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## **Relationships between characteristics of Tennessee corn producers, their farming operations and their use of recommended production practices**

John Adrian Chip Jones

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To the Graduate Council:

I am submitting herewith a thesis written by John Adrian Chip Jones entitled "Relationships between characteristics of Tennessee corn producers, their farming operations and their use of recommended production practices." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

Cecil E. Carter Jr, Major Professor

We have read this thesis and recommend its acceptance:

Roy R. Lessly, John Jared

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

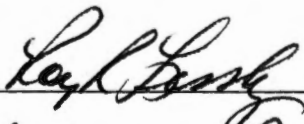
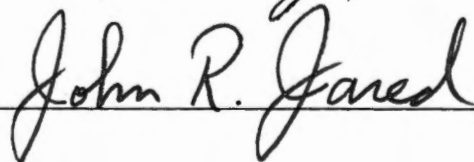
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To the Graduate Council:


I am submitting herewith a thesis written by John Adrian (Chip) Jones entitled "Relationships Between Characteristics of Tennessee Corn Producers, Their Farming Operations and Their Use of Recommended Production Practices." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

  
Cecil E. Carter, Jr., Major Professor

We have read this thesis  
and recommend its acceptance:

Accepted for the Council:

  
Vice Provost  
and Dean of The Graduate School

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Date May 19, 1988



RELATIONSHIPS BETWEEN CHARACTERISTICS OF TENNESSEE CORN PRODUCERS,  
THEIR FARMING OPERATIONS AND THEIR USE OF RECOMMENDED  
PRODUCTION PRACTICES

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

John Adrian (Chip) Jones

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## ABSTRACT

The major purpose of this study was to characterize Tennessee corn producers as to their farming operations, use of recommended production practices, their contacts with Extension agents, and to determine the relationships among these variables.

A total of 1,759 personal interviews were conducted by Extension agents in Tennessee during the fall of 1985. Chi square was used to determine the strength of the relationship between dependent and independent variables. Chi square values which achieved the .05 level of probability were accepted as significant.

Major findings include the following:

1. Seventy four percent of the corn producers were characterized as being full-time farmers in 1985. Twenty-six percent reported farming on a part-time basis.
2. More than half (51.7 percent) of the producers were under 47 years of age. The mean age was 46.
3. Over half (57.6 percent) of the corn producers indicated dairy-livestock as their major source of farm income in 1985.
4. The mean number of acres of yellow corn harvested for grain was 115; the mean number of acres of white corn harvested for grain was 98.
5. There was a significant relationship between farming status and the number of contacts producers had with Extension. Full-time farmers tended to have more Extension contacts than did part-time farmers.

6. That the producers' age was significantly related to the number of contacts with Extension agents over a 12 month period.

Older producers (over 50) had fewer contacts than those under 40.

7. The producers' major source of income was significantly related to their number of Extension contacts. Dairy producers tended to have more contacts with Extension agents than livestock (i.e., beef, swine) and row crop producers.

8. That of the 1985 acres of corn crop owned, cash rented, and share-cropped, only share-cropped corn was significantly related to the number of Extension contacts. Corn producers who share-cropped more acres had more contacts with Extension agents than producers who share-cropped fewer acres.

9. Producers 47 years and younger tended to double crop, grow no-till corn, scout for insects, plant in April, plant 7 to 9 inches between corn plants in the row, desire higher plant populations, use University of Tennessee Soil Testing Laboratory, apply more nitrogen, phosphate and potash fertilizer, and use more lime per acre than producers over 47 years of age.

10. Full-time farmers tended to double crop, grow no-till corn, scout for insects, plant corn in March, April and May, desire higher corn plant populations, and apply more nitrogen and potash per acre than did part-time farmers.

11. Twelve of the 20 corn production practices were significantly related to producers' farming status. Full-time farmers were more likely than were part-time farmers to be using 12 of the 20 production

practices studied. These 12 practices were as follows: double cropping corn, corn grown no-till, scouted for insects, planted corn in March, planted corn in April, planted corn in May, distance between corn rows, plant populations per acre, pounds of nitrogen applied per acre, pounds of potash applied per acre and tons of lime applied per acre of corn grown.

12. Nine of the 20 corn production practices studied were significantly related to producers' major source of farm income. The direction of relationship varied however depending upon specific practices. Row crop producers were more likely than dairy-livestock producers to double crop corn, use a recommended mid-season variety, plant some corn in April, desire a higher plant population per acre, and apply more pounds of nitrogen per acre of corn grown. On the other hand, the corn producers whose major source of farm income was dairy-livestock were more likely than row crop producers to have scouted corn for insects, to have planted some corn in May and to have planted some corn in June. The direction of relationship could not be determined for the variable regarding distance between corn rows.

13. Sixteen of the 20 corn production practices studied were significantly related to the number of contacts corn producers had with Extension agents over a 12 month period. The direction of relationship between Extension contacts and the planting of corn in April and the distance between corn rows and between plants in the row were inconclusive. For the other practices it was found that

producers who were in the high Extension contact group were more likely than others to use double cropping, to use no-till, to scout for insects, to use recommended varieties, to plant some corn in May, plant population desired per acre, use of the U.T. soil testing lab and pounds of nitrogen, phosphate, potash and limestone applied per acre of corn grown.

Implications and recommendations also were made.

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## CHAPTER I

### THE PROBLEM AND ITS SETTING

More acres of corn (Maize) are grown in America than any other crop. It was introduced into this country by American Indians. Corn was a major food source in the settlement of the new world and has been said to be the backbone of American agriculture.

In 1985, Tennessee produced 79.4 million bushels of grain and about 2 million tons of silage and ranked seventh among Tennessee's top agricultural products with cash receipts of about 128 million dollars. This represented over 6 percent of the state's agricultural receipts (10:86).\* Tennessee ranks eighteenth among the states in the nation in corn production. Thus corn is an important crop in Tennessee.

Today more than ever before, the key to any successful farming operation is management. Trends indicate that farms are becoming fewer and larger. Producers will need to become even better managers to remain efficient and profitable. Corn producers must utilize available management tools to reduce risks and maximize yields and profits.

The University of Tennessee Agricultural Extension Service has an integral role in Tennessee's agricultural industry. The Extension

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\*Numbers in parentheses refer to reference in alphabetically listed Bibliography; those after the colon represent page numbers.

service takes leadership in educating farm leaders, supplying dealers with current information and working with the media to effectively diffuse information. Through local county Extension agents, producers learn the latest in agricultural research and methods to apply practical information. Extension agents disperse information pertaining to corn production practices using many contact methods (e.g., meetings, office visits, telephone calls, farm visits and circular letters). Use of this information varies among corn producers.

This study was conducted to characterize Tennessee corn producers as to the nature of their farming operations, their use of recommended production practices and the number of contacts corn producers had with Extension agents over a 12 month period. This information should be useful to state Extension specialists and to county staffs in assessing needs and planning educational programs for Tennessee corn producers.

