture (10;100-103).

Barnes, in his study of Claiborne County, cow-calf producers compared participant and non-participant production groups. In general, he found farmers in the participant group had a higher total practice diffusion rating than non-participants. On the average, participants rated higher in the use of 31 practices than did the non-participants (1:151).

Brewer, in his study of Marshall County beef producers, noted that more high producers were using other recommended practices including: (1) waiting until replacement heifers were at least 15 months of age before breeding; (2) using a systematic rotational grazing program; (3) using recommended fly control practices; and (4) using recommended practices in castration. When high and low were compared, it was seen that high producers were doing a better job than low in: (1) keeping bulls whose records met minimum requirements of the breeder's performance tested bull sale; (2) using one or more performance tested bulls; and (3) frequently checking first calf heifers at calving season (3:76).

Taylor, in his study of Knox County beef producers, found producers were using the following practices: (1) waiting until replacement heifers were at least 51 months of age and had attained a minimum weight of 650 pounds before breeding; (2) checking older cows at least once a day during calving season; (3) arranging to have competent help available when calving difficulties occurred; (4) following recommended practices in dehorning and castration; (5) keeping cows on good permanent pasture sod until late fall and early winter to reduce winter feed costs; (6) following recommended fly control practices; and (7) getting the advice of professionals in the area of beef production and marketing. He noted that the high producers were using the following practices: (1) providing access to a recommended mineral mixture for all cattle; (2) keeping replacement heifers separate from the rest of breeding herd during winter; (3) following recommended lice control practices; and (4) checking cattle for possible trouble at least three times per week through the year. He found that

high producers were doing a better job in low in: (1) keeping bulls whose records met minimum requirements of the breeder's performance tested bull sale; (2) using one or more performance tested bulls; (3) checking herd cows at least once a day during breeding season; (4) identifying each breeding female; (5) checking first calf heifers at least two or three times daily during calving season; (6) identifying calves; (7) feeding thin cows and those that have calved better than others; (8) feeding supplement to brood cows; (9) using recommended grub control; and (10) maintaining an adequate system of working pens, lots and restraining equipment (16:82).

Jamison et al., recommended the breeding season for most commercial beef herds in Tennessee is from April 1 to July 1 (6:6). For winter feeding cows, Jamison et al. suggested turning cows on permanent pasture sods in November to provide winter grazing and reduce feed costs. They note that thin cows should gain weight. They should be provided extra grain and silage if necessary. Three to four pounds of concentrates daily including one pound protein supplement, were suggested for thin cows and first calf heifers (6:13).

Jamison recommended performance testing in order to: (1) measure maximum production of each individual breeding cow; (2) base selection of replacement heifers on average daily gain and quality records; (3) cull-poor-producing cows; (4) measure bull productivity; (5) increase financial returns of the herd by improving growth rate of and quality of calves; (6) increase the calving percentage; (7) determine post-weaning performance of prospective herd sire and foundation females by means of

actual feeding tests; (8) improve pasture, feeding and general management of the beef cattle enterprise; and (9) provide additional performance information to potential buyers (7:3).

Bembridge, in his 1975 study of Rhodesian beef practice adoption, grouped practices under the major headings of breeding and selection, nutrition, cattle management, disease control and prevention and grazing management. On the basis of 50 percent adoption by the population of 121 ranchers, supplementary feeding, dosing of young stock and grazing management were apparently the only practices showing a satisfactory adoption ratio (2:xi).

III. EXTENSION CONTACTS AND OTHER FACTORS INFLUENCING THE ADOPTION OF PRACTICES

The third study purpose dealt with Extension contacts and related factors influencing cattlemen to adopt practices.

Most authorities found that county agents, cattle buyers, local veterinarians, and friends were most often used as sources of information. Additional sources were: newspaper, farm magazines, television, radio, University of Tennessee bulletins and publications, listed in that order (10, 1, 3, 16).

Rogers reported seven characteristics of a farm practice influencing its rate of adoption. They are: (1) cost of the practice (i.e., those high in cost generally tend to be adopted more slowly); (2) complexity (i.e., new ideas are more quickly accepted if they are simple to understand); (3) visibility (i.e., new practices which are visible and

showy are generally adopted more rapidly); (4) divisibility (i.e., practices that can be tried on a small scale are adopted more quickly); (5) compatibility (i.e., attitudes and values toward a new idea may affect the rate of adoption of the new practice); (6) utility (i.e., new practices must be viewed as an improvement over existing methods); and (7) group action (i.e., some new ideas may require group adoption) (15:403-5).

Matthews in his study of Lawrence County, investigated factors that might have influenced cow-calf producers to adopt or reject the management practices considered important to production in the county. As stated earlier, high, medium and low production groups were compared. Many felt too old to change; while others were satisfied with their present operations. Some viewed beef only as a side line. They felt beef producers often did not adopt recommended practices because they lacked time or labor, had too small a profit margin, or lacked technical knowledge. Things they liked about beef production included: (1) working with cattle; (2) making best use of rough land; and (3) it gave them more time for other job (i.e. part time farming). Things they disliked were: (1) breeding and calving problems; (2) low returns; and (3) taking care of livestock in cold weather (10:130).

Barnes, in the study of Claiborne County beef producers, also explored the factors which influenced cow-calf producers to adopt or reject recommended beef production practices. Participant and non-participant production groups were compared. He found beef producers often did not adopt beef production practices because they lacked the time necessary to carry out the practices, they followed custom or habit, and they did not think recommended practices were necessary (1:155).

Brewer, in the study of Marshall County beef producers, found the things that cow-calf producers liked about beef cattle production were: (1) the joy of watching cattle grow and the relatively low labor requirement per unit; (2) the efficient use of available pasture; and (3) the relatively good return on investment. The thing they disliked most was the relatively slow turnover of money invested (3:95).

Taylor in the study of Knox County beef producers, identified factors that might have influenced the adoption of practices. He found the things they liked most about beef cattle production included the joy of raising cattle and efficient utilization of pasture. Other reasons given were: (1) less labor requirements; (2) challenge to produce better animals; and (3) supplemental income (16:89).

Bembridge's study of ranchers in Rhodesia disclosed that farmers in general were not aware of key practices found to affect efficiency. Efficiency was measured in terms of weaning percentages, herd mortality, and carcass grades. Managerial aptitude was found to be an important element in adoption. Bembridge recommended an Extension strategy taking account of the farmer's adoption classification and based on emphasis of a "package of practices" and multiple use of communications channels (i.e., Extension methods) in a planned program (2:xii).

CHAPTER III

METHODS AND PROCEDURE

I. POPULATION AND SAMPLE

The study population was limited to all beef producers using the cow-calf system and possessing fifteen or more cows in 1976-1977. There were 66,000 beef producers in 95 counties in Tennessee (5:2). The sample consisted of 955 producers interviewed in 57 selected counties. Counties for which data were available December 13, 1977 were included.

Data for this study were obtained from The 1977 Tennessee Extension Beef Survey. A survey interview schedule used consisted of questions which were designed to give the interviewer information regarding practices used and other information on management and production operations.

For the purposes of the study, the sample was divided into three size of herd groups of counties: Large producers averaged from 60 to 157 cows per herd, Medium producers had 40 to 59 cows per herd average and Small producers had averages from 20 to 39 cows per herd (see Appendix A).

II. INTERVIEW SCHEDULE

The interview schedule used in this study had many questions (see Appendix B). The schedule was designed to include characteristics, management practices, and factors influencing practice adoption according to size of herd category. These questions were used by agents in personal

interviews with cow-calf producers to determine the cow-calf producers' attitudes toward the recommended practices, management practices, and breeding practices. Also, backgrounding information was obtained, and effort made to determine how well the interviewer knew the beef producer.

III. HANDLING AND INTERPRETATION

Data were tabled in simple numbers, percents and averages, as appropriate, and statistical significance reported when available from computer printouts. Most comparisons were made between Large and Small producers since largest differences were sought between these two extreme groups to learn if size of herd had an influence. Analysis of variance, F tests were computed by the University of Tennessee Computer Center for relations between contacts and practice use. The .05 level of confidence was selected for the study.

CHAPTER IV

FINDINGS OF THE STUDY

I. CHARACTERISTICS OF COW-CALF PRODUCERS

Reference to Table I provides the reader with information concerning some characteristics of 955 cow-calf producers interviewed by agents in 57 Tennessee counties.

Years of Beef Production

On the average all producers had been in the cow-calf business for 21.1 years. Practically no difference was noted between Large, 20.5 years, and Small, 19.6 years, in average years of beef production.

Age of Producers

The average age of all producers interviewed was 50.2 years. Average ages of Large, 49.4 years, and Small, 50.0 years, were practically identical.

Number of Breeding Cows in Herd

It is shown in Table I, that the average number of breeding cows in the herd was 47.6. Large producers understandably averaged more cows, 82.4, than did Small producers, 33.4, in their herds.

Number of Bulls Used

As shown in Table I, all producers used an average of 2.2 bulls in the herd. Large producers used 3.2 bulls; while Small producers kept 1.7 bulls. Size of cow herd, of course, was the influence.

Table I

Some Characteristics of Selected Tennessee Cow-Calf Producers, Their Farms, and Herds in 57 Counties by Size of Herd Categories in Average Numbers of Producers Reporting

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
1. Years had beef on farm	21.1 (N = 932)	20.5 (N = 111)	22.0 (N = 552)	19.6 (N = 269)
2. Age of respondent (years)	50.2 (N = 914)	49.4 (N = 113)	50.4 (N = 543)	50.0 (N = 258)
3. Number of breeding cows in herd (Oct. 1, 1976)	47.6 (N = 905)	82.4 (N = 96)	48.4 (N = 544)	33.4 (N = 265)
4. Number bulls used	2.2 (N = 918)	3.2 (N = 114)	2.3 (N = 543)	1.7 (N = 261)
5. Number calves raised	43.6 (N = 904)	69.9 (N = 111)	44.5 (N = 535)	30.6 (N = 258)
6. Acres beef pasture	129.1 (N = 910)	175.4 (N = 113)	131.7 (N = 548)	102.3 (N = 249)
7. Length breeding season (months)	5.0 (N = 818)	5.0 (N = 83)	4.8 (N = 506)	5.2 (N = 229)
8. Age heifers bred (months)	17.4 (N = 840)	17.3 (N = 95)	17.6 (N = 492)	17.2 (N = 253)
9. Weight heifer bred (pounds)	685.9 (N = 926)	686.5 (N = 96)	682.6 (N = 561)	692.5 (N = 269)

Table I (cont'd)

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
10. Number times per day cows checked during breeding season (2 recommended)	1.2 (N = 929 in 56 cos.)	1.3 (N = 96 in 9 cos.)	1.2 (N = 564)	1.3 (N = 269)
11. Number times per day cows checked during calving season (once recommended)	1.5 (N = 894)	1.7 (N = 91)	1.5 (N = 547)	1.4 (N = 256)
12. Number times per day hiefers checked during calving season (2 or 3 recommended)	1.7 (N = 858)	2.2 (N = 89)	1.6 (N = 513)	1.7 (N = 256)
13. Age of calves when castrated (months) (recommended as soon as before four months)	2.8 (N = 857)	3.0 (N = 89)	2.7 (N = 532)	2.9 (N = 236)
14. Number of times cows wormed	1.0 (N = 573)	1.2 (N = 81)	1.0 (N = 324)	1.1 (N = 168)
15. Number animal units grazed	66.6 (N = 905)	102.7 (N = 109)	66.7 (N = 529)	51.6 (N = 267)
16. Number breeding females kept (Jan 1, 1977)	48.8 (N = 914)	78.6 (N = 112)	49.8 (N = 537)	34.2 (N = 265)
17. Number cows weaning calves	43.8 (N = 914)	64.4 (N = 114)	45.7 (N = 536)	31.1 (N = 264)
18. Pounds calves sold	21,050 (N = 776 in 56 cos)	30,780 (N = 101 in 9 cos.)	21,610 (N = 475)	14,830 (N = 200)
19. Pounds calves kept for replacements	9,460 (N = 567 in 55 cos.)	7,780 (N = 92 in 9 cos)	10,550 (N = 336)	7,930 (N = 139 in 17 cos)

Table I (cont'd)

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
20. Pounds calves kept for consumption	564.0 (N = 779 in 54 cos)	538.9 (N = 88 in 9 cos)	570.9 (N = 470 in 28 cos)	559.3 (N = 221 in 17 cos)
21. Acres orchard grass-white clover	40.6 (N = 355 in 42 cos)	45.2 (N = 17 in 5 cos)	43.8 (N = 236 in 26 cos)	32.6 (N = 102 in 11 cos)
22. Acres fescue-white clover	79.5 (N = 812)	129.2 (N = 101)	78.8 (N = 464)	60.5 (N = 247)
23. Acres blue grass-white clover	36.8 (N = 64 in 20 cos)	10.0 (N = 1 in 1 co)	29.7 (N = 28 in 11 cos)	43.2 (N = 35 in 8 cos)
24. Acres bermuda grass-white clover	31.8 (N = 36 in 22 cos)	52.7 (N = 15 in 7 cos)	17.7 (N = 11 in 7 cos)	16.0 (N = 10 in 8 cos)
25. Acres fescue-lespedeza	42.7 (N = 127)	59.6 (N = 21 in 7 cos)	36.8 (N = 74 in 12 cos)	45.1 (N = 32 in 10 cos)
26. Acres Bermuda grass-lespedeza	31.7 (N = 17 in 11 cos)	23.7 (N = 6 in 4 cos)	37.2 (N = 6 in 4 cos)	34.8 (N = 5 in 3 cos)
27. Acres orchardgrass	25.5 (N = 76 in 20 cos)	30.0 (N = 15 in 1 co)	24.9 (N = 54 in 15 cos)	20.6 (N = 7 in 4 cos)

Table I (cont'd)

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
28. Acres fescue	62.7 (N = 321 in 44 cos)	80.5 (N = 35 in 5 cos)	60.7 (N = 220 in 26 cos)	59.8 (N = 66 in 12 cos)
29. Acres bluegrass	90.2 (N = 17 in 7 cos)	30.0 (N = 1 in 1 co)	98.4 (N = 11 in 4 cos)	84.4 (N = 5 in 2 cos)
30. Acres bermudagrass	55.0 (N = 52 in 18 cos)	47.4 (N = 9 in 4 cos)	74.1 (N = 29 in 9 cos)	20.1 (N = 14 in 5 cos)
31. Acres lespedeza reseeded	79.8 (N = 53 in 12 cos)	54.5 (N = 8 in 4 cos)	105.0 (N = 33 in 5 cos)	27.5 (N = 12 in 3 cos)
32. Acres sericea	24.1 (N = 29 in 11 cos)	30.0 (N = 3 in 2 cos)	22.2 (N = 17 in 6 cos)	25.9 (N = 9 in 3 cos)
33. Acres temporary pasture-wheat	34.5 (N = 113 in 32 cos)	67.1 (N = 30 in 9 cos)	24.5 (N = 58 in 13 cos)	18.7 (N = 25 in 10 cos)
34. Acres temporary pasture-oats	20.7 (N = 54 in 22 cos)	64.3 (N = 4 in 3 cos)	18.3 (N = 35 in 11 cos)	14.7 (N = 15 in 8 cos)
35. Acres temporary pasture-barley	100.5 (N = 6 in 5 cos)	500.0 (N = 1 in 1 co)	8.0 (N = 1 in 1 co)	23.8 (N = 4 in 3 cos)
36. Acres temporary pasture-rye	31.1 (N = 28 in 18 cos)	112.0 (N = 5 in 4 cos)	18.6 (N = 11 in 8 cos)	8.9 (N = 12 in 6 cos)

Table I (cont'd)

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
37. Acres temporary pasture-ryegrass	59.8 (N = 15 in 10 cos)	189.5 (N = 4 in 4 cos)	14.6 (N = 5 in 4 cos)	11.0 (N = 6 in 2 cos)
38. Acres temporary pasture-crimson clover	4.7 (N = 3 in 3 cos)	1.0 (N = 1 in 1 co)	6.5 (N = 2 in 2 cos)	-- (N = 0)
39. Acres temporary pasture-sudangrass	20.8 (N = 23 in 13 cos)	80.0 (N = 3 in 3 cos)	9.9 (N = 7 in 4 cos)	13.1 (N = 13 in 6 cos)
40. Acres temporary pasture-sudangrass/ sor. hyb.	17.6 (N = 41 in 17 cos)	19.8 (N = 14 in 6 cos)	18.8 (N = 20 in 4 cos)	9.7 (N = 7 in 7 cos)
41. Acres temporary pasture-pearlmillet	5.0 (N = 1 in 1 co)	-- (N = 0)	-- (N = 0)	5.0 (N = 1 in 1 co)
42. Acres temporary pasture-annual lespedeza	24.3 (N = 26 in 12 cos)	31.7 (N = 3 in 2 cos)	16.2 (N = 9 in 5 cos)	28.0 (N = 14 in 5 cos)
43. Acres temporary pasture-other	55.0 (N = 13 in 5 cos)	450.0 (N = 1 in 1 co)	12.0 (N = 10 in 2 cos)	72.5 (N = 2 in 2 cos)
44. Tons corn silage	271.7 (N = 120 in 36 cos)	328.7 (N = 21 in 8 cos)	292.4 (N = 68 in 20 cos)	187.5 (N = 31 in 8 cos)
45. Tons sorghum silage	272.6 (N = 7 in 7 cos)	298.0 (N = 2 in 2 cos)	265.5 (N = 4 in 4 cos)	250.0 (N = 1 in 1 co)

Table I (cont'd)

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
46. Tons other silage	270.6 (N = 8 in 8 cos)	280.0 (N = 1 in 1 co)	345.0 (N = 4 in 4 cos)	168.3 (N = 3 in 3 cos)
47. Tons fescue hay	50.0 (N = 591 in 56 cos)	57.9 (N = 71)	52.8 (N = 370 in 28 cos)	45.5 (N = 150)
48. Tons orchardgrass hay	41.4 (N = 378 in 43 cos)	58.3 (N = 30 in 5 cos)	39.9 (N = 251 in 26 cos)	39.9 (N = 97 in 12 cos)
49. Tons timothy hay	48.4 (N = 117 in 33 cos)	37.2 (N = 6 in 3 cos)	50.1 (N = 67 in 19 cos)	47.4 (N = 44 in 11 cos)
50. Tons annual lespedeza hay	31.1 (N = 111 in 26 cos)	38.5 (N = 23 in 7 cos)	28.9 (N = 72 in 15 cos)	30.1 (N = 16 in 4 cos)
51. Tons small grain hay	49.8 (N = 31 in 17 cos)	101.5 (N = 4 in 2 cos)	46.7 (N = 22 in 11 cos)	22.2 (N = 5 in 4 cos)
52. Tons red clover hay	28.3 (N = 97 in 27 cos)	43.8 (N = 16 in 5 cos)	28.9 (N = 65 in 17 cos)	10.5 (N = 16 in 5 cos)
53. Tons alfalfa hay	84.6 (N = 49 in 29 cos)	227.6 (N = 9 in 5 cos)	64.3 (N = 25 in 15 cos)	32.5 (N = 15 in 9 cos)

Table I (cont'd)

Characteristic or Item	Total Producers (N = 955 in 57 counties*) Average Number**	Large Producers (N = 114 in 10 counties) Average Number	Medium Producers (N = 567 in 29 counties) Average Number	Small Producers (N = 274 in 18 counties) Average Number
54. Tons other hay	54.0 (N = 168 in 40 cos)	53.9 (N = 36 in 6 cos)	58.5 (N = 77 in 21 cos)	47.6 (N = 55 in 13 cos)

*Where numbers of producers and counties vary from totals given, they are presented in parentheses for individual items.

**Average Numbers were computed by taking numbers responding in each county reporting for each size of herd category on each item times the means, adding all the total and dividing by the total numbers of producers.

Number of Calves Raised

The average number of calves raised was 43.6. Large producers averaged 69.9 calves and Small producers averaged 30.6 calves. Large producers obviously would average more calves raised than Small producers.

Acres of Beef Pasture

Table I also shows that the average number of total pasture acres for the beef herds of all producers was approximately 129.1. The Large producers had an average of 175.4 pasture acres; while the Small had an average of 102.3 pasture acres. The Large thus had 71.6 acres more than the Small, on the average.

Length of Breeding Season

Table I also shows that the average length of breeding season was 5.0 months for all producers interviewed. Large producers had an average of 5.0 months and Small producers had an average 5.2 months. Therefore, there was little difference to be noted between Large and Small producers. Both exceeded the maximum three months, April 1 to July 1, recommended.

Age of Heifers Bred

As seen in Table I, the average age of heifers when first bred for all producers was 17.4 months. Seventeen point three months was the average for the Large producers and 17.2 months for the Small producers. Both exceeded the recommended minimum of 15 months.

Weight of Heifers When Bred

The average weight of heifers in herds of cow-calf producers at breeding time was 685.9 pounds. There was a difference in weights of heifers between Large producers, 686.5 pounds, and Small producers, 692.5 pounds. Breeding weights of Large producers averaged slightly less than those of Small producers, though both exceeded the recommended 650 pounds.

Number of Times Per Day Cows Were Checked at Breeding Time

It was noted that the average number of times cows were checked per day at breeding time was 1.2 times for those reporting compared to the recommendation of two times. Large and Small producers checked their cows an average of 1.3 times per day. One Large production county did not respond.

Number of Times Per Day Cows Were Checked During Calving Season

Table I further indicates that all producers on the average checked their cows 1.5 times daily during calving season. The Large producers checked their cows 1.7 times per day, and Small producers checked their cows 1.4 times per day during calving season. Once a day, of course, was recommended.

Number of Times Per Day Heifers Were Checked During Calving Season

The average number of times heifers were checked during calving season by interviewed producers was 1.7 times per day versus the two or three recommended. Large producers checked their heifers, as recommended somewhat more frequently, 2.2 times per day, than did Small producers 1.7 times per day, less than recommended.

Age of Calves When Castrated

The average age of calves when castrated was 2.8 months compared with the recommendation of before four months. Little difference was noted between Large producers who averaged 3.0 months and Small producers who averaged 2.9 months.

Number of Times Cows Wormed

The average number of times cows were wormed for all producers interviewed was the recommended 1.0 times per year. Large producers had wormed cows an average of 1.2 times, and Small producers had wormed theirs 1.1 times.

Number of Animal Units Grazed

It was noted that the average number of animal units when grazed was 66.6. Large producers, of course, had an average of 102.7 units; while Small producers had 51.6 units.

Number of Breeding Females Kept

Table I indicates that all producers kept an average of 48.8 beef females of breeding age in the herd. The Large producing herds averaged 78.6 breeding females compared to 34.2 for Small producing herds.

Number of Cows Weaning Calves

On the average all producers had an average of 43.8 cows weaning calves the previous year. Large producers had an average of 64.4 cows compared with Small producers who had an average of 31.1 cows.

Pounds of Calves Sold

It is shown in Table I that the average total weight of all calves sold by all producers in 56 counties reporting was 21,050 pounds in 1976-1977. Large producers reporting in nine counties sold a total average of 30,780 pounds compared to 14,830 pounds sold by the Small producers. One Large production county did not report.

Pounds of Calves Kept for Replacements

Table I shows the average weight of calves kept for replacements by the producers reporting in 55 counties to be 9,460 in 1976-1977. The average weight of calves kept by the Large producers reporting in nine counties was 7,780 pounds; while the Small producers reporting in 17 counties averaged 7,930 pounds. Thus, it was noted Large producer averaged keeping fewer pounds of replacement calves than did Small producers. One Large and one Small production counties did not report.

Pounds of Calves Kept for Consumption

The average pounds of calf kept for consumption by all producers reporting in 54 counties was 564.0 pounds. Large producers in nine counties kept an average of 538.9 pounds; while Small producer reporting in 17 counties kept an average of 559.3 pounds. One county in each category did not report.

Acres of Orchardgrass-White Clover

Table I shows that all producers in 42 counties reporting averaged 40.6 acres of orchardgrass-white clover. Large producers in five counties reporting averaged 45.2 acres; while Small producers in 11 counties reporting averaged 32.6 acres.

Acres of Fescue-White Clover

The average acres of fescue-white clover of all producers interviewed was 79.5 acres. Large producers had an average of 129.2 acres compared to 60.5 acres for the Small producers. Thus, Large producers had more acres on the average than did Small. All counties represented.

Acres of Bluegrass-White Clover

The average number of acres of bluegrass-white clover for 20 counties reporting was 36.8 acres. One Large production county had only 10.0 acres; while eight Small production counties had an average of 43.2 acres. Thus, relatively few producers and counties reported having bluegrass-white clover mixes.

Acres of Bermudagrass-White Clover

The total average number of acres of bermudagrass-white clover used in 20 counties reporting was 31.8 acres. Large producers in seven counties reporting had an average of 52.7 acres; while Small producers in eight counties had an average of 16.0 acres. Thus, relatively few counties had producers who reported having bermudagrass-white clover mixes.

Acres of Fescue-Lespedeza

The average number of acres of fescue-lespedeza pastures grown by all producers in 29 counties reporting was 42.7. Large producers in seven counties reporting had an average of 59.6 acres; while Small producers in 10 counties had an average of 45.1 acres. Again, relatively few (i.e. 29 of 57 counties) producers were reported to have had fescue-lespedeza mixes.

Acres of Bermudagrass-Lespedeza

The average acreage of bermudagrass-lespedeza grown by all producers in 11 counties was 31.7 acres. Large producers in the four counties reporting grew 23.7 acres compared to 34.8 acres grown by Small producers in three counties reporting. So, few grew bermudagrass-lespedeza mixes.

Acres of Orchardgrass

The average acreage of orchardgrass grown by all cow-calf producers in 20 counties reporting was 25.5 acres. Large producers in one county grew 30.0 acres, on the average, and Small producers in four counties averaged 20.6 acres.

Acres of Fescue

The average number of acres of fescue grown by all cow-calf producers in 44 counties reporting was 62.7 acres. Large producers in five counties reporting grew 80.5 acres, and Small producers in 13 counties grew 59.8 acres. Thus, the majority of counties did report producers growing fescue.

Acres of Bluegrass

The average acres of bluegrass grown by all producers in only seven counties was 90.2. Large producers in one county grew an average of 30.0 acres, compared to 84.4 acres for Small producers in two counties.

Acres of Bermudagrass

The average acres of bermudagrass grown by all producers in 18 counties was 55.0 acres. Large producers in four counties grew 47.4 acres

compared to 20.1 acres for Small producers in five counties. Medium producers in nine counties averaged an amazing 74.1 acres. All in all, relatively few counties reported bermudagrass production.

Acres of Lespedeza Reseeded

The average acreage of lespedeza reseeded by all producers in 12 counties reporting was 79.8 acres. Large producers in four counties grew 54.5 acres; while Small producers in three counties grew 27.5 acres. Thus, relatively few producers had reseeded lespedeza.

Acres of Sericea

The average acres of sericea grown by all producers in 11 counties reporting was 24.1 acres. Large producers in two counties averaged 30.0 acres; while Small producers in three counties had 25.9 acres. Thus, few counties reported producers with sericea.

Acres of Temporary Pasture-Wheat

The average acres of temporary pasture-wheat for all producers in 32 counties reporting was 34.5 acres. Large producers in nine counties had an average of 67.1 acres compared to 18.7 acres for Small producers in 10 counties. Thus, a slight majority of counties studied (i.e., 56%) reported producers using temporary wheat pasture.

Acres of Temporary Pasture-Oats

The average acres of temporary pasture-oats for all producers in 22 counties reporting was 20.7 acres. Large producers in three counties had an average of 64.3 acres; while Small producers in eight counties had an average of 14.7 acres. A little more than one-third of counties reported use of oats as temporary pasture.

Acres of Temporary Pasture Barley

The average acres of temporary pasture barley for all producers in five counties was 100.5. The one Large production county had an average of 500.0 acres and this amount was grown by only one respondent. Small producers in three counties had an average 23.8 acres grown by four respondents. Few grew barley for temporary pasture.

Acres of Temporary Pasture Rye

The average acres of temporary pasture rye of all producers in 18 counties reporting was 31.1 acres. Large producers in four counties had an average of 112.0 acres compared with Small producers in six counties that average 8.9 acres. Few grew rye for temporary pasture.

Acres of Temporary Pasture-Ryegrass

The average acres of temporary pasture-ryegrass of all producers in 10 counties reporting was 59.8. Large producers in four counties averaged 189.5 acres compared with Small producers in two counties who averaged 11.0 acres each. Thus, relatively few grew ryegrass for temporary pasture.

Acres of Temporary Pasture-Crimson Clover

The average acres of temporary pasture-crimson clover of all producers in three counties reporting was 4.7. Large producers in one county had an average of 1.0 acre grown by only one respondent. Medium producers in two counties had an average of 6.5 acres, and none of the Small producers reportedly grew temporary pasture-crimson clover. Thus, few had crimson clover.

Acres of Temporary Pasture-Sudangrass

The average acres of temporary pasture-sudangrass of all producers in 13 counties reporting was 20.8 acres. Large producers in three counties had an average of 80.0 acres compared to 13.1 acres for Small producers in six counties reporting. Thus, few had sudangrass.