#### I. NEED FOR THE STUDY

Tennessee agricultural Extension agents and specialists are continually trying to improve the effectiveness of their educational programs. One major objective of the Tennessee Agricultural Extension Service is to encourage the adoption of recommended agricultural and practices. All agencies involved in serving the public, agriculture or other, are striving for increased accountability to taxpayers and legislators.

It is believed that this study will provide information which will help Extension agents and specialists improve their programs.

## II. PURPOSE AND OBJECTIVES OF THIS STUDY

The purpose of this study was to characterize Tennessee corn producers as to their farming operations, their use of recommended production practices, their contacts with Extension agents, and to determine the relationships among these variables.

The specific objectives of this study were:

1. To characterize the corn producers in Tennessee and their farming operations.
2. To determine relationships between corn producer characteristics and the number of contacts they had with Extension agents.
3. To determine relationships between characteristics of corn producers' farming operations and the number of contacts they had with Extension agents.
4. To determine relationships between ages of corn producers and their use of production practices.
5. To determine relationships between the farming status of corn producers and their use of production practices.
6. To determine relationships between corn producers' major sources of farm income and their use of production practices.
7. To determine relationships between the number of contacts corn producers had with Extension agents and their use of production practices.

### III. LIMITATIONS OF THE STUDY

This study was limited to the analysis of data from the 1985 Tennessee Agriculture Extension Service Corn Production Survey conducted in the fall of 1985. The data were obtained by Extension agents through personal interviews with 1,759 corn producers in the major corn producing counties of Tennessee. Agents in each county surveyed 20 or more producers, or all producers if there were 2,500 acres of corn grown in the county. The number interviewed ranged from 20 to 35, depending on the corn acreage in each county.

### IV. METHODS AND PROCEDURES OF INVESTIGATION

#### Population and Sample

The population of this study was corn producers in Tennessee who grew 20 or more acres of corn in 1985. Data were obtained through personal interviews by Extension agents using interview schedules developed by specialists at the University of Tennessee. Each agent was instructed to use the "nth" number to randomly select individual corn producers. The number of producers interviewed per county was determined as follows: counties producing 2,500 acres or less, interviewed 20 producers; counties producing 2,501 to 5,000 acres, interviewed 25 producers, counties producing 5,001 to 10,000 acres, interviewed 30 producers; counties producing over 10,000 acres interviewed 35 producers. Each producer surveyed grew 20 acres or more of corn for grain or silage. Completed surveys were returned to the Agricultural Extension Education Office.

### Method of Analysis

The 1985 survey data were processed for computer analysis. The University of Tennessee Computing Center facilities were used in the analysis of data.

Responses to survey questions were summarized using descriptive statistics. The chi square test was used to determine the strength of the relationship between dependent and independent variables. Chi square values which achieved the .05 level of probability were accepted as significant.

### V. DEFINITION OF TERMS

1. Corn Producer. An individual making management decisions pertaining to at least 20 acres of corn in 1985. These producers constitute the target audience of this study.

2. Extension Contacts. The number of Extension group meetings attended, visits made to the Extension office, telephone calls made to the Extension office, farm visits received from Extension agents, or circular letters received from Extension agents during the previous 12 months.

3. Variable (Dependent). The variable which one wishes to explain as a function of other variables.

4. Variable (Independent). The explanatory variable in a statistical analysis.

5. Practice. A research verified and commonly accepted procedure which, if performed correctly and on a regular basis, will increase or help insure a desired outcome or return.

## CHAPTER II

### REVIEW OF RELATED STUDIES

Available studies were reviewed relating to: (1) characteristics of Tennessee corn producers and their farm operation, (2) studies of relationships between the characteristics of producers and the number of contacts they had with Extension agents, (3) studies of relationships between the characteristics of producers and their use of recommended practices, and (4) studies of relationships between the number of contacts producers had with Extension agents and their use of recommended practices.

#### I. CHARACTERISTICS OF TENNESSEE FARMERS AND THEIR FARM OPERATION

A number of related studies describing the average farm operation in Tennessee revealed that the average farm in 1985 contained 137 acres with only 20 percent of the farms being larger than 180 acres (10:4).

Data indicate that the average farm size in Tennessee has historically increased each year, however recent trends may point to a leveling off in average farm size (12:1).

Lumpkin (1985) found in his study of Tennessee cow-calf producers that producers who owned their farm as compared to those who did not, who were full-time farmers as compared to those who were part-time farmers, and those who gave farming as their major source of income were older. Also, producers who gave livestock as their major source of



income were older. Lumpkin also found that producers who were full-time farmers and those who gave farm as their major source of income had a significantly higher percent of cows weaning calves than others (7).

Freeman (1978) found that the average Tennessee Grade A dairyman was 50 years old, and a high percentage owned their farm (2).

## II. STUDIES OF RELATIONSHIPS BETWEEN THE CHARACTERISTICS OF PRODUCERS AND THE NUMBER OF CONTACTS PRODUCERS HAD WITH EXTENSION AGENTS

Several studies were identified concerning the characteristics of producers and the number of contacts they had with Tennessee Extension agents.

Jenkins (1977) and Perry (1980) found in separate studies that full-time farmers in soybean and swine production tended to have more contacts with Extension than part-time farmers (5, 9).

Yabaya's study of corn producers in Tennessee and Freeman's (1978) study of Tennessee dairy producers showed that the number of contacts these farmers had with Extension agents decreased as the size of the farming operation increased (13, 2).

Freeman's dairy study showed that as age of the producer increased, the number of Extension contacts decreased.

### III. STUDIES OF RELATIONSHIPS BETWEEN THE CHARACTERISTICS OF PRODUCERS AND THEIR USE OF RECOMMENDED PRACTICES

Gordon (1977) found that age of Tennessee feeder pig producers was not significantly related to their adoption of recommended pig production practices (3).

Turner (1985) showed in his Tennessee study of tobacco marketing practice that producers' age was significantly related to use of the practices of hand tying, baling, and sheeting. Turner concluded that older producers hand tied significantly more tobacco than younger producers. Older producers also baled and sheeted significantly less tobacco than younger producers (11).

### IV. STUDIES OF RELATIONSHIPS BETWEEN THE NUMBER OF CONTACTS PRODUCERS HAD WITH EXTENSION AGENTS AND THEIR USE OF RECOMMENDED PRACTICES

Several studies were found regarding practice use as related to the type and number of contact producers had with Extension agents. Hall (1971) found that Extension bulletins, newspapers, radio programs, farm meetings, commercial bulletins, field days and television were listed as important sources of information by all of the high-yielding soybean producers (4).

Freeman (1978) found that the Grade A milk producers' total number of Extension contacts and the number of Extension farm visits received were significantly related to the total number of practices used (2).

Other studies found that Extension contacts were significantly related to the use of selected recommended practices. McLemore (1979) showed that the total number of contacts swine producers had with Extension was significantly related to their use of 23 of the 25 recommended swine practices studied (8). It was implied that either Extension was spending time contacting producers already using recommended practices or that producers were using the practices as a result of Extension contacts. Perry (1980), in a study of Tennessee swine producers, found that there was a significant relationship between the use of nine of the recommended pig production practices and the number of contacts producers had with Extension agents (9).

Bradley (1980) found in a study of Tennessee cotton producers that there was a significant relationship between the use of nine of the recommended cotton practices studied and the number of contacts producers had with Extension (1).

Yabaya (1978) found in a Tennessee corn study that the total number of Extension contacts was significantly related to five out of eight corn production practices used by producers. Producers having fewer Extension contacts were less likely to use the practices (13).

Johnson (1982) found that the yield per acre of corn increased as the number of Extension meetings attended increased, and that the use of recommended practices increased as contacts with Extension increased (6).

## CHAPTER III

### CHARACTERISTICS OF TENNESSEE CORN PRODUCERS, THEIR FARM OPERATIONS, THEIR USE OF RECOMMENDED PRODUCTION PRACTICES, AND RELATIONSHIPS BETWEEN PRODUCER CHARACTERISTICS AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS IN 1985

The purpose of this chapter is to describe characteristics of Tennessee corn producers, their farm operations, their use of recommended production practices, and relationships between producer characteristics and the number of contacts they had with Extension agents.

Chapter III is organized into three sections:

Section I presents findings regarding characteristics of the corn producers, their farm operation, their use of recommended practices, and the number of contacts made with Extension agents.

Section II presents findings regarding relationships between producer characteristics and the number of contacts they had with Extension agents.

Section III presents findings regarding relationships between characteristics of corn producers' farm operations and the number of contacts with Extension agents.

I. CHARACTERISTICS OF TENNESSEE CORN PRODUCERS, THEIR FARM OPERATIONS, THEIR USE OF RECOMMENDED PRODUCTION PRACTICES, AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS

This section presents findings regarding selected characteristics of Tennessee corn producers, their farm operations, their use of recommended practices, and the number of contacts they had with Extension agents. Findings were organized under three subsections: (1) "Producer Characteristics," (2) "Farm Characteristics," (3) "Use of Production Practices," and (4) "Extension Contacts." Findings regarding these characteristics are summarized in Table I.

Producer Characteristics

Selected producer characteristics presented in Table I include farming status, estimated age of producer, and producers' major source of farm income. Each characteristic will be discussed in separate headings below.

Farming status. Data in Table I revealed that of 1,730 farmers, 74.0 percent, were characterized as being full-time farmers. The remaining 449 or 26.0 percent reported farming on a part-time basis.

Estimated age of corn producer. Almost 52 percent of the 1,724 corn producers were under 47 years of age. Those producers 47 years and over represented 48 percent of the total producers. The mean age was 46.5 years.

TABLE I. Characteristics of Tennessee Corn Producers, Their Farm Operations, Use of Corn Production Practices and Contacts They Had With Extension Agents in 1985

Selected Variables	Number of Producers*	Percent of Producers
<b>PRODUCER CHARACTERISTICS</b>		
Farming Status		
Full-time farm	1,281	74.0
Part-time farm	449	26.0
TOTAL	1,730	100.0
Estimated Age of Corn Producer		
Under 47	891	51.7
47-over	833	48.3
TOTAL	1,724	100.0
	Mean = 46.47 years (N = 1,724)	
Major Source of Farm Income		
Crop sales	731	42.4
Dairy-livestock	992	57.6
TOTAL	1,723	100.0
<b>CHARACTERISTICS OF FARM OPERATION</b>		
Was Yellow Corn Harvested for Grain		
No	161	9.2
Yes	1,586	90.8
TOTAL	1,747	100.0
	Mean = 115 acres (N = 1,586)	
Was White Corn Harvested for Grain		
No	1,531	88.0
Yes	208	12.0
TOTAL	1,739	100.0
	Mean = 98 acres (N = 208)	
Was Corn Harvested for Silage		
No	1,223	70.0
Yes	525	30.0
TOTAL	1,748	100.0
	Mean = 57 acres (N = 525)	
Acres 1985 Corn Crop Owned		
10 to 39	489	34.5
40 to 120	665	46.9
121 - over	263	18.6
TOTAL	1,417	100.0
	Mean = 85 acres (N = 1,417)	
Acres 1985 Corn Crop Cash Rental		
10 to 39	204	34.8
40 to 120	252	43.0
121 - over	130	22.2
TOTAL	586	100.0
	Mean = 97 acres (N = 586)	
Acres 1985 Corn Crop Share-Cropped		
10 to 39	105	27.1
40 to 120	166	42.9
121 - over	116	30.0
TOTAL	387	100.0
	Mean = 110 acres (N = 387)	
<b>USE OF CORN PRODUCTION PRACTICES</b>		
Was Corn Double Cropped		
No	1,360	77.5
Yes	395	22.5
TOTAL	1,755	100.0
	Mean = 69 acres (N = 395)	

TABLE I (Continued)

Selected Variables	Number of Producers	Percent of Producers
Was Corn Grown No-Till		
No	1,191	68.1
Yes	559	31.9
TOTAL	1,750	100.0
Mean = 76 acres (N = 559)		
Was Corn Scouted for Insects		
No	484	28.5
Yes	1,216	71.5
TOTAL	1,900	100.0
Mean = 4.6 times (N = 1,216)		
Was Recommended Early Season Variety Planted		
No	649	37.1
Yes	1,099	62.9
TOTAL	1,748	100.0
Was Recommended Mid-Season Variety Planted		
No	379	21.6
Yes	1,379	78.4
TOTAL	1,758	100.0
Was Recommended Full-Season Variety Planted		
No	270	15.4
Yes	1,482	84.6
TOTAL	1,752	100.0
Was Any Corn Acreage Planted in March		
No	1,602	91.1
Yes	156	8.9
TOTAL	1,758	100.0
Was Any Corn Acreage Planted in April		
No	513	29.3
Yes	1,235	70.7
TOTAL	1,748	100.0
Was Any Corn Acreage Planted in May		
No	742	42.4
Yes	1,006	57.6
TOTAL	1,748	100.0
Was Any Corn Acreage Planted in June		
No	1,603	91.7
Yes	145	8.3
TOTAL	1,748	100.0
Distance Between Corn Rows		
Under 36 inches	305	17.5
36 to 37 inches	565	32.5
38 to 40 inches	841	48.4
41-over inches	27	1.6
TOTAL	1,738	100.0
Mean = 36 inches (N = 1,738)		
Distance Between Corn Plants in Row		
6-less inches	338	19.8
7 to 9 inches	969	56.7
10 to 12 inches	393	23.0
13-over inches	9	0.5
TOTAL	1,709	100.0
Mean = 8.1 inches (N = 1,709)		
Desired Corn Plant Population Per Acre		
17,000-less	249	14.2
17,001 to 19,000	395	22.5
19,001 to 20,000	428	24.3
20,001-over	686	39.0
TOTAL	1,758	100.0
Mean = 20,023 plants per acre (N = 1,758)		