Acres of Temporary Pasture-Sudangrass/Sorghum Hybrid

The average acreage of temporary pasture-sudangrass/sorghum hybrid grown in 17 counties reporting was 13.8 acres. Large producers in six counties had an average of 19.8 acres compared to 9.7 acres for Small producers in seven counties reporting sudangrass/sorghum hybrid. Less than one-third of counties reported this crop.

Acres of Temporary Pasture-Pearlmillets

Pearlmillet temporary pasture was reported by only one producer a Small producer. His total acreage was 5.0 acres.

Acres of Temporary Pasture-Annual Lespedeza

The average acres of temporary pasture-annual lespedeza grown by all producers in 12 counties reporting was 24.3 acres. Large producers in two counties had an average of 31.7 acres each; while Small producers in five counties had an average of 28.0 acres. Thus, about one-fourth of counties reported temporary pasture-annual lespedeza grown.

Acres of Temporary Pasture-Other

The average acres of temporary pasture-other reported for all cow-calf producers in five counties reporting was 55.0 acres. The Large producer in the one county grew 450.0 acres compared to an average of 72.5 acres for Small producers in two counties.

Tons of Corn Silage

Table I shows that all producers reporting in 36 counties averaged 271.7 tons of corn silage produced. Large producers in eight counties had an average of 328.7 tons; while Small producers in eight counties had an average of 187.5 tons. Therefore, Large producers reporting had on the average, produced more tons than Small producers. Nearly two-thirds of the counties reported corn silage production.

Tons of Sorghum Silage

The average tons of sorghum silage produced by all producers in seven counties reporting was 272.6. Large producers in two counties averaged 298.0 tons compared to 250.0 tons for Small producers in one county reporting.

Tons of Other Silage

The average tons of other silage reported by all producers in eight counties was 270.6 tons. Large producers in one county averaged 280.0 tons; while Small producers in three counties averaged 168.3 tons. Thus, few reported silage other than corn or sorghum.

Tons of Fescue Hay

The average tons of fescue hay produced by all producers in 56 counties was 50.0 tons. Large producers averaged 57.9 tons; while Small producers averaged less, 45.5 tons. So, producers in all but one county reported fescue hay.

Tons of Orchardgrass Hay

The average tons of orchardgrass hay of all producers in 43 counties reporting was 41.4. Large producers in five counties averaged 58.3 tons; while Small producers in 12 counties averaged 39.9 tons. Large producers averaged more tons than did Small producers. Three-fourths of producers studied reported producing orchardgrass hay.

Tons of Timothy Hay

The average tons of timothy hay produced by all producers in 33 counties was 48.4 tons. Large producers in three counties averaged 37.2 tons; while Small producers in 11 counties averaged 47.4 tons. A majority of producers did produce timothy hay.

Tons of Annual Lespedeza Hay

The average tons of annual lespedeza hay of all producers in 26 counties was 31.1 tons. Large producers in seven counties averaged 38.5 tons; while Small producers in four counties averaged 30.1 tons. Less than one-half of the counties reported annual lespedeza hay produced.

Tons of Small Grain Hay

The average tons of small grain hay for all producers in 17 counties was 49.8. Large producers in two counties averaged 101.5 tons; while Small producers in four counties averaged 22.2 tons. Less than one-third of those studied reported small grain hay.

Tons of Red Clover Hay

All producers in 27 counties averaged 28.3 tons of red clover hay. Large producers in five counties had an average 43.8 tons; while

Small producers in five counties had an average of 10.5 tons. Less than one-half of these interviewed reported red clover hay.

Tons of Alfalfa Hay

All producers in about one-half of the counties, 29, averaged 84.6 tons of alfalfa hay. Large producers in five counties averaged 227.6 tons; while Small producers in nine counties averaged 32.5 tons.

Tons of Other Hay

All producers in 40 counties averaged 54.0 tons of other hay. Large producers in six counties averaged 53.9 tons; while Small producers in 13 counties averaged 47.6 tons of other hay. The production in majority of counties, thus, reported producing other kinds of hay than those listed.

II. METHOD OF DISPOSITION OF CALVES

Table II shows methods of disposition of calves reported by producers interviewed. Methods reportedly used for calf disposition, in descending order of percents of calves marketed and numbers of counties where the methods were mentioned, included: (1) sold at organized feeder sales, 67.1 percent, 50 counties represented; (2) sold at weekly auction, 65.6 percent, all 57 counties represented, (3) sold to backgrounder or feeder, 61.6 percent, 22 counties represented; (4) sold to local traders, 47.4 percent, 34 counties represented; and (5) calves retained, 32.8 percent, all 57 counties represented.

Table II

Disposition of Calves of Selected Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories in Average Percents of Calves Sold

Method of Disposition of Calves	Total Producers (N = 955 in 57 counties*) Average Percent**	Large Producers (N = 114 in 10 counties) Average Percent	Medium Producers (N = 567 in 29 counties) Average Percent	Small Producers (N = 274 in 18 counties) Average Percent
1. Percent calves sold at organized feeder sales	67.1 (N = 369 in 50 cos)	71.0 (N = 47 in 8 cos)	68.0 (N = 233 in 27 cos)	62.8 (N = 89 in 15 cos)
2. Percent calves sold at weekly auctions	65.6 (N = 626)	61.4 (N = 65)	65.4 (N = 362)	67.3 (N = 199)
3. Percent calves sold to backgrounder or feeder	61.6 (N = 37 in 22 cos)	38.5 (N = 8 in 6 cos)	68.8 (N = 25 in 13 cos)	62.5 (N = 4 in 3 cos)
4. Percent calves sold to local traders	47.4 (N = 152 in 34 cos)	47.4 (N = 16 in 6 cos)	44.9 (N = 99 in 19 cos)	54.0 (N = 37 in 9 cos)
5. Percent calves retained	32.8 (N = 409)	38.2 (N = 55)	31.4 (N = 223)	33.0 (N = 131)

*Numbers in parentheses are numbers of producers and counties in which methods were used, if different from totals.

**Average percents selling calves were computed by taking numbers responding in each county reporting for each size of herd category on each item times the means, adding all the total and dividing by the total numbers of producers.

When Large and Small production counties and producers are compared for each method of calf disposition, it may be seen that organized feeder sales were mentioned as having been used to market the highest percent of Large producer calves, 71.0 percent; while the largest percent of Small producer calves, 67.3 percent, were sold through weekly auctions. A consequentially higher percent of Small, 62.5, than Large producer calves, 38.5 percent, was sold to backgrounders and feeders. Fifty-four percent of Small producer calves were sold to local traders, versus 47.4 percent for Large. The reverse was noted on organized feeder sales where 71.0 percent of the Large producer calves and 62.8 percent of the Small producer calves were marketed. Also, 38.2 percent of the Large and 33.0 percent of the Small producer calves were retained as replacements or for backgrounding.

III. BACKGROUNDING CATTLE

Table III presents average numbers and percents of calves backgrounded and tells how they were marketed.

Number of Calves Backgrounded

The average number of calves backgrounded by all cow-calf producers interviewed was 45.3, 52 counties represented. There was a considerable difference between Large producers who had an average 56.1, 10 counties represented, and Small producers who had an average 41.5, 16 counties represented. Large producers averaged more than did Small producers.

Table III

Numbers and Percents of Calves Backgrounded and Marketing Methods as Reported by Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories

Backgrounding Item	Total Producers (N = 955 in 57 counties*) Average number or percent**	Large Producers (N = 114 in 10 counties) Average number or percent	Medium Producers (N = 567 in 29 counties) Average number or percent	Small Producers (N = 274 in 18 counties) Average number or percent
1. Number of calves backgrounded	45.3 (N = 245 in 52 cos)	56.1 (N = 45)	43.5 (N = 132 in 26 cos)	41.5 (N = 68 in 16 cos)
2. Percent calves backgrounded home reared	88.3 (N = 223 in 51 cos)	91.0 (N = 43)	89.3 (N = 115 in 25 cos)	84.6 (N = 65 in 16 cos)
3. Percent backgrounded calves steers	63.7 (N = 266 in 52 cos)	62.6 (N = 42)	63.9 (N = 146 in 26 cos)	64.0 (N = 78 in 16 cos)
4. Percent backgrounded cattle sold at local auctions	77.9 (N = 119 in 40 cos)	92.4 (N = 17 in 8 cos)	67.8 (N = 62 in 18 cos)	87.5 (N = 40 in 14 cos)
5. Percent backgrounded cattle sold at organized yearling sales	80.9 (N = 92 in 38 cos)	96.2 (N = 13 in 6 cos)	78.8 (N = 60 in 20 cos)	77.5 (N = 19 in 12 cos)
6. Percent backgrounded cattle sold to order buyers	73.4 (N = 58 in 31 cos)	87.2 (N = 11 in 7 cos)	64.9 (N = 32 in 14 cos)	81.2 (N = 15 in 10 cos)
7. Percent backgrounded cattle sold direct to feeders	64.6 (N = 18 in 14 cos)	88.7 (N = 3 in 3 cos)	57.4 (N = 13 in 9 cos)	75.0 (N = 2 in 2 cos)

*Numbers in parentheses are numbers of producers and counties if different from total.

**Average numbers and percents were computed by taking number respondent in each county reporting for each size of herd category on each item times the means, adding all the totals and dividing by the total numbers of producers.

Percent of Calves Backgrounded That Were Home Reared

Table III also shows that 88.3 percent of calves backgrounded were home reared, 51 counties being represented. More Large producers, 91.0 percent in 10 counties reporting, than was true for Small producers, 84.6 percent in 16 counties reporting. There was no consequential difference between the two production groups.

Percent of Backgrounded Calves That Were Steers

Nearly two-thirds, 63.7 percent, of backgrounded calves were steers for all cow-calf producers interviewed, in 52 counties represented. It was noted that there was no big difference between Large producers, 62.6 percent in 10 counties represented, and Small producers, 64.0 percent in 16 counties represented.

Percent of Backgrounded Cattle That Were Sold at Local Auctions

It was noted that 77.9 percent of backgrounded cattle in 40 counties reporting were sold at local auctions. Large producers in eight counties averaged 92.4 percent; while Small producers in 14 counties averaged 87.5 percent marketed in this way. Thus, there was no large difference between the two production groups.

Percent of Backgrounded Cattle That Were Sold at Organized Yearling Sales

Table III also shows that 80.9 percent of backgrounded cattle of producers reporting in 38 counties were sold at organized yearling sales. Large producers here reported marketing a consequentially higher percent, 96.2, six counties represented, than Small producers, 77.5 percent, 12 counties represented.

Percent of Backgrounded Cattle Sold to Order Buyers

Order buyers had bought 73.4 percent of backgrounded cattle from all producers reporting in 31 counties. Large producers here reporting had marketed a higher percent, 87.2 perent, seven counties represented, than had Small producers, an average of 81.2 percent in 10 counties represented.

Percent of Backgrounded Cattle Sold Direct to Feeders

The average percent of backgrounded cattle sold direct to feeders by all producers reporting was 64.6 in 14 counties represented. Large producers reported marketing a consequentially higher percent direct to feeders, 88.7 in three counties represented, than Small producers 75.0 percent in two counties represented.

IV. MANAGEMENT PRACTICES

A wide range in beef management practice use is evident as presented in Table IV. A total of 44.5 percent of all producers interviewed, on the average, used each of the 14 practices here studied. A higher percent of Large producers, 51.0, than Small, 40.8 percent, on the average used each practice listed.

The highest percent using a practice for all producers interviewed was 82.5 percent on Practice #7, Cows allowed free access to a mineral mixture. A higher percent of Large producers, 89.5, than Small 77.4 percent had used Practice #7.

The lowest percent using a practice for the total column was 4.9 percent for producers in 25 counties on Practice #3, Herd enrolled in Tennessee Beef Cattle Improvement Program (TBCIP). Here again, more Large, 9.6 percent, than Small, 4.7 percent, had used the practice.

Table IV

Management Practices Used by Selected Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories in Average Percents of Producers Using Them in 1976-1977

Recommended Management Practice	Total Producers (N = 955 in 57 counties*) Average Percent**	Large Producers (N = 114 in 10 counties) Average Percent	Medium Producers (N = 567 in 29 counties) Average Percent	Small Producers (N = 274 in 18 counties) Average Percent
1. Used performance tested bull	27.0 (N = 258 in 53 cos)	44.7 (N = 51)	26.3 (N = 149)	21.2 (N = 58 in 14 cos)
2. Bulls met minimum requirement for PTB sale	43.5 (N = 415 in 55 cos)	53.5 (N = 61)	42.2 (N = 239)	42.0 (N = 115 in 16 cos)
3. Herd enrolled in TBCIP	4.9 (N = 47 in 25 cos)	9.6 (N = 11 in 5 cos)	4.1 (N = 23 in 14 cos)	4.7 (N = 13 in 6 cos)
4. Cows pregnancy checked after breeding season	8.1 (N = 77 in 35 cos)	9.6 (N = 11 in 7 cos)	8.3 (N = 47 in 20 cos)	6.9 (N = 19 in 8 cos)
5. Calves vaccinated for blackleg and malignant edema	79.3 (N = 757)	86.0 (N = 98)	81.5 (N = 462)	71.9 (N = 197)
6. Used growth stimulants	12.9 (N = 123 in 36 cos)	23.7 (N = 27 in 7 cos)	11.8 (N = 67 in 20 cos)	8.4 (N = 29 in 9 cos)
7. Cows allowed free access to mineral mixture	82.5 (N = 788)	89.5 (N = 102)	83.6 (N = 474)	77.4 (N = 212)
8. Cows provided magnesium oxide to prevent grass tetany	62.5 (N = 594)	62.3 (N = 71)	65.3 (N = 370)	55.8 (N = 153)
9. Stockpiled fescue	62.4 (N = 596)	51.8 (N = 59)	61.4 (N = 348)	69.0 (N = 189)

Table IV (cont'd)

Recommended Management Practice	Total Producers (N = 955 in 57 counties*) Average Percent**	Large Producers (N = 114 in 10 counties) Average Percent	Medium Producers (N = 567 in 29 counties) Average Percent	Small Producers (N = 274 in 18 counties) Average Percent
10. Gave needy cows special treatment	40.0 (N = 378 in 53 cos)	40.4 (N = 46 in 9 cos)	40.2 (N = 228 in 27 cos)	38.0 (N = 104 in 17 cos)
11. Used protein with low quality roughage	48.3 (N = 461 in 56 cos)	57.9 (N = 66)	49.0 (N = 278)	42.7 (N = 117 in 17 cos)
12. Used grub/lice control	61.7 (N = 589)	71.1 (N = 81)	53.5 (N = 357)	55.1 (N = 151)
13. Vaccinated for leptospirosis	26.2 (N = 250 in 49 cos)	32.5 (N = 37 in 8 cos)	28.0 (N = 159 in 26 cos)	19.7 (N = 54 in 15 cos)
14. Working facilities adequate	64.3 (N = 614)	80.7 (N = 92)	64.0 (N = 363)	58.0 (N = 159)
Total Average Using 14 Practices	44.5	51.0	43.9	40.8

*Numbers in parentheses are numbers of producers in counties if different from totals.