TABLE I (Continued)

Selected Variables	Number of Producers	Percent of Producers
<b>Was any Corn Acreage Fertilized by Soil Test</b>		
No	186	10.6
Yes	1,570	89.4
TOTAL	1,756	100.0
Mean = 127.2 acres (N = 1,570)		
<b>Was any Corn Acreage Limed by Soil Test</b>		
No	348	19.8
Yes	1,407	80.2
TOTAL	1,755	100.0
Mean = 113.46 acres (N = 1,407)		
<b>Was U.T. Soil Test Lab Used</b>		
Did not use U.T. lab	183	17.1
Part of crop used U.T. lab	289	27.0
All of crop used U.T. lab	600	56.0
TOTAL	1,072	100.0
<b>Average Pounds Nitrogen Applied Per Acre</b>		
20 to 120 pounds	912	52.7
121 to 200 pounds	817	47.3
TOTAL	1,729	100.0
Mean = 126 pounds (N = 1,729)		
<b>Average Pounds Phosphate Applied Per Acre</b>		
20 to 66 pounds	776	47.1
67 to 300 pounds	873	52.9
TOTAL	1,649	100.0
Mean = 70 pounds (N = 1,649)		
<b>Average Pounds Potash Applied Per Acre</b>		
20 to 74 pounds	794	46.4
75 to 200 pounds	916	53.6
TOTAL	1,710	100.0
Mean = 76 pounds (N = 1,710)		
<b>Average Tons Lime Applied Per Acre</b>		
None limed	1,119	63.6
1 to 4 tons	629	35.8
TOTAL	1,748	100.0
Mean = 2.0 tons (N = 629)		
<b>EXTENSION CONTACTS</b>		
<b>Number of Extension Corn Meetings Attended 12 Months</b>		
Not any	840	48.0
1 to 4	909	52.0
TOTAL	1,749	100.0
Mean = .699 meetings (N = 1,749)		
<b>Number of Office Visits Made 12 Months</b>		
Not any	788	45.3
1 to 6	952	54.7
TOTAL	1,740	100.0
Mean = 1,034 office visits (N = 1,740)		
<b>Number of Telephone Calls Made 12 Months</b>		
Not any	582	33.3
1 to 8	1,168	66.7
TOTAL	1,750	100.0
Mean = 1,677 calls (N = 1,750)		
<b>Number of Farm Visits Received by Extension Agents</b>		
Not any	574	33.0
1 to 8	1,166	67.0
TOTAL	1,740	100.0
Mean = 1,408 farm visits (N = 1,740)		
<b>Total Number of Circular Newsletters Received 12 Months</b>		
Not any	239	13.9
1 to 25	1,479	86.1
TOTAL	1,718	100.0
Mean = 5.549 newsletters (N = 1,718)		

\*Variation in the number of respondents was due to no responses and/or does not apply situations.



Producers' major source of farm income. Almost 58 percent of the corn producers indicated dairy-livestock as their major source of farm income compared to 42.4 percent who indicated crop sales as their major source of farm income.

#### Characteristics of Farm Operation

Findings regarding six variables selected to characterize the Tennessee corn producers' farm operations are presented in Table I.

Was yellow corn harvested for grain. Almost 91 percent of corn producers harvested yellow corn for grain in 1985. The mean number of acres of yellow corn harvested for grain by these producers in 1985 was 115 acres.

Was white corn harvested for grain. Only 12.0 percent of corn producers harvested white corn for grain during the 1985 crop year. The mean acres of white corn harvested for grain by these producers was 98 acres.

Was corn harvested for silage. Only 525 of 1,748 total corn producers or 30.0 percent reported corn harvested for silage. The mean acres of corn harvested for silage by these 525 producers was 57 acres.

Acres 1985 corn crop owned. A small percentage of corn producers (18.6 percent) owned 121 or more acres in 1985. Almost 35 percent owned 10 to 39 acres and almost 47 percent owned 40 to 120 acres of the land cropped. The mean acres of the 1985 corn crop owned was 85 acres.

Acres 1985 corn crop cash rental. Almost 35 percent of the corn producers who cash rented (i.e., 586 producers), cash rented 10 to 39 acres of their 1985 crop. Forty three percent cash rented 40 to 120 acres and 22.2 percent cash rented 121 or more acres. The mean acres of the 1985 corn crop cash rented by these 586 producers was 97 acres.

Acres 1985 corn crop share-cropped. Almost 43.0 percent of the corn producers who share-cropped (i.e., 387 producers) share-cropped 40 to 120 acres in 1985. Thirty percent share-cropped 121 or more acres. Of the 387 producers responding 27.1 percent share-cropped 10 to 39 acres in 1985. The mean acres share-cropped by these 387 producers was 110 acres.

#### Corn Producers' Use of Recommended Practices

Findings regarding 20 variables selected to characterize Tennessee corn producers use of recommended corn production practices are presented in Table I.

Was corn double cropped. Only 22.5 percent of the corn producers (395 producers) double cropped corn in 1985. The mean acres double cropped by these 395 producers was 69 acres.

Was corn grown no-till. Almost 32 percent of Tennessee corn producers (559 producers) grew no-till corn. The mean acres grown no-till by these 559 producers was 76 acres.

Was corn scouted for insects. Almost 72 percent of corn producers scouted for insects. Producers who scouted for insects averaged scouting 4.6 times.

Was recommended mid-season variety planted. Of the corn producers surveyed, 78.4 percent planted a recommended mid-season varieties.

Was recommended full season variety planted. Almost 85 percent of corn producers planted a recommended full season variety corn.

Was any corn acreage planted in March. Findings in Table I show that only 8.9 percent of corn producers planted some corn acreage in March compared to 91.1 percent who planted later in the season.

Was any corn acreage planted in April. Almost 71 percent of corn producers planted some corn acreage in April. Other producers, 29.3 percent did not plan corn in April.

Was any corn acreage planted in May. Almost 58 percent of corn producers planted some corn acreage in May, compared to 42.4 percent of producers who did not plant in May.

Was any corn acreage planted in June. Only 8.3 percent of corn producers planted some corn acreage in June compared to almost 92 percent who planted corn earlier in the season.

Distance between corn rows. Findings showed the mean inches between corn rows to be 36 inches. Less than 2 percent of the corn producers had row spacings of 41 inches or more.

Distance between corn plants in row. The mean inches for distance between plants in rows was 8.1 inches. Almost 57 percent of corn

producers had plant spacings from 7 to 9 inches. Less than 1 percent of producers had plant spacings in the row 13 or more inches.

Desired corn plant population per acre. The mean number of corn plants desired per acre was 20,023. Thirty nine percent of corn producers desired over 20,000 plants per acre. Only 14.2 percent of the producers desired 17,000 or less plants per acre.

Was any corn acreage fertilized by soil test. Findings show that 89.4 percent of corn producers fertilized their acreage by soil test compared to 10.6 percent who did not. The mean acres fertilized by soil test was 127.2 acres.

Was any corn acreage limed by soil test. The percentage of corn producers who limed their acreage according to soil test recommendations was 80.2 percent. The mean acres limed by soil test was 113.5 acres.

Was U.T. soil test lab used. Eighty-three percent of corn producers who tested soil used U.T. lab compared to 17.0 percent who did not use the soil testing lab. It should be noted that over 500 of the producers who tested their soil did not respond to this question.

Average pounds nitrogen applied per acre. Almost 53 percent of corn producers applied 20 to 120 pounds of nitrogen per acre. The producers applying 121 to 200 pounds of nitrogen per acre was 47.3 percent. The mean pounds of nitrogen applied was 126 pounds.

Average pounds phosphate applied per acre. Almost 53 percent of corn producers applied 67 to 300 pounds of phosphate per acre. The producers applying 20 to 66 pounds of phosphate per acre was 47.1 percent. The mean pounds of phosphate applied per acre was 70 pounds.

Average pounds potash applied per acre. Almost 54 percent of corn producers applied 75 to 200 pounds of potash per acre. The producers applying 20 to 74 pounds of potash represented 46.4 percent. The mean pounds of potash applied per acre was 76 pounds.

Average tons limed applied per acre. Almost 64 percent of corn producers applied no lime compared to 35.8 percent who applied 1 to 4 tons. The mean tons of lime applied per acre was 2.0 tons.

#### Extension Contacts

Findings regarding five variables were used to characterize corn producers as to the number of contacts made with Extension agents during the past 12 months.

Number of corn Extension meetings attended. Fifty-two percent of corn producers attended 1 to 4 Extension corn meetings over a 12 month period. Another 48 percent attended no corn meetings over the same period. The mean Extension corn meetings attended in 12 months was 0.699 meetings.

Number of visits to Extension office. Almost 55 percent of corn producers made 1 to 6 visits to the Extension office, while

45.3 percent did not visit the office during the past year. The mean number of office visits made was 1.03.

Number of telephone calls to Extension office. Over half (66.7 percent) of the producers surveyed called the Extension office 1 to 8 times during the past year. Over 33 percent of the producers did not call the Extension office during the previous 12 months. The mean number of calls to the Extension office during the past year was 1.7 calls.

Number of farm visits by Extension agents. Sixty seven percent of corn producers were visited during the past year by Extension agents. Thirty three percent of producers reported receiving not any visits by agents. The mean number of farm visits made by agents was 1.5 per year.

Number of circular newsletters received. Almost 14 percent of corn producers reported receiving not any circular newsletters from the Extension office compared to 86.1 percent who received 1 to 25 newsletters. The mean number of circular newsletters received was 5.5.

## II. RELATIONSHIPS BETWEEN CORN PRODUCER CHARACTERISTICS AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS

This section presents findings regarding selected characteristics of Tennessee corn producers and the number of contacts they had with Extension agents in a 12 month time period. Data regarding these relationships are presented in Table II.

TABLE II. Relationships Between Corn Producer Characteristics and the Number of Contacts They Had With Extension Agents

Producer Characteristics	Number of Extension Contacts					
	None		1 to 5		6-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Farming Status						
Full-time farm	154	12.3	625	49.7	478	38.0
Part-time farm	82	18.6	244	55.2	116	26.2
Chi square Test = 24.252		p = 0.000				
Estimated Age of Farm Operator						
Under 40	55	11.0	231	46.0	216	43.0
40 to 55	117	14.8	425	53.7	250	31.6
Over 55	64	16.0	212	52.9	125	31.2
Chi square Test = 22.203		p = 0.000				
Major Source of Farm Income						
Row crops	110	15.4	383	53.6	221	31.0
Dairy	42	10.6	172	43.2	184	46.2
Beef	42	17.9	131	55.7	62	26.4
Swine	29	11.8	128	52.0	89	36.2
Other	12	12.1	51	51.5	36	36.4
Chi square Test = 37.668		p = 0.000				



Selected producer characteristics presented in Table II include farming status, estimated age of producer, and producers' major source of farm income.

#### Producer Characteristics

Farming status. Thirty-eight percent of corn producers characterized as being full-time farmers had 6 or more contacts with Extension compared to 26.2 percent of the part-time farmers. These differences were significant ( $p < .05$ ) as tested by the chi square test. Therefore there was a significant relationship between farming status and the number of contacts producers had with Extension. Full-time farmers tended to have more Extension contacts than did part-time farmers.

Estimated age of producer. Forty three percent of those producers under 40 years of age had 6 or more contacts with Extension compared to 32 percent or less of the 55 years and older producers. These differences were significant. Therefore age of producer was significantly related to the number of contacts producers had with Extension over a 12 month time period. Older producers (e.g., 40 and older) had fewer contacts than those under 40.

Major source of farm income. Over 46 percent of the corn producers indicating dairy as their major source of farm income, compared to 26.4 percent of those indicating beef as their major source of farm income were in the high Extension contact group (i.e., 6-over contacts). These differences were significant. Therefore,



there was a significant relationship between major source of farm income and the number of contacts corn producers had with Extension agents. Dairy producers tended to have more contacts with Extension agents than livestock (i.e., beef, swine) or row crop producers.

#### Summary

The corn producers' farming status, age and major source of farm income were significantly related to the number of contacts they had with Extension. Full-time farmers had more Extension contacts than did part-time farmers. Older producers (e.g., 40 and older) had fewer contacts than those under 40. Also, corn producers who indicated dairy as their major source of farm income had more contacts with Extension agents than those who indicated other farm enterprises.

### III. RELATIONSHIPS BETWEEN CHARACTERISTICS OF CORN PRODUCERS' FARM OPERATION AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS

This section presents findings regarding selected characteristics of Tennessee corn producers' farm operation and the total number of contacts of all types (i.e., meetings, office visits, telephone calls and farm visits) they had with Extension agents in a 12 month time period. Findings regarding these relationships are summarized in Table III. Six variables are selected to describe the producers' farm operation.