**Average percents were computed by adding numbers of producers using a practice in each county in each size of herd category, multiplying by 100 and dividing by the total number in the size of herd category.

Breeding Practices

Practices relating to breeding also are shown in Table IV. The first cow-calf management practice had to do with Practice #1, Used performance tested bull. The average percent for all interviewees reporting in 53 counties was 27.0 using. There was a very consequential difference between Large, 44.7 percent using, and Small producers, 21.2 percent using. Fourteen of 18 counties had producers reporting. The second management practice, Practice #2, was concerned with Bulls meeting minimum requirements for performance tested bull sale. The average percent using for all producers reporting in 55 counties was 43.5. There was a consequential difference between Large producers, 53.5 percent using, and Small producers, 42.0 percent.

The average percent use for Practice #3, Herd enrolled in Tennessee Beef Cattle Improvement Program (TBCIP), was a relatively low 4.9 percent. A higher percent of Large producers, 9.6 percent in five counties using than Small producers 4.7 percent in six counties were using Practice #3.

The average percent using Practice #4, Cows checked after breeding season, in 35 counties reporting was 8.1. The Large producers, 9.6 percent, used the practice more frequently than did the Small producers with average percent of 6.9. Thus, the Large producers tended to rate higher than the Small producers on breeding practices (i.e., Practices #1-#4).

Herd Health Practices

Practices #5 and #13 in Table IV relate to vaccinating practices. There was a considerable difference between average percents of Large and Small producers using these practices. Of all cow-calf producers interviewed, 79.3 percent used Practice #5, Calves vaccinated for blackleg and malignant edema. A consequentially higher percent of Large producers, 86.0 percent, than Small, 71.9, percent, had used Practice #5. The average percent of all producers interviewed reporting in 49 counties was 26.2 on Practice #13, Vaccinated for Leptospirosis. A consequentially higher percent of Large producers, 32.5, in eight counties than Small producers, 19.7 percent, 15 counties had used Practice #13. Thus, higher percents of Large producers had used these two vaccinating practices than was true for the Small producers.

Growth Stimulants Practice

Table IV shows that on Practice #6, Used growth stimulants, the average percent for all producers interviewed in 36 counties reporting was 12.9 percent. Large producers, 23.7 percent using, were consequentially above. Small producers, 8.4 percent using Practice #6.

Feeding and Pasturing Practices

Average percent use for all interviewees reporting on Practice #7, Cows allowed free access to mineral mixture, was 82.5 percent. The percent of Large producers using Practice #7 was 89.5 compared to 77.4 percent for the Small producers, a consequential difference.

On Practice #8, Cows provided magnesium oxide to prevent grass tetany, the average percent using for all producers interviewed was 62.5. There was no consequential difference noted between Large producers, on the average 62.3 percent, and Small producers, on the average 55.8 percent using. However, a higher percent of Large producers than Small producers had used the Practice.

Of all producers interviewed an average of 62.4 percent had used Practice #9, Stockpiled fescue. There was a consequential difference between Large producers 51.8 percent using and Small producers 69.0 percent using. Thus, a higher percent ofSmall producers than Large producers had used Practice #9.

There was no big difference between Large producers 40.4 percent using, and Small producers 38.0 percent using, relative to use of Practice #10. Gave needy cows special treatment. The average percent of all producers interviewed in 53 counties reporting was 40.0 percent.

On Practice #11, Used protein with low quality roughage, the average percent using for all interviewees in 56 counties was 48.3. A consequentially higher percent of the Large producers 57.9 percent, had used the practice than was true for the Small producers, 42.7 percent, in 17 counties reporting.

Parasite Control Practice

On Practice #12, Used grub/lice control, the average percent using for all producers was 61.7 percent. A consequentially higher percent of Large producers, 71.1 percent, than Small, 55.1 percent, had used the practice.

Working Facilities Practice

The average percent using for all producers interviewed was 64.3 percent on Practice #14, Working facilities adequate. A consequentially higher percent of Large producers, 80.7 percent, than Small producers, 58.0 percent had used Practice #14. Thus, Large producers apparently had more adequate systems of working facilities than Small producers, in the main.

Brief Summary of Use of Management Practices

A study of practices in Table IV, indicates a considerable difference between Large and Small producers in their use of management practices. In 13 of 14 practices, higher percents of Large producers than Small producers had used the practices. Consequentially higher percents of Large than Small had used all practices and Practices #1, #2, #5, #6, #7, #11, #12, #13 and #14; while the reverse was true on Practice #9.

Other Management Practices Indirectly Reported

Reference to Table V discloses that, on the average, producers were found to be using five of eight other management practices alluded to in the survey. Large producers, on the average, used six of the eight, while Small used five.

Responses of "No," means that, on the average, producers were not using the practice alluded to in Table I, items 7-14, pages 17 and 18. "Yes" responses meant that, on the average, they were.

Other Practice #1, Limited breeding season to April 1 through July 1, was, on the average, not used by any group. Most reported breeding seasons of five or more months.

Table V

Other Management Practices Indirectly Reported on by Selected Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories According to Response

Recommended Management Practice	Total (N = 955 in 57 counties)	Large Producers (N = 114 in 10 counties)	Medium Producers (N = 567 in 29 counties)	Small Producers (N = 274 in 18 counties)
	Average Response*			
1. Limited breeding season to April 1 through July 1	No	No	No	No
2. Bred heifers at 15 months of age or older	Yes	Yes	Yes	Yes
3. Bred heifers at 650# or more	Yes	Yes	Yes	Yes
4. Checked cows twice daily during breeding season	No	No	No	No
5. Checked cows once daily during calving season	Yes	Yes	Yes	Yes
6. Checked heifers two or three times daily during calving season	No	Yes	No	No
7. Castrate bull calves as soon as possible	Yes	Yes	Yes	Yes
8. Worm cows as recommended at least once per year	Yes	Yes	Yes	Yes
Number "Yes" Responses out of 8 practices	5	6	5	5

*"No" responses meant that "on the average" producers were not following the practice. "Yes" responses meant that "on the average" they were.

Other Practice #2, Bred heifers at 15 months of age or older, was, on the average, used by all groups, the average age for breeding being 17.4 months.

Other Practice #3, Bred heifers at 650# or more, again, was used by all groups, on the average, the average weight being 685.9# at breeding.

Other Practice #4, Checked cows twice daily during breeding season, was, on the average, not used by any group, the average being 1.2 checks per day.

Other Practice #5, Checked cows once daily during calving season, was used by all groups, on the average, the average being 1.5 times per day.

Other Practice #6, Checked heifers two or three times daily during calving season, was used only by Large producers, with an average of 2.2, while others averaged less than two (1.7).

Other Practice #7, Castrate bull calves as soon as possible (i.e., and no later than four months), was, on the average used by all groups, the average being 2.8 months.

Other Practice #8, Worm cows as recommended at least once per year, was, on the average used by all groups.

VI. TYPES OF EXTENSION CONTACTS

Table VI shows types of Extension contacts reported for 1976-1977 by cow-calf producers interviewed. It was noted in this table that the average number of contacts with Extension mentioned by producers the previous year included: (1) Number of phone calls to the Extension office, averaged 5.6, 55 counties represented; (2) Number of visits to the Extension office, averaged 4.3, 56 counties represented; (3) Number of Extension meetings attended, had an average 4.2, all 57 counties represented; (4) Number farm visits by Extension Agents, averaged 3.7, 56 counties represented; and (5) Number of beef Extension meetings attended, averaged 1.4, 46 counties represented.

With regard to Number of phone calls to the Extension office when Large and Small producers were compared, it was seen that there was no large difference between Large producers who had an average 6.0, 10 counties represented, and Small producers who had an average 6.3, 17 counties represented.

Concerning Number of visits to the Extension office, Large producers averaged 3.8, 10 counties represented, while Small producers averaged 4.5, 17 counties represented.

With regard to Number of Extension meetings attended, Large producers had an average of 3.6, 10 counties represented, and Small producers had an average of 3.5, 18 counties represented.

Concerning Number of farm visits by agents, Large producers averaged 4.5, 10 counties represented, while Small producers averaged 3.9, 17 counties represented. Also Large producers averaged attending 1.5 beef Extension meetings, eight counties represented; while Small producers averaged 1.3, 13 counties represented.

Table VI

Kinds of Contacts with Extension Reported by Tennessee Cow-Calf Producers in 57 Counties by Size of Herd Categories in Average Number of Contacts, 1976-1977

Kind of Extension Contact	Total Producers (N = 955 in 57 counties*)	Large Producers (N = 114 in 10 counties)	Medium Producers (N = 567 in 29 counties)	Small Producers (N = 274 in 18 counties)
1. Number of phone calls to Extension office (Av.)**	5.6 (N = 888 in 55 cos)	6.0 (N = 96)	5.3 (N = 543 in 28 cos)	6.3 (N = 249 in 17 cos)
2. Number of visits to Extension office (Av.)	4.3 (N = 902 in 56 cos)	3.8 (N = 96)	4.3 (N = 563)	4.5 (N = 243 in 17 cos)
3. Number of Extension meetings attended (Av.)	4.2 (N = 634 in 47 cos)	3.6 (N = 81)	4.7 (N = 369)	3.5 (N = 184)
4. Number of farm visits by Extension agents (Av.)	3.7 (N = 909 in 56 cos)	4.5 (N = 96)	3.5 (N = 564)	3.9 (N = 249 in 17 cos)
5. Number of beef Extension meetings attended (Av.)	1.4 (N = 762 in 46 cos)	1.5 (N = 77 in 8 cos)	1.4 (N = 494 in 25 cos)	1.3 (N = 191 in 13 cos)
Total average Number of Extension Contacts	19.2 (N = 4095 in 46-57 cos)	19.4 (N = 446 in 8-10 cos)	19.2 (N = 2533 in 25-29 cos)	19.5 (N = 1116 in 13-18 cos)
Average Number Contacts Per Method	3.8	3.9	3.8	3.9

*Numbers in parentheses are numbers of producers and counties if different from totals.

**Average numbers were computed (by Table I).

It was noted that the average number of Extension contacts per kind for all producers interviewed was 3.8. Large and Small producers had the same average number 3.9.

Finally, little difference was noted on Total average Number of Extension contacts producers reported the previous year between Large producers, 19.4 average total contacts, and Small, 19.5 contacts.

VII. RELATIONS OF MEAN NUMBERS OF SELECTED EXTENSION CONTACTS REPORTED IN 1976-1977 BY PRODUCERS AND USE OF RECOMMENDED BEEF PRODUCTION PRACTICES

Data in Table VII include mean numbers of Extension contacts reported by cattlemen using and not using each of 14 approved beef production practices, F values and confidence levels. Kinds of contacts included Number of Total Extension meetings, Number of beef production meetings, Number of visits to the Extension office, Number of telephone calls to the Extension office and Number of farm visits from the Extension agents.

Beef Practice #1, Used Performance Tested Bulls

Reference to Table VII shows that use of Beef Practice #1, Used performance tested bulls, was positively and significantly related to Numbers of beef production meetings attended, visits to Extension office, telephone calls to Extension office, and visits from the Extension agents. It was negatively but significantly related to Number of total Extension meetings attended the previous year. Thus, those using Practice #1 had attended fewer total Extension meetings but had recorded more of all other kinds of Extension contacts studied.

Table VII

Relations of Mean Numbers of Selected Extension Contacts Reported in 1976-1977 by Producers and Use of Recommended Beef Production Practices*

Use of Recommended Beef Production Practices	Number Ext. Meetings Attended past 12 months			Number Beef Prod. Meetings Attended past 12 months			Number Visits to Extension office past 12 months			Number Telephone Calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
1. Used perform. tested bull			25.17			75.86			40.75			66.53			24.63
No	669	2.48		669	0.78		670	3.21		670	4.32		670	3.08	
Yes	258	2.21	P = 0.001	257	1.46	P = 0.001	257	5.23	P = 0.001	258	7.80	P = 0.001	258	4.50	P = 0.001
Total	927	2.36		926	0.97		927	3.77		928	5.29		928	3.48	
2. Bulls met. min. req. PTBS			5.72			12.53			16.30			21.38			19.22
No	462	2.21		462	0.81		463	3.02		463	4.11		463	2.76	
Yes	416	2.80	P = 0.001	415	1.17	P = 0.001	415	4.70	P = 0.001	416	6.71	P = 0.001	416	4.38	P = 0.001
Total	878	2.55		877	0.99		878	3.81		879	5.33		879	3.52	
3. Herd enrolled TBCIP			3.15			8.46			16.30			37.74			24.76
No	876	2.45		875	0.95		876	3.64		877	6.06		877	3.35	
Yes	47	3.15	P = 0.08	47	1.43	P = 0.001	47	6.28	P = 0.001	47	10.43	P = 0.001	47	6.25	P = 0.001
Total	923	2.49		922	0.98		923	3.78		924	5.32		924	3.49	
4. Cows pregnancy checked following breeding			1.16			0.80			0.23			3.00			3.39
No	836	2.56		835	0.99		836	3.88		837	5.27		837	3.44	
Yes	77	2.21	P = 0.28	77	0.87	P = 0.37	77	3.69	P = 0.73	77	6.52	P = 0.08	77	4.31	P = 0.07
Total	913	2.53		912	0.98		913	3.86		914	5.38		914	3.51	
5. Calves vacci. Blackleg, malignant edema			15.21			33.49			12.62			18.61			9.37
No	169	1.74		169	0.53		169	2.67		169	3.54		169	2.67	
Yes	758	2.77	P = 0.001	757	1.09	P = 0.001	758	4.14	P = 0.001	759	5.74	P = 0.001	759	3.71	P = 0.001
Total	927	2.58		926	0.97		927	3.87		928	5.34		928	3.52	

Table VII (cont'd)

Use of Recommended Beef Production Practices	Number Ext. Meetings Attended past 12 months			Number Beef Prod. Meetings Attended past 12 months			Number Visits to Extension office past 12 months			Number Telephone Calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
6. Used growth stimulants			37.71			52.08			55.28			44.46			17.64
No	807	2.33		806	0.89		807	3.41		808	4.83		808	3.30	
Yes	123	4.15	P = 0.001	123	1.66	P = 0.001	123	6.82	P = 0.001	123	8.64	P = 0.001	123	4.89	P = 0.001
Total	930	2.57		929	0.99		930	3.86		931	5.33		931	3.51	
7. Mineral fed free access			16.38			15.16			11.35			17.21			14.51
No	141	1.67		141	0.65		141	2.64		141	3.39		141	2.33	
Yes	788	2.63	P = 0.001	787	1.03	P = 0.001	788	3.98	P = 0.001	789	5.66	P = 0.001	789	3.70	P = 0.001
Total	929	2.48		928	0.97		929	3.78		930	5.32		930	3.50	
8. Fed cows magnesium oxide to prevent grass tetany			14.16			32.81			11.35			7.60			1.58
No	331	2.05		331	0.70		331	3.14		331	4.59		331	3.28	
Yes	594	2.72	P = 0.001	593	1.12	P = 0.001	594	4.15	P = 0.001	595	5.73	P = 0.01	595	3.62	P = 0.22
Total	925	2.48		924	0.97		925	3.78		926	5.32		926	3.50	
9. Stockpiled fescue			0.06			0.80			4.42			0.37			0.63
No	332	2.46		331	1.02		332	3.38		333	5.16		333	3.36	
Yes	595	2.50	P = 0.81	595	0.95	P = 0.37	595	4.01	P = 0.04	595	5.41	P = 0.55	595	3.58	P = 0.43
Total	927	2.48		926	0.97		927	3.78		928	5.32		928	3.50	
10. Gave needy cows special treatment			9.28			10.52			1.05			1.50			6.91
No	543	2.32		542	0.88		542	3.69		543	5.15		543	3.23	
Yes	376	2.94	P = 0.001	376	1.13	P = 0.001	377	4.01	P = 0.31	377	5.65	P = 0.22	377	3.94	P = 0.01
Total	919	2.57		918	0.98		919	3.82		920	5.35		920	3.52	

Table VII (cont'd)

Use of Recommended Beef Production Practices	Number Ext. Meetings Attended past 12 months			Number Beef Prod. Meetings Attended past 12 months			Number Visits to Extension office past 12 months			Number Telephone Calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
11. Used protein with roughages			7.76			3.68			1.46			2.42			3.55
No	382	2.18		381	0.94		382	3.48		382	4.85		382	3.19	
Yes	461	2.68	P = 0.01	461	1.00	P = 0.06	461	3.82	P = 0.23	462	5.49	P = 0.12	462	3.71	P = 0.06
Total	843	2.45		842	0.86		843	3.67		844	5.20		844	3.47	
12. Used grub-lice control			13.88			39.15			9.13			23.72			14.56
No	346	2.09		346	0.69		346	3.22		346	4.10		346	2.88	
Yes	587	2.85	P = 0.001	586	1.17	P = 0.001	587	4.17	P = 0.001	588	6.07	P = 0.001	588	3.90	P = 0.001
Total	933	2.57		932	0.99		933	3.82		934	5.34		934	3.52	
13. Vaccin. Leptospirosis			1.20			15.51			13.60			31.79			21.55
No	675	2.45		674	0.90		676	3.50		676	4.67		676	3.14	
Yes	249	2.68	P = 0.27	249	1.18	P = 0.001	248	4.76	P = 0.001	249	7.17	P = 0.001	249	4.50	P = 0.001
Total	924	2.51		923	0.97		924	3.84		925	5.35		925	3.51	
14. Working facilities adequate			4.90			11.77			6.41			14.16			10.93
No	318	2.28		318	0.82		318	3.30		318	4.31		318	2.94	
Yes	613	2.76	P = 0.03	612	1.09	P = 0.001	613	4.15	P = 0.01	614	5.88	P = 0.001	614	3.84	P = 0.001
Total	931	2.59		930	1.00		931	3.86		932	5.34		934	3.53	

*SOURCE: Cecil R. Carter, Jr. Summary of Survey, TAEE 11/18/77.

**One-way analysis of variance F test (i.e. between-group mean square/within-group mean square) of the significance of differences in the means of the two sub-samples (i.e. those who were and those who were not using the practice).

Beef Practice #2, Bulls Met Minimum Requirements PTBS

Table VII shows that use of Beef Practice #2, Bulls met minimum requirements for the Performance Tested Bull Sale, was positively and significantly related to Numbers of Extension meetings attended, beef production meetings attended, visits to Extension office, telephone calls to Extension office, farm visits from the Extension agents the previous year. Thus, those using Practice #2 had recorded significantly more of all kinds of Extension contacts studied than had others.

Beef Practice #3, Herd Enrolled TBCIP

It is noted in Table VII that the use of Beef Practice #3, Herd enrolled in Tennessee Beef Cattle Improvement Program was positively but not significantly related to Number of total Extension meetings attended the previous year. It was positively and significantly related to Number of beef production meetings attended, visits to Extension office, telephone calls to Extension office, and farm visits from Extension agents the previous year. Thus, those using Practice #3 had reported more of all kinds of Extension contacts studied.

Beef Practice #4, Cows Pregnancy Checked Following Breeding Season

It is seen in Table VII that use of Beef Practice #4, Cows pregnancy checked following breeding season, was negatively, thought not significantly related to Number of Extension meetings attended, Number of beef production meetings attended, and visits to Extension office, the previous year. It was positively, but not significantly related to telephone calls to the Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #3 were not significantly different than others.

Beef Practice #5, Calves Vaccinated for Blackleg and Malignant Edema

Table VII shows that use of Beef Practice #5, Calves vaccinated for blackleg and malignant edema, was positively and significantly related to Number of Extension meetings attended, beef production meetings attended, visits to Extension office, telephone calls to Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #5 had recorded significantly more of all kinds of Extension contacts studied than others.

Beef Practice #6, Used Growth Stimulants

Table VII reveals that use of Beef Practice #6, Used growth stimulants, was positively and significantly related to Number of total Extension meetings attended, beef production meetings attended, visits to Extension office, telephone calls to Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #6 had recorded significantly more of all kinds of Extension contacts studied than those not using the practice.

Beef Practice #7, Mineral Fed Free Access

Table VII indicates that use of Beef Practice #7, Mineral fed free access to cows, was positively and significantly related to Number of total Extension meetings attended, number of beef production meetings attended, visits to Extension office, telephone calls to Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #7 had reported significantly more of all kinds of Extension contacts studied than had non-users of the practice.

Beef Practice #8, Fed Cows Magnesium Oxide to Prevent Grass Tetany

Table VII shows that use of Beef Practice #8, Cows fed magnesium oxide to prevent grass tetany, was positively and significantly related to Number of Extension meetings attended, beef production meetings attended, visits to Extension office and telephone calls to Extension office the previous year. It was positively, but not significantly related to Number of farm visits from the Extension agents, the previous year. Thus, those using Practice #8 had reported significantly more of all kinds of Extension contacts studied excepting farm visits.

Beef Practice #9, Stockpiled Fescue

It was noted in Table VII that use of Beef Practice #9, Stockpiled fescue, was positively, but not significantly related to the total Number of total Extension meetings attended, telephone calls to Extension office, and farm visits from the Extension agents the previous year. It was negatively though not significantly related to Number of beef production meetings attended the previous year. It was positively and significantly related to Number of visits to the Extension office the previous year. Thus, those using Practice #9 had made more visits to the Extension office than others.

Beef Practice #10, Gave Needy Cows Special Treatment

Table VII shows that use of Beef Practice #10, Gave needy cows special treatment, was positively and significantly related to Number of total Extension meetings attended, number of beef production meetings attended, and farm visits from the Extension agents the previous year. It was positively, but not significantly related to Number of visits to

the Extension office and telephone calls to Extension office the previous year. Thus, those using Practice #10 had reported significantly more meetings of both kinds attended and visits from agents than others.

Beef Practice #11, Used Protein With Roughages

Table VII shows that use of Beef Practice #11, Used protein with low quality roughages, was positively and significantly related to Number of total Extension meetings attended the previous year. It was positively but not significantly related to Number of beef production meetings attended, visits to Extension office, telephone calls to Extension office and farm visits from the Extension agents the previous year. Thus, those using Practice #11, had recorded more total Extension meetings than others.

Beef Practice #12, Used Grub-Lice Control

It was seen in Table VII that use of Beef Practice #12, Used grub-lice control, was positively and significantly related to total Number of total Extension meetings attended, beef production meetings attended, visits to Extension office, telephone calls to Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #12 had reported significantly more of all kinds of Extension contacts studied than non-users.

Beef Practice #13, Vaccinated for Leptospirosis

Table VII reveals that use of Beef Practice #13, Vaccinated for leptospirosis, was positively but not significantly related to Number of total Extension meetings attended the previous year. It was positively and significantly related to Number of beef production meetings attended,

visits to Extension office, telephone calls to Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #13 had recorded significantly more of all kinds of Extension contacts studied excepting total Extension meetings attended.

Beef Practice #14, Working Facilities Adequate

Table VII shows that use of Beef Practice #14, Working facilities adequate, was positively and significantly related to total Number of total Extension meetings attended, Number of beef production meetings attended, visits to Extension office, telephone calls to Extension office, and farm visits from the Extension agents the previous year. Thus, those using Practice #14 had recorded significantly more of all kinds of Extension contacts studied than non-users.

VIII. RELATIONS OF MEAN NUMBERS OF SELECTED EXTENSION CONTACTS REPORTED IN 1976-1977 BY PRODUCERS AND USE OF RECOMMENDED PASTURE PRODUCTION PRACTICES

Information in Table VIII includes mean numbers of Extension contacts reported by cattlemen using and not using each of 18 approved pasture production practices, F values and confidence levels. A confidence level of .05 was used for the study. Kinds of contacts again, as in the previous table, included Numbers of total Extension meetings, beef production meetings, visits to the Extension office, telephone calls to the Extension office and farm visits received from the county Extension agents. Numbers reporting varied on each item. For study purposes cattlemen not

Table VIII

Relations of Mean Numbers of Selected Extension Contacts Reported in 1976-1977 by Producers and Use of Recommended Pasture Production Practices*

Use of Recommended Pasture Production Practice	Number Ext. Meetings Attended past 12 months			Number of Beef Prod. Meetings attended past 12 months			Number of Visits to Ext. Office past 12 months			Number of Telephone Calls to Ext. Office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
1. Past. 30-50% clover			8.77			5.50			12.56			8.56			8.08
LT Half	389	2.13		389	0.87		389	3.16		389	4.80		389	3.03	
OV Half	341	2.69		340	1.01		341	3.94		342	5.20		342	3.63	
All	171	3.11	P = 0.001	171	1.19	P = 0.001	171	5.24	P = 0.001	171	6.99	P = 0.001	171	4.46	P = 0.001
Total	901	2.53		900	0.98		901	3.85		920	5.36		902	3.53	
2. Use rotation of pastures			8.28			8.56			14.21			8.56			12.86
None	68	1.69		68	0.54		68	2.46		68	3.22		68	2.15	
LT Half	247	2.05		247	0.82		246	3.28		247	4.56		247	2.82	
OV Half	321	2.49		321	1.01		322	3.22		322	5.16		322	3.30	
All	296	3.00	P = 0.001	295	1.17	P = 0.001	296	5.20	P = 0.001	296	6.55	P = 0.001	296	4.54	P = 0.001
Total	932	2.48		931	0.98		932	3.81		933	5.30		933	3.48	
3. Had Soil tested prior to Estab. Pastures			9.17			14.82			15.12			10.05			11.31
None	97	1.66		97	0.53		97	2.28		97	3.05		97	2.07	
LT Half	222	1.99		222	0.74		223	2.79		223	4.36		223	2.79	
OV Half	245	2.74		245	1.09		245	3.73		245	5.72		245	3.65	
All	356	2.89	P = 0.001	355	1.19	P = 0.001	355	4.95	P = 0.001	356	6.28	P = 0.001	356	4.25	P = 0.001
Total	920	2.76		917	0.98		920	3.82		921	5.33		921	3.51	

Table VIII (cont'd)

Use of Recommended Pasture Production Practice	Number Ext. Meetings Attended past 12 months			Number ofBeef Prod. Meetings attended past 12 months			Number of Visits to Ext. office past 12 months			Number of Telephone calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
4. Used soil test recommendations when estab. pastures			13.14			15.84			14.40			11.34			11.28
None	97	1.56		97	0.51		97	1.94		97	2.76		97	1.90	
LT Half	208	1.81		208	0.71		209	2.85		209	4.33		209	2.91	
OV Half	241	2.87		241	1.11		241	3.93		241	5.78		241	3.58	
All	374	2.89	P = 0.001	373	1.17	P = 0.001	373	4.77	P = 0.001	374	6.23	P = 0.001	374	4.22	P = 0.001
Total	920	2.50		919	0.98		920	3.81		921	5.32		921	3.51	
5. Soil tested estab. pastures			14.74			17.32			23.21			15.32			15.95
None	118	1.48		118	0.51		118	1.95		118	2.71		118	1.97	
LT Half	220	1.91		220	0.74		220	2.75		220	4.50		220	2.90	
OV Half	243	2.79		243	1.11		244	3.64		244	5.39		244	3.37	
All	345	3.01	P = 0.001	344	1.20	P = 0.001	344	5.25	P = 0.001	345	6.69	P = 0.001	345	4.52	P = 0.001
Total	926	2.50		925	0.98		926	3.81		927	5.32		927	3.51	
6. Applied lime fert. estab. pastures			18.37			19.40			21.88			14.09			11.64
None	113	1.35		113	0.50		113	1.96		113	2.80		113	2.08	
LT Half	230	1.83		230	0.71		231	2.72		231	4.39		231	2.85	
OV Half	247	2.95		247	1.11		247	3.81		247	5.67		247	3.76	
All	341	2.98	P = 0.001	340	1.22	P = 0.001	340	5.21	P = 0.001	341	6.56	P = 0.001	341	4.24	P = 0.001
Total	931	2.49		930	0.98		931	2.83		932	5.33		932	3.50	

Table VIII (cont'd)