#### Farm Operations

Was yellow corn harvested for grain. Almost 66 percent of corn producers who harvested yellow corn for grain were in the high

TABLE III. Relationships Between Characteristics of Corn Producers' Farm Operation and the Total Number of Contacts They Had With Extension Agents

Farm Operations	Total Number of Extension Contacts					
	None	1 to 5			6-over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Was Yellow Corn Harvested for Grain						
No	8	5.0	40	25.2	111	69.8
Yes	112	7.4	405	26.9	988	65.6
Chi square Test = 1.701						
p = 0.427						
Was White Corn Harvested for Grain						
No	111	7.6	395	27.2	948	65.2
Yes	7	3.5	49	24.4	145	72.1
Chi square Test = 6.068						
p = 0.048						
Was Corn Harvested for Silage						
No	101	8.8	330	28.7	719	62.5
Yes	19	3.7	117	22.8	378	73.5
Chi square Test = 23.939						
p = 0.000						
Acres 1985 Corn Crop Owned						
10 to 39	23	5.0	138	29.8	302	65.2
40 to 120	34	5.4	163	25.7	437	68.9
121 - over	12	4.9	52	21.1	183	74.1
Chi square Test = 6.828						
p = 0.145						
Acres 1985 Corn Crop Cash Rented						
10 to 39	13	6.7	52	26.8	129	66.5
40 to 120	15	6.2	63	26.0	164	67.8
121 - over	9	7.3	27	21.8	88	71.0
Chi square Test = 1.2018						
p = 0.877						
Acres 1985 Corn Crop Share Cropped						
10 to 39	-	-	33	33.3	66	66.7
40 to 120	8	5.3	38	25.0	106	69.7
121 - over	11	10.3	16	15.0	80	74.8
Chi square Test = 17.939						
p = 0.001						

contact group (i.e., 6-over contacts) compared to almost 70 percent of the producers who reported not harvesting yellow corn for grain. These differences, however, were not significant as tested by the chi square test. There was not a significant relationship between harvesting yellow corn for grain and the total number of Extension contacts.

Was white corn harvested for grain. Seventy-two percent of the 201 corn producers who harvested white corn for grain were in the high Extension contact group (i.e., 6-over contacts) compared to 65 percent of the producers who did not harvest white corn for grain. These differences were significant as tested by the chi square test. There was a significant relationship between whether or not corn producers harvested white corn for grain and the number of contacts they had with Extension agents. Corn producers who harvested white corn for grain tended to have more contacts with Extension agents than did producers not growing white corn.

Was corn harvested for silage. Almost 74 percent of the 514 corn producers who harvested corn for silage were in the high contact group (i.e., 6-over contacts) compared to almost 63 percent of producers not harvesting corn for silage. These differences were significant ( $p < .05$ ) as tested by the chi square test. Therefore there was a significant relationship between whether or not producers harvested corn for silage and the number of contacts they had with Extension agents. Producers harvesting corn for silage tended to have more contacts with Extension agents than did those not harvesting corn for silage.

Acres 1985 corn crop owned. Seventy-four percent of corn producers who owned 121 or more acres of the 1985 crop were in the high Extension contact group (i.e., 6-over contacts), compared to 65 percent of those who owned 10 to 39 acres. When tested by the chi square test these differences were not significant. Acres of corn owned was not significantly related to the total number of contacts producers had with Extension agents.

Acres 1985 corn crop cash rented. Seventy-one percent of corn producers who cash rented 121 or more acres of their 1985 corn crop were in the high contact group (i.e., 6-over contacts), compared to 67 percent of the producers who cash rented 10 to 39 acres. When tested by the chi square test these differences were not significant. There was not a significant relationship between acres of corn producers cash renting and the number of contacts they had with Extension agents.

Acres 1985 corn crop share cropped. Seventy-five percent of corn producers who share cropped 121 or more acres of their 1985 corn crop were in the high contact group (i.e., 6-over contacts), compared to almost 67 percent of the producers who share cropped 10 to 39 acres. These differences were significant ( $p < .05$ ) as tested by the chi square test. Therefore there was a significant relationship between acres share cropped and the number of contacts producers had with Extension agents. Producers who share cropped more acres in 1985 tended to have more contacts with Extension agents than did producers who share cropped fewer acres.

Summary

Three of six variables regarding producers' farm operations were significantly related to the total number of contacts producers had with Extension agents during the past year. Whether or not producers harvested white corn for grain, harvested corn for silage and acres of corn share-cropped were significantly related to the number of contacts. Yellow corn harvested for grain, acres corn crop owned and acres corn crop cash rented were not significantly related to the number of contacts producers had with Extension agents. Corn producers who grew white corn for grain and those who grew silage tended to have more contacts with Extension than did producers not growing white corn and those not growing corn silage. Producers who share-cropped larger acres of corn had more contacts with Extension than did those who share-cropped fewer acres of corn.

## CHAPTER IV

### RELATIONSHIPS BETWEEN TENNESSEE CORN PRODUCERS' USE OF RECOMMENDED PRODUCTION PRACTICES AND THEIR AGE, THEIR FARMING STATUS, THEIR MAJOR SOURCE OF FARM INCOME AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS IN 1985

The purpose of this chapter was to present findings regarding relationships between the use of production practices by Tennessee corn producers and their age, their farming status, their major source of farm income and the number of contacts they had with Extension agents. Findings are summarized in four tables and discussed under four sections.

Section I presents findings regarding relationships between age of corn producers and their use of corn production practices.

Section II presents findings regarding relationships between the farming status of corn producers and their use of corn production practices.

Section III presents findings regarding relationships between producers major source of farm income and their use of corn production practices.

Section IV presents findings regarding relationships between the number of contacts corn producers had with Extension agents and their use of corn production practices.

I. RELATIONSHIPS BETWEEN AGE OF CORN PRODUCERS AND THEIR  
USE OF CORN PRODUCTION PRACTICES

This section presents findings regarding relationships between ages of corn producers and their use of 20 selected corn production practices. Findings regarding these relationships are summarized in Table IV.

Corn Production Practices

Was corn double cropped. Almost 25 percent of corn producers under 47 years of age double cropped corn in 1985 compared to almost 21 percent of producers who were 47 and older. These differences were significant. Therefore there was a significant relationship between producers' age and the use of double cropping. Younger producers were more likely than older producers to double crop corn.

Was corn grown no-till. Thirty-four percent of corn producers under 47 years of age grew no-till corn in 1985 compared to 29 percent of producers who were 47 and older. These differences were significant. Therefore there was a significant relationship between producers' age and the use of no-till. Younger corn producers were more likely than the older ones to grow corn no-till.