Use of Recommended Pasture Production Practice	Number Ext. Meetings Attended past 12 months			Number of Beef Prod. Meetings attended past 12 months			Number of Visits to Ext. office past 12 months			Number of Telephone calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
7. Seeded on firm, moist seedbed			6.40			3.76			7.51			7.62			6.48
None	12	1.00		12	0.42		12	4.00		12	2.83		12	3.17	
LT Half	90	1.61		90	0.72		90	2.84		90	3.84		90	2.26	
OV Half	277	2.39		277	0.95		278	3.01		278	4.44		278	3.08	
All	535	2.76	P = 0.001	534	1.06	P = 0.01	534	4.43	P = 0.001	535	6.12	P = 0.001	535	3.96	P = 0.001
Total	914	2.51		913	0.99		914	3.84		915	5.34		915	3.51	
8. Used Recommended Varieties			7.64			5.81			9.68			8.52			8.72
None	9	1.11		9	0.67		9	5.89		9	4.33		9	4.33	
LT Half	58	1.24		58	0.55		58	1.93		58	3.05		58	1.62	
OV Half	253	2.26		253	0.87		254	2.98		254	4.25		254	2.93	
All	596	2.76	P = 0.001	595	1.08	P = 0.001	595	4.38	P = 0.001	596	6.06	P = 0.001	596	3.93	P = 0.001
Total	916	2.51		915	0.98		916	3.85		917	5.35		917	3.51	
9. Used Recomm. seeding dates on permanent pastures			6.12			10.02			10.49			7.56			6.94
None	11	1.45		11	0.36		11	4.73		11	3.27		11	3.55	
LT Half	61	1.56		61	0.57		61	2.26		61	3.41		61	2.12	
OV Half	276	2.21		276	0.80		277	2.87		277	4.39		277	2.92	
All	567	2.78	P = 0.001	566	1.13	P = 0.001	566	4.50	P = 0.001	567	6.06	P = 0.001	567	3.55	P = 0.001
Total	915	2.51		914	0.99		915	3.86		916	5.35		916	3.51	

Table VIII (cont'd)

Use of Recommended Pasture Production Practice	Number Ext. Meetings Attended past 12 months			Number of Beef Prod. Meetings attended past 12 months			Number of Visits to Ext. office past 12 months			Number of Telephone calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
10. Used Recom. seeding rates			6.09			9.30			9.99			6.51			8.59
None	9	1.33		9	0.44		9	5.33		9	4.00		9	4.44	
LT Half	72	1.51		72	0.53		72	2.19		72	3.81		72	2.11	
OV Half	271	2.30		271	0.85		272	2.99		272	4.38		272	2.85	
All	564	2.76	P = 0.001	563	1.12	P = 0.001	563	4.46	P = 0.001	564	6.03	P = 0.001	564	3.99	P = 0.001
Total	916	2.51		915	0.99		916	3.86		917	5.35		917	3.51	
11. Properly inoculated legume seeds			13.46			10.07			8.41			15.63			14.07
None	102	1.45		102	0.76		102	3.17		102	3.09		102	2.30	
LT Half	133	1.95		133	0.70		133	2.78		133	3.98		133	2.52	
OV Half	237	2.40		237	0.89		238	3.42		238	4.72		238	3.02	
All	418	3.03	P = 0.001	417	1.19	P = 0.001	417	4.70	P = 0.001	418	6.73	P = 0.001	418	4.40	P = 0.001
Total	890	2.52		889	0.99		890	3.90		891	5.36		891	3.52	
12. Stockpiled fescue and fescue clover pastures			3.54			2.50			5.93			6.56			7.53
None	144	1.82		144	0.82		144	3.24		144	4.19		144	2.90	
LT Half	246	2.59		245	0.90		246	3.27		247	4.89		247	2.94	
OV Half	286	2.63		286	1.05		286	3.79		286	5.10		286	3.44	
All	239	2.64	P = 0.01	239	1.08	P = 0.06	239	4.86	P = 0.001	239	6.70	P = 0.001	239	4.45	P = 0.001
Total	915	2.49		914	0.98		915	3.84		916	5.32		916	3.49	

Table VIII (cont'd)

Use of Recommended Pasture Production Practice	Number Ext. Meetings Attended past 12 months			Number of Beef Prod. Meetings attended past 12 months			Number of Visits to Ext. office past 12 months			Number of Telephone calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
13. Grazed or clipped fescue clover pastures to maintain clover			6.17			6.53			5.38			4.01			6.99
None	115	1.67		115	0.69		115	3.09		115	4.94		115	2.50	
LT Half	232	2.24		232	0.84		232	3.12		232	4.22		232	2.91	
OV Half	316	3.72		315	1.10		316	3.96		317	5.74		317	3.75	
All	251	2.76	P = 0.001	251	1.11	P = 0.001	251	4.62	P = 0.001	251	5.83	P = 0.01	251	4.15	P = 0.001
Total	914	2.48		913	0.98		914	3.82		915	5.28		915	3.49	
14. Grazed Bermudagrass to desired height			1.78			2.12			1.63			2.13			0.39
None	125	2.48		125	0.98		125	5.42		125	6.90		125	4.64	
LT Half	61	2.25		61	1.23		61	3.85		61	5.36		61	4.07	
OV Half	43	3.14	P = 0.17	43	1.30	P = 0.12	43	4.60	P = 0.20	43	4.77	P = 0.12	43	4.84	P = 0.68
Total	229	2.81		229	1.10		229	4.85		229	6.09		229	4.52	
15. Cut hay from pastures			2.28			3.53			3.65			8.13			6.20
None	106	2.23		106	0.92		106	5.04		106	7.35		106	4.48	
LT Half	140	2.33		140	0.86		140	3.47		140	4.20		140	2.74	
OV Half	241	2.50	P = 0.10	241	1.15	P = 0.03	242	3.70	P = 0.03	242	5.41	P = 0.001	242	3.68	P = 0.001
Total	487	2.53		487	1.02		488	3.92		488	5.48		488	3.58	

Table VIII (cont'd)

Use of Recommended Pasture Production Practice	Number Ext. Meetings Attended past 12 months			Number of Beef Prod. Meetings attended past 12 months			Number of Visits to Ext. office past 12 months			Number of Telephone calls to Ext. office past 12 months			Number Farm Visits from Extension Agents past 12 months		
	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**	Number Resp.	Mean	F Value**
16. Clipped pasture weeds			5.37			11.73			4.00			5.19			3.07
None	27	1.44		27	0.85		27	5.74		27	7.41		27	3.78	
LT Half	128	1.85		128	0.59		128	3.15		128	3.76		128	2.45	
OV Half	349	2.58	P = 0.01	349	1.12	P = 0.001	349	3.28	P = 0.02	350	5.11	P = 0.01	350	3.28	P = 0.05
Total	504	2.34		504	0.97		504	3.38		505	4.89		505	3.10	
17. Cut hay-silage from excess pastures			6.34			6.19			0.16			3.88			0.62
None	55	2.56		55	0.98		55	3.31		55	5.36		55	2.55	
LT Half	126	1.57		126	0.62		126	3.02		126	3.54		126	3.13	
OV Half	284	2.46	P = 0.001	284	1.00	P = 0.001	285	3.23	P = 0.86	285	4.73	P = 0.02	285	3.14	P = 0.54
Total	465	2.23		465	0.89		466	3.18		466	4.48		466	3.07	
18. Renovated pastures			6.27			8.30			3.41			10.05			3.86
None	212	1.90		212	0.84		212	2.83		212	3.51		212	2.62	
LT Half	307	2.31		307	0.83		308	3.60		308	5.12		308	3.27	
OV Half	244	2.76	P = 0.001	243	1.18	P = 0.001	243	3.84	P = 0.03	244	5.66	P = 0.001	244	3.58	P = 0.02
Total	763	2.34		762	0.95		763	3.46		764	4.85		764	3.19	

*SOURCE: Cecil E. Carter, Jr., Summary of Survey, TAEE 11/21/77

**One-way analysis of variance F test (i.e. between-group mean square/within-group mean square) of the significance of differences in the means of the sub-populations (i.e. producers not using the practice, those using the practice on less than half their acreage, on over half and on all of their pasture acreage).

using practices at all and less than one-half of the time were considered to be non-users. Those using a practice more than one-half the time and always were declared to be using the practice.

Main comparisons will be between users and non-users.

Pasture Practice #1, Pasture was 30-50% Clover

Reference to information in Table VIII discloses that use by cattlemen of Pasture Practice #1, Pasture was 30-50% clover, was positively and significantly related to all kinds of Extension contacts studied. Relations were positive in all cases. Cattlemen reportedly using the practice on less than one-half the cases (i.e., 389 for each kind of contact) had made significantly fewer contacts the previous year than others (i.e., those using the practice in over one-half and all cases). Total numbers responding ranged from 900, on Number of beef production meetings attended, to 920 on Number of telephone calls made to the Extension office.

Pasture Practice #2, Used Rotation of Pastures

Use of Pasture Practice #2, Used rotation of pastures, was positively and significantly related to all five kinds of Extension contacts studied. The 314 or 315 non-users in each kind of contact had made significantly fewer contacts with Extension than the 616 to 618 users reporting. Total numbers responding ranged from 931 on Number of beef production meetings attended to 933 on Numbers of telephone calls to the Extension office and farm visits received from the agents.

Pasture Practice #3, Had Soil Tested

Table VIII shows that use of Pasture Practice #3, Had soil tested before establishing pastures, was positively and significantly related to all five kinds of Extension contacts studied. The 319 or 320 non-users in each case had made significantly fewer contacts with Extension than the 600-601 users reporting. Total numbers responding ranged from 919 on Number of beef production meetings attended the previous year to 921 on Numbers of telephone calls to the Extension office and farm visits from the Extension agents.

Pasture Practice #4, Used Soil Test Recommendations When Establishing Pastures

Use of Pasture Practice #4, Used soil test recommendations, was positively and significantly related to all kinds of Extension contacts studied. The 305 or 306 non-users in each case had made significantly fewer contacts with Extension than the 614-615 users reporting. Total numbers responding ranged from 919 on Number of beef production meetings attended to 921 on Numbers of telephone calls to the Extension office and farm visits from the agents the previous year.

Pasture Practice #5, Soil Tested Established Pastures

Use of Pasture Practice #5, Soil tested established pastures, was positively and significantly related to all kinds of Extension contacts studied. The 338 non-users in each case had made significantly fewer contacts with Extension than the 587 to 589 users reporting. Total numbers responding ranged from 925 on Number of beef production meetings attended to 927 on Numbers of telephone calls to Extension office and farm visits from the agents the previous year.

Pasture Practice #6, Applied Lime and Fertilizer on Established Pastures

Use of Pasture Practice #6, Applied lime and fertilizer on established pastures, was positively and significantly related to all kinds of Extension contacts studied. The 343 or 344 non-users in each case had made significantly fewer contacts with Extension than the 587 - 588 users reporting. Total numbers responding ranged from 930 on Number of beef production meetings attended to 932 on Numbers of telephone calls to Extension office and farm visits from the agents the previous year.

Pasture Practice #7, Seeded on Firm, Moist Seedbed

Use of Pasture Practice #7, Seeded on firm, moist seedbed, was positively and significantly related to all kinds of Extension contacts studied. The 102 non-users in each case had made significantly fewer contacts with Extension than the 811 to 813 users reporting. Total numbers responding ranged from 913 on number of beef meetings attended to 915 on Numbers of telephone calls to Extension office and farm visits from the Extension agents the previous year.

Pasture Practice #8, Used Recommended Varieties

Use of Pasture Practice #8, Used recommended varieties was positively and significantly related to all kinds of Extension contacts studied. The 67 non-users in each case had made significantly fewer contacts with Extension than the 848 to 850 users reporting. Total numbers responding ranged from 915 on Number of beef production meetings attended to 917 on Numbers of telephone calls to Extension office and farm visits from the agents the previous year.

Pasture Practice #9, Used Recommended Seeding Dates on Permanent Pasture

Use of Pasture Practice #9, Used recommended seeding dates on permanent pasture, was positively and significantly related to all kinds of Extension contacts studied. The 72 non-users had made significantly fewer contacts with Extension than the 842 to 844 users reporting. Total numbers responding ranged from 914 on Number of beef production meetings attended to 916 on Numbers of telephone calls to the Extension office and farm visits from the Extension agents the previous year.

Pasture Practice #10, Used Recommended Seeding Rates

Use of Pasture Practice #10, Used recommended seeding rates on permanent pasture, was positively and significantly related to all kinds of Extension contacts studied. The 81 non-users in each case had made significantly fewer contacts with Extension than the 834 to 836 users reporting. Total numbers responding ranged from 915 on Number of beef meetings attended to 917 on Numbers of telephone calls to Extension office and farm visits from the agents the previous year.

Pasture Practice #11, Properly Inoculated Legume Seeds

Use of Pasture Practice #11, Properly inoculated legume seeds, was positively and significantly related to all kinds of Extension contacts studied. The 235 non-users in each case had made significantly fewer contacts with Extension than the 654 to 656 users reporting. Total numbers responding ranged from 889 on Number of beef production meetings

attended to 891 on Numbers of telephone calls to the Extension office and farm visits from the Extension agents the previous year.

Pasture Practice #12, Stockpiled Fescue and Fescue-Clover Pastures

Use of Pasture Practice #12, Stockpiled fescue and fescue-clover pastures, was positively but not significantly related to the Number of beef production meetings attended. It was positively and significantly related to all other kinds of Extension contacts studied. The 389 to 391 non-users reporting other methods had made significantly fewer contacts with Extension than the 525 users reporting. Total numbers responding ranged from 914 on Number of beef production meetings attended the previous year to 916 on Numbers of telephone calls to the Extension office and farm visits from the agents.

Pasture Practice #13, Grazed or Clipped Fescue Clover Pastures to Maintain Clover

Use of Practice #13, Grazed or clipped fescue-clover pastures to maintain clover, was positively and significantly related to all kinds of Extension contacts studied. The 347 non-users in each case had made significantly fewer contacts with Extension than the 566 to 568 users reporting. Total number responding ranged from 913 on Number of beef production meetings attended the previous year to 915 on Numbers of telephone calls to the Extension office and farm visits from the Extension agents.

Pasture Practice #14, Grazed Bermudagrass to Desired Height

Use of Pasture Practice #14, Grazed bermudagrass to desired height, was not significantly related to any kind of Extension contact studied. Relations were positive in all cases excepting Number of

telephone calls and visits to the Extension office. Cattlemen reportedly not using the practice totalled 186 while those using the practice were only 43. The total number responding, then, was 229 on each kind of contact studied.

Pasture Practice #15, Cut Hay from Pastures

Use of Pasture Practice #15, Cut hay from pasture, grazed fescue and fescue-white clover mixtures in spring and accumulated orchard-grass-white clover mixtures for hay or silage was positively but not significantly related to Number of Extension meetings attended the previous year. It was positively and significantly related to Number of beef meetings attended and visits from the Extension agents. It was negatively but significantly related to Numbers of visits and telephone calls to the Extension office. Thus, the 246 non-users had attended fewer beef meetings and received fewer visits from the agent, but had made more office visits and telephone calls to his office than 241 or 242 users. Total numbers ranged from 487 to 488 responding.

Pasture Practice #16, Clipped Pasture Weeds

Use of Pasture Practice #16, Clipped pasture weeds, was negatively but significantly related to Number of visits to the Extension office. Other kinds of contacts were positively and significantly related to practice use. Totals of 155 non-users and 349 or 350 users reported for a grand total of 504 to 505.