Was corn scouted for insects. Almost 75 percent of corn producers under 47 years of age scouted their corn for insects compared to 69

TABLE IV. Relationships Between Age of Corn Producers and Their Use of Production Practices

Production Practices	Age of Corn Producers			
	Under 47		47-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
<b>Was Corn Double Cropped</b>				
No	670	75.4	660	79.4
Yes	219	24.6	171	20.6
TOTAL	889	100.0	831	100.0
	Chi square Test = 3.803	p = .051		
<b>Was Corn Grown No-Till</b>				
No	581	65.6	587	70.7
Yes	304	34.4	243	29.3
TOTAL	885	100.0	830	100.0
	Chi square Test = 4.84	p = 0.027		
<b>Was Corn Scouted for Insects</b>				
No	216	25.3	254	31.3
Yes	637	74.7	558	68.7
TOTAL	853	100.0	812	100.0
	Chi square Test = 6.99	p = 0.008		
<b>Was Recommended Early Season Variety Planted</b>				
No	313	35.5	309	37.2
Yes	569	64.5	522	62.8
TOTAL	882	100.0	831	100.0
	Chi square Test = 0.461	p = 0.496		
<b>Was Recommended Mid Season Variety Planted</b>				
No	177	19.9	187	22.4
Yes	713	80.1	646	77.6
TOTAL	890	100.0	833	100.0
	Chi square Test = 1.543	p = 0.214		
<b>Was Recommended Full Season Variety Planted</b>				
No	136	15.4	120	14.4
Yes	749	84.6	712	85.6
TOTAL	885	100.0	832	100.0
	Chi square Test = 0.231	p = 0.630		
<b>Was Any Corn Acreage Planted in March</b>				
No	798	89.6	770	92.5
Yes	93	10.4	62	7.5
TOTAL	891	100.0	832	100.0
	Chi square Test = 4.327	p = 0.037		
<b>Was Any Corn Acreage Planted in April</b>				
No	235	26.5	272	32.9
Yes	652	73.5	554	67.1
TOTAL	887	100.0	826	100.0
	Chi square Test = 8.196	p = 0.004		
<b>Was Any Corn Acreage Planted in May</b>				
No	367	41.5	351	42.4
Yes	518	58.5	477	57.6
TOTAL	885	100.0	828	100.0
	Chi square Test = 0.114	p = 0.73		
<b>Was Any Corn Acreage Planted in June</b>				
No	806	91.3	764	92.0
Yes	77	8.7	66	8.0
TOTAL	883	100.0	830	100.0
	Chi square Test = 0.237	p = 0.626		
<b>Distance Between Corn Rows</b>				
Under 36 inches	199	22.6	103	12.5
36 to 37 inches	303	34.4	251	30.5
38 to 40 inches	364	41.3	456	55.5
41 - over inches	15	1.7	12	1.5
TOTAL	881	100.0	822	100.0
	Chi square Test = 44.06	p = 0.000		



TABLE IV (Continued)

Production Practices	Age of Corn Producers			
	Under 47		47-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
<b>Distance Between Corn Plants in Row</b>				
Under 6 inches	185	21.1	151	18.9
7 to 9 inches	514	58.7	435	54.4
10 to 12 inches	173	19.8	209	26.1
13 - over inches	3	.3	5	.6
TOTAL	875	100.0	800	100.0
	Chi square Test = 10.57 p = 0.014			
<b>Desired Corn Plant Population Per Acre</b>				
Under 17,000 plants	91	10.2	152	18.2
17,001 to 19,000 plants	180	20.2	208	25.0
19,001 to 20,000 plants	217	24.4	204	24.5
20,001 - over plants	402	45.2	269	32.3
TOTAL	890	100.0	833	100.0
	Chi square Test = 42.25 p = 0.000			
<b>Was Any Corn Acreage Fertilized by Soil Test</b>				
No	101	11.3	79	9.5
Yes	789	88.7	752	90.5
TOTAL	890	100.0	831	100.0
	Chi square Test = 1.3660 p = 0.242			
<b>Was Any Corn Acreage Limed by Soil Test</b>				
No	183	20.6	156	18.8
Yes	706	79.4	675	81.2
TOTAL	889	100.0	831	100.0
	Chi square Test = 0.780 p = 0.376			
<b>Was U.T. Soil Test Lab Used</b>				
Did not use U.T. lab	100	16.8	78	17.2
Part of crop used U.T. lab	146	24.6	126	27.8
All of crop used U.T. lab	348	58.6	250	55.1
TOTAL	594	100.0	454	100.0
	Chi square Test = 1.57 p = 0.454			
<b>Average Pounds Nitrogen Applied Per Acre</b>				
20 to 120 pounds	432	49.3	456	55.7
121 to 200 pounds	445	50.7	363	44.3
TOTAL	877	100.0	819	100.0
	Chi square Test = 6.74 p = 0.009			
<b>Average Pounds Phosphate Applied Per Acre</b>				
20 to 66 pounds	360	43.1	399	51.2
67 to 300 pounds	476	56.9	380	48.8
TOTAL	836	100.0	779	100.0
	Chi square Test = 10.44 p = 0.001			
<b>Average Pounds Potash Applied Per Acre</b>				
20 to 74 pounds	357	41.2	419	51.8
75 to 200 pounds	510	58.8	390	48.2
TOTAL	867	100.0	809	100.0
	Chi square Test = 18.54 p = 0.000			
<b>Average Tons Lime Applied Per Acre</b>				
None limed	542	60.8	548	65.8
1 to 4 tons	346	38.8	279	33.5
No response	3	.3	6	.7
TOTAL	891	100.0	833	100.0
	Chi square Test = 6.27 p = 0.043			

percent of producers who were 47 and older. These differences were significant. Therefore there was a significant relationship between producers' age and scouting for insects. Younger corn producers were more likely than older producers to scout corn for insects.

Was recommended early season variety planted. Almost 65 percent of corn producers under 47 years of age planted a recommended early season variety corn compared to 63 percent of producers who were 47 and older. These differences were not significant when tested by the chi square test ( $p < .05$ ). Thus there was not a significant relationship between producers' age and planting a recommended early season variety corn.

Was recommended mid season variety planted. Eighty percent of corn producers under 47 years of age planted a recommended mid season variety corn compared to 78 percent of producers who were 47 and older. These differences were not significant. Therefore there was not a significant relationship between producers' age and planting a recommended mid season variety corn.

Was recommended full season variety planted. Almost 85 percent of corn producers under 47 years of age planted a recommended full season variety corn in 1985 compared to 86 percent of producers who were 47 and older. These differences were not significant. Therefore there was not a significant relationship between producers' age and use of a recommended full season variety.

Was any corn acreage planted in March. Ten percent of corn producers under 47 years of age planted some corn in March compared to 8 percent of producers who were 47 and older. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between producers' age and planting some acreage in March. Younger producers were more likely than older producers to have planted some corn in March.

Was any corn acreage planted in April. Seventy-four percent of corn producers under 47 years of age planted some corn in April compared to 67 percent of producers who were 47 and older. These differences were significant. Thus, there was a significant relationship between corn producers' age and planting some corn in April. Younger producers were more likely than older producers to have planted some corn acreage in April.

Was any corn acreage planted in May. Fifty-nine percent of corn producers under 47 years of age planted corn in May compared to 58 percent of producers who were 47 and older. These differences were not significant. Therefore, there was not a significant relationship between producers' age and having planted some corn in May.

Was any corn acreage planted in June. Nine percent of corn producers under 47 years of age planted corn in June compared to 8 percent of producers who were 47 and older. These differences

were not significant as tested by the chi square test ( $p < .05$ ). Thus, there was not a significant relationship between producers' age and having planted corn in June.