Pasture Practice #17, Cut Hay-Silage from Excess Pastures

Use of Pasture Practice #17, Cut hay-silage from excess pastures, was positively and significantly related to the Number of Extension meetings attended, beef production meetings attended and telephone calls to the Extension office. It was not significantly but appeared to be positively related to Numbers of visits to the Extension office and farm visits from the agents. Totals of 181 non-users and 284 or 285 users reported for grand totals of 465 or 466 reporting.

Pasture Practice #18, Renovated Pastures

Use of Pasture Practice #18, Renovated pastures was positively and significantly related to all kinds of Extension contacts studied. Totals of 519 or 520 non-users and 243 or 244 users for grand totals of 762 or 764 reported on the various kinds of contact.

CHAPTER V

SUMMARY AND IMPLICATIONS

This study was conducted in an attempt to determine: (a) Some of the characteristics of selected Tennessee cow-calf producers, 1976-1977, by size of herd categories; (b) To find which research-verified management practices, the producers were using and not using in size of herd categories; (c) To study Extension contacts by means of which producers got their information; (d) To study relationships between producer use of recommended beef and pasture practices and contacts with Extension.

For all but the last study purpose above, the 955 producers in 57 counties reporting were divided into three production groups: 114 Large producers in 10 counties, 567 Medium producers in 29 counties; and 274 producers in 18 counties, the data for the groups were comparatively analyzed.

For study purposes, Large producer counties were those averaging beef cow herds of from 60 to 157 cows, Medium producer counties averaged from 40 to 59 cows per herd, and Small producer counties averaged from 20 to 39 cows per herd in 1976-1977.

Producers were personally questioned in a statewide Extension survey by agents concerning their use or non-use of items related to one or more of fourteen beef production and eighteen pasture practices recommended by the University of Tennessee.

For the final study purpose concerning relations between practice use and Extension contacts reported by producers for the previous year, 1976-1977, numbers responding varied from 229 reporting on one pasture practice to 933 on a beef production practice. For interpretive reasons, producers not using approved pasture practices at all and in less than one-half the cases were considered to be non-users; while those using pasture practices always and in more than one-half the cases were considered to be users. The analysis of variance (i.e. F test) was used to determine the significance of relations between practice use and contacts with Extension. The .05 level of probability was accepted for use in the study.

A. MAJOR STUDY FINDINGS

Findings will be reviewed briefly below related to each of the four purposes of the study.

Characteristics of Producers and their Herds

In summarizing the data concerning some of the characteristics of selected Tennessee cow-calf producers, their farms and herds in 57 counties by size of herd categories in average number of producers reporting, main comparisons were made between Large and Small production categories. Major findings included the following:

1. All producers averaged 21.1 years of beef production on their farms. Large producers averaged 20.5 years; while Small producers averaged 19.6 years.

2. The average producer was 50.2 years of age. Large producers, 49.4 years, and Small 50.0 years, were about the same.
3. The average producer in the study had 47.6 breeding cows in the herd the previous year. Large producers averaged more, 82.4 breeding cows than Small, 33.4 breeding cows.
4. All producers kept an average of 2.2 bulls in the herd. Large producers kept 3.2 bulls; while Small producers kept 1.7 bulls.
5. All producers had 43.6 calves raised. Large producers averaged 69.9 calves; while the Small producers averaged 30.6 calves.
6. The average farm size for all producers interviewed was 129.1 acres. Large producers averaged 175.4 farm acres compared to 102.3 farm acres for the Small producers.
7. The average number of animal units grazed for all producers interviewed was 66.6 units. Large producers averaged 102.7 units; while the Small averaged 51.6 units.
8. All producers interviewed had, on the average, 48.8 breeding females in the herd the previous year. Large producers kept 78.6 females which was more than the Small producers who kept 34.2 females.
9. The average number of cows weaning calves the previous year was 43.8 for all producers interviewed. Large producers averaged 64.4 cows compared to 31.1 cows for the Small producers.

10. All producers interviewed sold an average of 21,050 pounds of calves in 1976-1977. Large producers averaged selling 30,780 pounds; while Small producers had sold 14,830 pounds.
11. Pounds of replacement calves kept by all producers interviewed averaged 9,460 pounds in 1976-1977. Pounds of replacement calves kept by Large producers averaged 7,780 pounds, and those kept by Small producers average 7,930 pounds.
12. The average pounds of calf kept for consumption by all producers interviewed was 564.0. Large producers kept 538.9 pounds; while the Small producers kept 559.3 pounds.
13. Most producers in the study had, on the average, the following pasture acreages:
    a. 79.5 acres of fescue-white clover (i.e., 129.2 acres for Large and 60.5 for Small) reported in all 57 counties.
    b. 62.7 acres of fescue (i.e. 80.5 acres for Large and 59.8 for Small) reported in 44 counties.
    c. 42.7 acres of fescue-lespedeza (i.e. 59.6 acres for Large and 45.1 for Small) reported in 29 counties.
    d. 40.6 acres of orchardgrass-white clover (i.e. 45.2 acres for Large and 32.6 for Small) reported in 42 counties.
    e. 34.5 acres of temporary wheat pasture (i.e. 67.1 acres for Large and 18.7 for Small) reported in 32 counties.

14. Most producers on the average had produced the following tonnage of hay or silage:
    a. 271.7 tons of corn silage (i.e. 328.7 tons for Large and 187.5 for Small) reported in 36 counties.
    b. 84.6 tons of alfalfa hay (i.e. 227.6 tons for Large and 32.5 for Small) reported in 29 counties.
    c. 54.0 tons of other hay (i.e. 53.9 tons for Large and 47.6 for Small) reported in 40 counties.
    d. 50.0 tons of fescue hay (i.e. 57.9 tons for Large and 45.5 for Small) reported in 56 counties.
    e. 48.4 tons of timothy hay (i.e. 37.2 tons for Large and 47.4 for Small) reported in 33 counties.
    f. 41.4 tons of orchardgrass hay (i.e. 58.3 tons for Large and 39.9 for Small) reported in 43 counties.
15. With regard to marketing procedures used for calves in 1976-1977:
    a. Producers from 88 percent of the counties reported selling an average of about 67 percent of their calves in organized feeder sales.
    b. Producers from all 57 counties reported selling an average of 66 percent of their calves at weekly auctions.
    c. Producers from 39 percent of counties reported selling 62 percent of their calves directly to backgrounders and feeders.
    d. Producers from 60 percent of the counties reported selling an average of nearly one-half of their calves to local traders.

e. Producers from all counties reported retaining about one-third of their calves as replacements or for backgrounding purposes.

16. With regard to backgrounding of calves:

a. Producers in 91 percent of the counties reported backgrounding an average of 45.3 calves, Large producers averaging 56.1 calves and Small 41.5.

b. About 88 percent of those backgrounding (i.e. 91 percent of Large and 85 percent of Small producers) noted calves were home reared - nearly two-thirds being steers.

c. Most backgrounded cattle, about three-fourths or more, were sold at local auctions, organized yearling sales and/or to order buyers.

Management Practices of Cattlemen

Herein is a summary of the findings related to breeding, herd health, feeding, pasturing, parasite control, working facilities, and other management practices. The major differences found to exist between Large and Small producers according to their using and not using certain selected management practices according to size of herd categories are presented below.

1. Consequentially higher percents of Large producers (i.e. about one-half) than Small had used two of four management practices related to breeding, namely: a) Used performance tested bulls; and b) Bulls met minimum requirements of PTB sale.

2. Also higher percents of Large than Small producers were using two other breeding practices: a) Herd enrolled in TBCIP (Large producers had 10 percent compared to five percent for Small producers); and b) Cows checked after breeding season (Large producers had 10 percent compared to 7 percent for the Small producers).
3. Consequentially higher percents of Large producers than Small had used each of two management practices related to herd health. They were as follows: a) Calves vaccinated for blackleg and malignant edema (Large producers, 86 percent, compared to 72 percent for the Small); and b) Vaccinated for leptospirosis (Large producers, 32.5 percent, compared to 20 percent for the Small).
4. Nearly one-fourth of Large producers and less than 10 percent of Small had used growth stimulus recommended.
5. On management practices related to feeding and pasturing, higher percents of Large producers than Small were using four out of five practices, including: a) Cows allowed free access to mineral mixture (Large producers, 90 percent compared to Small 77); b) Cows provided magnesium oxide to prevent grass tetany (Large producer, 62 percent, and Small, 56 percent); c) Gave needy cows special treatment (Large producers, 40 percent, and Small 38 percent); and d) Used protein with low quality roughage (Large producers, 58 percent, and Small 43 percent). A consequentially lower percent of Large producers, 52 percent, than Small, 60 percent, had stockpiled fescue.

6. A consequentially higher percent of Large producers, 71 percent, than Small, 55 percent had used the grub/lice control practice.
7. The vast majority, 81 percent, of Large producers had reportedly had adequate working facilities; while consequentially fewer Small producers, 58 percent, had such facilities.
8. A consequentially higher percent of Large producers, 51 percent, than Small, 41 percent, on the average, used each and all of the 14 beef production practices studied.
9. On the average, neither the Large or Small producers limited their breeding seasons to April 1 through July 1. Most of the producers reported breeding seasons of five or more months.
10. Most producers bred heifers as recommended at 15 months or older. The average age of breeding heifers for all interviewees was at 17.4 months.
11. On the average, all producers bred heifers above the minimum recommended weight 650 pounds. The average weights of heifers for all producers interviewed was 685.9 pounds.
12. Most of the producers interviewed did not check cows the recommended twice daily during the breeding season. The average was 1.2 times daily.
13. On the average, all producers checked cows 1.5 times daily during calving season. The average recommendation was at least once per day.

14. As recommended, Large producers checked their heifers an average of two or more times daily during calving season. The average for the Small producers was less than the recommended twice per day.

15. As recommended, all producers castrated bull calves as soon as possible and before four months of age. The average age of calves when castrated by all producers interviewed was 2.8 months.

16. On the average, all producers interviewed had wormed cows the minimum required once a year.

Weak beef production practices, (i.e., less than 60 percent using), then, identified for Large producers included: 1) Use performance tested bulls; 2) Bulls meet requirements of Performance Tested Bull Sales; 3) Enroll herd in TBCIP; 4) Check cows should be checked during the breeding season; 5) Pregnancy check cows after the breeding season; 6) Use growth stimulants; 7) Stockpile fescue; 8) Give needy cows special treatment; 9) Use protein with low quality roughage; 10) Vaccinate for leptospirosis; and 11) Maintain breeding season from April 1 until July 1.

Weak practices for Small producers were: 1) Use performance tested bull; 2) Bulls meet minimum requirements for PTB sales; 3) Enroll herd in TBCIP; 4) Check cows should be checked during the breeding season; 5) Pregnancy check cows after breeding season; 6) Use growth stimulants; 7) Provide magnesium oxide to prevent grass tetany; 8) Give needy cows special treatment; 9) Use protein with low quality roughage; 10) Use grub/lice control; 11) Vaccinate for leptospirosis; 12) Have adequate working facilites; 13) Maintain breeding season from April 1 until July 1; and 14) Check heifers two or three times daily during calving.

Extension Contacts Reported by Cattlemen

An attempt was made to identify some Extension contacts by means of which cattlemen got their production information. Producers reporting were found to have averaged 19 total Extension contacts each during 1976-1977. Average contact consisted of six telephone calls to the Extension office, four visits to the Extension office, four Extension general meetings attended, four farm visits by the Extension agents, and one beef Extension meeting attended. Little difference was found between Large and Small producers.

Relations of Practice Use and Extension Contacts

Relationships between producers use of 14 recommended beef production practices and 18 pasture practices and Extension contacts in 1976-1977 were studied. Extension contacts included: 1) Number of Extension meetings attended the previous year; 2) Number of beef production meetings attended; 3) Number of visits to the Extension office; 4) Number of telephone calls to the Extension office; and 5) Number of farm visits from the Extension agents.

Main findings regarding beef production practices and contacts were as follows:

1. Practices found to be positively and significantly related ($P < .05$) to all five kinds of Extension contacts reported were:
   a. Bulls met minimum requirements for Performance Tested Bull sale
   b. Calves vaccinated for blackleg and malignant edema

c. Used growth stimulants

d. Mineral fed free access

e. Used grub/lice controls

f. Working facilities were adequate

2. Practices found to be positively and significantly related ($P < .05$) to at least four of the kinds of Extension contacts reported were:

   a. Used performance tested bull

   b. Herd enrolled in TBCIP (i.e. Number of total Extension meetings attended last 12 months was not significantly related)

   c. Fed cows magensium oxide to prevent grass tetany (i.e. Number of farm visits from Extension agents was not significantly related)

   d. Vaccinated for leptospirosis (i.e. Number of total Extension meetings attended in last 12 months was not significantly related)

3. A practice found to be positively and significantly related ($P < .05$) to at least three kinds of Extension contacts was: Gave needy cows special treatment (i.e. Number of visits and telephone calls to Extension office were not significantly related).

4. Practices found to be positively and significantly related ($P < .05$) to at least one kind of Extension contact were:

   a. Used protein with roughages (i.e. significantly related only to Number of Extension meetings attended).

b. Stockpiled fescue (i.e. significantly related only to Number of visits to the Extension office).

5. Only one beef production practice, Cows pregnancy checked following breeding, was not significantly related to any kind of Extension contact.

Main findings regarding pasture practices and contacts were as follows:

1. Practices found to be positively and significantly related ($P < .05$) to all five kinds of Extension contacts reported were:

   a. Pasture was 30-50 percent clover
   b. Used rotation of pastures
   c. Had soil tested prior to establishing pastures
   d. Used soil test recommendation when establishing pastures
   e. Soil tested established pastures
   f. Applied lime and fertilizer to established pastures
   g. Seeded on firm, moist seedbed
   h. Used recommended varieties
   i. Used recommended seeding dates on permanent pastures
   j. Used recommended seeding rates
   k. Properly inoculated legume seeds
   l. Grazed or clipped fescue-clover pastures to maintain clover
   m. Renovated pastures

2. A practice found to be positively and significantly related ($P < 0.5$) to at least four of the five kinds of Extension contacts reported was:

   Stockpile fescue and fescue-clover pastures (i.e. Number of beef production meetings attended in last 12 months was not significantly related).

3. A practice found to be positively and significantly related ($P < 0.5$) to at least three of the kinds of Extension contacts reported was:

   Cut hay silage from excess pastures (i.e. Number of visits to the Extension office and farm visits from the agents in last 12 months were not significantly related).

4. Practices found to be negatively but significantly related to at least one or two kinds of Extension contact were:

   a. Clipped pastures weeds (i.e. Number of visits to the Extension office last 12 months was negatively related).

   b. Cut hay from pastures (i.e. Numbers of visits to the Extension office and telephone calls to the Extension office last 12 months were negatively related).

5. Only one pasture practice, Grazed bermudagrass to desired height, was not significantly related to any kind of Extention contact.

B. IMPLICATIONS

Based upon the findings of the present study the implications might include the following:

1. Since it was found that all five kinds of Extension contacts were found to be significantly related to use of many recommended beef production and pasture practices by both Large and Small producers, it is implied that numbers of Extension contacts may have influenced beef producers to adopt related Extension practices. Therefore, if Extension workers provide beef producers with information about recommended practices and educational programs, such help would be expected to assist cattlemen interested in improving herd management and the efficiency of their operations.

2. Weak and strong practices identified in the study should serve as a basis for development of Extension's future educational work with Tennessee cow-calf producers.

C. RECOMMENDATIONS

Regarding Use of Findings

It is recommended that the findings of this study be used by Tennessee county, district and state staffs for the development of the beef cattle educational program. Weak practices identified for Large and Small producers and successful Extension methods used should be studied and emphasized.

Regarding Further Study

1. Similar studies should be done in other survey areas.
2. Data from TEMIS should be related to survey data for five-year periods to study Extension inputs and clientele outputs.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Barnes, James Hughes. "Some Significant Beef Production Practices of Two Selected Beef Producer Groups In Claiborne County, Tennessee." Unpublished M.S. degree study, University of Tennessee, Knoxville, 1971.

2. Bembridge, Timothy James. "The Communication and Adoption of Beef Cattle Production Practice In The Matabeleland and Midlands Provinces of Rhodesia." Unpublished Doctorial thesis, The University of Pretoria, 1975.

3. Brewer, Lester Ray. "Characteristics of Marshall County Beef Producers and Their Farms, Management Practices of Marshall County Beef Producers, Factors Influencing Beef Management Practice Adoption by Marshall County Beef Producers." Unpublished special problems in lieu of Thesis, University of Tennessee, Knoxville, 1972.

4. 4-H Beef Cattle Handbook. Agricultural Extension Service, Publication 568, The University of Tennessee, Knoxville, 1973.

5. Jamison, Haley M., et al. "Annual Plan of Work for Fiscal Year 1979." Unpublished typewritten plan. Extension Beef, Horse and Sheep Section, Tennessee Agricultural Extension Service, Knoxville, June, 1978.

6. Jamison, Haley, F. David Kirkpatrick, Clyde Lane, Jim Neel, and Fred Powell. Tennessee Beef Cattle Calendar. Agriculture Extension Service, Publication 544, The University of Tennessee, Knoxville, 1977.

7. Jamison, Haley M. Tennessee Beef Cattle Improvement Program, What It Is, How It Works. Tennessee Agriculture Extension Service, Publication 542, The University of Tennessee, Knoxville, 1967.

8. Keyes, Kenneth G. "Production and Management Practices of Selected Beef Cattle Producers In Campbell County, Tennessee." Unpublished Master's Thesis, University of Tennessee, Knoxville, 1966.

9. Luck, George F. "Production and Management Practices of Selected Beef Producers in Macon County, Tennessee." Unpublished Master's Thesis, The University of Tennessee, Knoxville, 1967.

10. Matthews, James Thomas. "Characteristics of Lawrence County Beef Producers and Their Farms, Management Practices of Lawrence County Beef Producers, Factors Influencing Beef Management Practice Adoption by Lawrence County Beef Producers." Unpublished special problems in lieu of Thesis, University of Tennessee, Knoxville, 1968.

11. Miller, P. A., et al. Cooperative Extension Service Today. The Federal Extension Service, Extension Committee on Organization and Policy, and the U. S. Department of Agriculture Washington: Government Printing Office, April, 1958.

12. Neel, James B. "Efficiency of Your Cow-Calf Business." Agriculture Extension Service, Publication 689, The University of Tennessee, 1975.

13. Nichols, John J. "The Applicability of Live Beef Cattle Futures to Tennessee Feedlot Operators." Unpublished Master's Thesis, University of Tennessee, 1969.

14. Ranney, W. P. "Beef Cattle Numbers and Practices on Farms in Seven Counties of South Central Tennessee." Summary, The University of Tennessee, 1964.

15. Rogers, Everett M. Social Change in Rural Society. New York: Appleton-Century-Crofts, Inc. 1960.

16. Taylor, Clyde N. "Characteristics of Knox County Beef Producers and Their Farms, Management Practices of Knox County Beef Producers, Factors Influencing Beef Management Practice Adoption by Knox County Beef Producers." Unpublished special problems in lieu of Thesis, University of Tennessee, Knoxville, 1972.

17. Tennessee Agricultural Statistics. United States Department of Agriculture and Tennessee Department of Agriculture, Annual Bulletin, 1978.

18. "Tennessee Agriculture $1 Billion By 1985." Agriculture Extension Service, The University of Tennessee, Knoxville, SP 190, 1973.

APPENDICES

APPENDIX A

AVERAGE BEEF HERD SIZES IN TENNESSEE COUNTIES, 1976-1977

AVERAGE BEEF HERD SIZES IN TENNESSEE COUNTIES,

1976-1977

20-39 (N=18)	40-59 (N-29)	60-157 (N=10)
Carroll	Hardin	Fayette
Chester	Weakley	Hardeman
Decatur	Bedford	Haywood
Henderson	Houston	Henry
McNairy	Humphrey	Madison
Lawrence	Marshall	Obion
Lewis	Robertson	Tipton
Rhea	Bledsoe	Montgomery
Cannon	Franklin	Meigs
Jackson	McMinn	Knox
Anderson	Monroe	
Campbell	Polk	
Grainger	Van Buren	
Hancock	Cumberland	
Johnson	Macon	
Roane	Morgan	
Sevier	Pickett	
Union	Putnam	
	Scott	
	Smith	
	Trousdale	
	White	
	Blount	
	Carter	
	Cocke	
	Hawkins	
	Jefferson	
	Loudon	
	Sullivan	

APPENDIX B

BEEF COW-CALF SURVEY

THE AGRICULTURAL EXTENSION SERVICE
THE UNIVERSITY OF TENNESSEE
KNOXVILLE, TENNESSEE

1977 Tennessee Beef Cow-Calf Producer Survey
(For Cow Herds of 15 or More in Size)

Name of Respondent _____ Address _____

1
(1) Card Number

County _____ Date _____

(2) (3) (4)

Tenure Status (1 = Owner, 2 = Other)

(7)

A. General Information

(8) 1. What is the major agricultural enterprise? (1 = Livestock; 2 = Row Crops; 3 = Dairy; 4 = Fruits and/or Vegetables; 5 = Other)

(9) 2. What is the major livestock enterprise? (1 = Beef; 2 = Swine; 3 = Sheep; 4 = Horses; 5 = Other)

(10) (11) 3. Actual number of years beef cattle have been an enterprise on respondent's farm?

(12) 4. Is respondent a full-time farmer? (1 = No; 2 = Yes)

(13) 5. What is respondent's major source of income? (1 = Farm, 2 = Non-farm)

(14) (15) 6. What is approximate age of respondent?

(16) (17)(18) (19) 7. Actual number females of breeding age in herd last year? (9999 = Does not apply, DNA)

(20) (21) 8. Actual number bulls used last year? (99 = DNA)

(22) (23) (24) (25) 9. Actual number calves raised to weaning last year? (9999 = DNA)

(26) (27) (28) (29) 10. Actual number acres pasture used by beef cattle last year?

B. Recommended Practices

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(49) 17. What is major grass species used in pastures (Select one): 1 = Fescue, 2 = Orchardgrass, 3 = Bluegrass, 4 = Bermudagrass, 5 = Other, 9 = Does not apply

(50) 18. What is major forage used to winter cow herd? (Select one): 1 = Corn silage, 2 = Grass silage, 3 = Hay, 4 = Other, 9 = Does not apply

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

(52) 20. Which crop residues were used in order to reduce winter feed costs? (1 = None, 2 = Corn, 3 = Soybeans, 4 = Both corn and soybeans, 5 = Milo, 6 = Straw, 9 = Does not apply)

(53) 21. Were replacement heifers, thin cows, and cows that had recently calved fed more and better quality feed than others? (1 = No, 2 = Yes, 9 = Does not apply)

(54) 22. Were bred cows fed supplemental protein when low quality roughages such as hulls, straw, crop residues and poor quality hay were fed? (1 = No, 2 = Yes, 9 = Does not apply)

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

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

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

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

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

What percentage of calves were sold through:

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

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

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

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

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

Backgrounding

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

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

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

(1) 2 Card Number

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

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

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

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

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

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

(20) 42. Which of the following animal health practices was used? (Select one: 1 = Vaccinated for blackleg, malignant edema and hemorrhagic septicemia, 2 = Vaccinated for IBR, BVD and PI3, 3 = Injected with Vitamins A, D and E, 4 = 1 and 2 above, 5 = All of above, 9 = Does not apply)

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

What percentage of backgrounded cattle were marketed through:

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

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

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

(31) (32) (33) 47. Directly to feedlots? (Record actual percent - 999 = Does not apply)

Number of contacts respondent had with County Extension Agents during previous 12 months (record actual number). (TO THE EXTENSION AGENT: The purpose of the following questions is to provide information needed to help identify methods and approaches of greatest use to county personnel.)

(34) (35)	48. Number of Extension meetings of all kinds attended? (Record actual number)
(36)	49. Number of Extension meetings where beef production discussed? (Record actual number)
(37) (38)	50. Number of visits to County Extension Office? (Record actual number)
(39) (40)	51. Number of telephone calls to County Extension Office? (Record actual number)
(41) (42)	52. Number of farm visits received by respondent from all County Extension Agents? (Record actual number)

TAEE 416J1a

1977 TENNESSEE PASTURE (FORAGE) SURVEY
(BEEF: COW-CALF PRODUCERS)

A. Animal units grazed last year

(43) (44) (45) (46) 1. Actual total number of animal units grazed last year (9999 = Does not apply, DNA)

(47) (48) (49) (50) 2. Actual number breeding females (cows) kept as of January 1, last year (9999 = DNA)

(51) (52) (53) (54) 3. Actual total number cows weaning calves last year (9999 = DNA)

(55) (56) (57) (58) 4. Actual total pounds weaning calves sold last year in <u>hundreds of pounds</u> (9999 = DNA)

(59) (60) (61) (62) 5. Actual total pounds weaning calves kept for replacement last year in hundres of pounds (9999 = DNA)

(63) (64) (65) (66) 6. Actual total pounds calves kept for home consumption last year

3/1 Card Number

B. Acreages of different types of permanent pasture (Record actual acreages; 999 = DNA)

(8) (9) (10) 1. Orchardgrass - white clover

(11) (12) (13) 2. Fescue - white clover

(14) (15) (16) 3. Bluegrass - white clover

(17) (18) (19) 4. Bermudagrass - white clover

(20) (21) (22) 5. Fescue - lespedeza

(23) (24) (25) 6. Bermudagrass - lespedeza

(26) (27) (28) 7. Orchardgrass

(29) (30) (31) 8. Fescue

(32) (33) (34) 9. Bluegrass

(35) (36) (37) 10. Bermudagrass

(38) (39) (40) 11. Annual lespedeza (Reseeded)

(41) (42) (43) 12. Sericea lespedeza

C. Acreages of different types of temporary winter and summer pastures (Record actual acreages; 999 = DNA)

(44) (45) (46) 1. Wheat

(47) (48) (49) 2. Oats

(50) (51) (52) 3. Barley

(53) (54) (55) 4. Rye

(56) (57) (58) 5. Ryegrass

(59) (60) (61) 6. Crimson clover

(62) (63) (64) 7. Sudangrass

(65) (66) (67) 8. Sudangrass - sorghum hybrid

(68) (69) (70) 9. Pearlmillets

(71) (72) (73) 10. Annual lespedeza

(74) (75) (76) 11. Other (Please name) _____

(4) Card Number

D. Tons of hay and/or silage produced (Record estimated number of tons; 999 = DNA)

(8) (9) (10) 1. Corn silage

(11) (12) (13) 2. Sorghum silage

(14) (15) (16) 3. Other silage (Please name) _____

(17) (18) (19) 4. Fescue hay

(20) (21) (22) 5. Orchardgrass hay

(23) (24) (25) 6. Timothy hay

(26) (27) (28) 7. Annual lespedeza hay

(29) (30) (31) 8. Small grain hay

(32) (33) (34) 9. Red clover hay

(35) (36) (37) 10. Alfalfa hay

(38) (39) (40) 11. Other hay (Please name) _____

E. Recommended practices (0 = Practice not used at all; 1 = practice used in less than 1/2 amount; 2 = used in more than 1/2 amount; 3 = practice full used; 9 = DNA)

(41) 1. Had 30 to 50% clover in permanent pasture mixture.

(42) 2. Grazed permanent pastures in rotation.

(43) 3. Took a soil sample and had UT test it prior to the time pastures were established.

(44) 4. Followed soil test recommendations in liming and fertilizing pastures when establishing them.

(45) 5. Determined lime and fertilizer needs of established pastures by a soil test within last three years.

(46) 6. Applied lime and fertilizer based on soil test recommendations in maintaining established pastures.

(47) 7. Seeded on a moist, firm seedbed.

(48) 8. Used recommended varieties.

(49) 9. Seeded permanent pasture within recommended dates.

(50) 10. Used recommended seeding rates.

(51) 11. Properly inoculated legumes.

(52) 12. Did not graze a portion of fescue or fescue-clover pasture during August and September to accumulate growth for wintering cattle.

(53) 13. Grazed or clipped fescue-clover pastures to a desired stubble height about June 1 and January 1 to help maintain clover.

(54) 14. Kept bermudagrass grazed to a desired height.

(55) 15. Grazed fescue and fescue-white clover mixtures in spring and accumulated orchardgrass-white clover mixtures for hay or silage.

(56) 16. Mowed permanent pastures to control weeds and remove mature growth.

(57) 17. Used excess pasture forage for hay or silage.

(58) 18. Renovated pastures (put clovers back in "all grass" pastures).

VITA

Warka Own Mohammad was born in Mosul, Iraq on April 8, 1953. She graduated from the University of Mosul in 1975, with the Bachelor of Science degree in Animal Husbandry. The author is a member of the Iraqi Agricultural Engineering Organization.

She was married on September 16, 1977, to Ali Al-Talib. On August 21, 1978 a daughter, Sadeel, was born.

In September, 1977, she arrived in Knoxville, Tennessee. She entered the Graduate School of the University of Tennessee in 1978, and will graduate from the University of Tennessee with the Master of Science degree in August, 1979.

She is a member of Gama Sigma Delta, the national honorary Agriculture Society.