Distance between corn rows. Sixty percent of corn producers under 47 years of age planted corn in rows which were 37 inches or less apart compared to 43 percent of those 47 years or older. These differences in row spacing were significant. Therefore, there was a significant relationship between producers' age and the distance between corn rows. Younger producers were more likely than older producers to plant corn in narrow rows (i.e., 37 or less inches apart).

Distance between corn plants in row. Almost 80 percent of corn producers under 47 years of age had plant spacings within the row under 9 inches compared to 73 percent of producers who were 47 and older. These differences were significant. Therefore, there was a significant relationship between producers' age and the distance between corn plants in rows. Younger producers (under 47 years) tended to use closer plant spacing in the row than did the older producers.

Desired corn plant population per acre. Forty-five percent of corn producers under 47 years of age desired a plant population per acre of 20,001 plants and over compared to 32 percent of producers who were 47 and older. These differences were significant. Therefore, there was a significant relationship between producers' age and desired

corn plant population per acre. Younger producers were more likely than older producers to desire a high corn plant population.

Was any corn acreage fertilized by soil test. Eighty-nine percent of corn producers under 47 years of age fertilized their corn acreage by soil test compared to 91 percent of producers who were 47 and older. These differences were not significant. Thus there was not a significant relationship between producers' age and whether or not corn acreage was fertilized by soil test.

Was any corn acreage limed by soil test. Seventy-nine percent of corn producers under 47 years of age limed their corn acreage by soil test compared to 81 percent of producers who were 47 and older. These differences were not significant as tested by the chi square test ( $p < .05$ ). Therefore there was no significant relationship between producers' age and whether or not corn acreage was limed by soil test.

Was U.T. soil test lab used. About 73 percent of corn producers under 47 years of age used the U.T. soil test lab compared to almost 83 percent of producers 47 and older. These differences were significant. Therefore, there was a significant relationship between producers' age and whether or not the U.T. soil test lab was used. Older producers were more likely than younger producers to use the U.T. soil test lab.

Average pounds nitrogen applied per acre. Fifty-one percent of corn producers under 47 years of age applied 121 to 200 pounds of



nitrogen per acre compared to 44.3 percent of producers 47 and older. These differences were significant. Therefore, there was a significant relationship between producers' age and pounds of nitrogen used per acre of corn. Younger producers were more likely than older producers to apply a high rate of nitrogen per acre of corn grown.

Average pounds phosphate applied per acre. Almost 57 percent of corn producers under 47 years of age applied from 67 to 300 pounds of phosphate per acre compared to 48.8 percent of producers 47 and older. These differences were significant. Therefore, there was a significant relationship between producers' age and the pounds of phosphate applied per acre of corn grown. Younger producers tended to apply more pounds of phosphate per acre of corn grown than the older producers.

Average pounds potash applied per acre. Almost 59 percent of corn producers under 47 years of age applied 75 to 200 pounds of potash per acre compared to 48.2 percent of producers 47 and older. These differences were significant. Therefore, there was a significant relationship between producers' age and the pounds of potash applied per acre of corn grown. Younger producers tended to apply more pounds of potash per acre of corn grown than did the older producers.

Average tons lime applied per acre. Almost 39 percent of corn producers under 47 years of age applied 1 to 4 tons of lime per acre compared to 34 percent of producers 47 and older. These differences were significant. Therefore, there was a significant relationship

between producers' age and the tons of lime applied per acre. Younger corn producers tended to apply more lime per acre than did older producers.

### Summary

Twelve of the 20 production practices studied were significantly related to producers' age. Younger producers were generally more likely than older producers to be using these practices. These practices included double cropping corn, corn grown no-till, scouting for insects, planting in the months of March and April, distances in inches between corn rows and corn plants within the row, plant populations per acre, applications of the recommended pounds per acre of nitrogen, phosphate, potash, and the application of the recommended tons of lime per acre. Those practices not significantly related to producers' age include planting recommended early, mid, and full season varieties of corn, planting in the months of May and June, fertilizing and liming according to soil test recommendations, and use of the U.T. soil test lab.

## II. RELATIONSHIP BETWEEN THE FARMING STATUS OF CORN PRODUCERS AND THEIR USE OF PRODUCTION PRACTICES

This section presents findings regarding relationships between the farming status of corn producers and their use of 20 selected corn production practices. Findings regarding these relationships are summarized in Table V.

TABLE V. Relationships Between the Farming Status of Corn Producers and Their Use of Production Practices

Production Practices	Farming Status of Corn Producer			
	Full-Time		Part-Time	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Was Corn Double Cropped				
No	943	73.8	391	87.3
Yes	335	26.2	57	12.7
TOTAL	1,278	100.0	448	100.0
Chi square Test = 33.623	p = 0.000			
Was Corn Grown No-Till				
No	831	65.1	340	76.6
Yes	446	34.9	104	23.4
TOTAL	1,277	100.0	444	100.0
Chi square Test = 19.519	p = 0.000			
Was Corn Scouted for Insects				
No	321	26.1	150	33.9
Yes	908	73.9	292	66.1
TOTAL	1,229	100.0	442	100.0
Chi square Test = 9.433	p = 0.002			
Was Recommended Early Season Variety Planted				
No	452	35.6	177	39.4
Yes	818	64.4	272	60.6
TOTAL	1,270	100.0	449	100.0
Chi square Test = 1.935	p = 0.164			
Was Recommended Mid Season Variety Planted				
No	264	20.6	106	23.6
Yes	1,016	79.4	343	76.4
TOTAL	1,280	100.0	449	100.0
Chi square Test = 1.585	p = 0.208			
Was Recommended Full Season Variety Planted				
No	185	14.5	74	16.5
Yes	1,090	85.5	374	83.5
TOTAL	1,275	100.0	448	100.0
Chi square Test = 0.895	p = 0.344			
Was Any Corn Acreage Planted in March				
No	1,154	90.1	420	93.8
Yes	127	9.9	28	6.3
TOTAL	1,281	100.0	448	100.0
Chi square Test = 5.020	p = 0.025			
Was Any Corn Acreage Planted in April				
No	326	25.6	182	40.6
Yes	945	74.4	266	59.4
TOTAL	1,271	100.0	448	100.0
Chi square Test = 34.96	p = 0.000			
Was Any Corn Acreage Planted in May				
No	508	93.8	213	48.1
Yes	768	60.2	230	51.9
TOTAL	1,276	100.0	443	100.0
Chi square Test = 8.897	p = 0.002			
Was Any Corn Acreage Planted in June				
No	1,163	91.4	412	92.4
Yes	110	8.6	34	7.6
TOTAL	1,273	100.0	446	100.0
Chi square Test = 0.322	p = 0.569			
Distance Between Crop Rows				
Under 36 inches	256	20.3	47	10.5
36 to 37 inches	417	33.0	137	30.6
38 to 40 inches	576	45.6	249	55.7
41 - over inches	13	1.0	14	3.1
TOTAL	1,262	100.0	447	100.0
Chi square Test = 34.51	p = 0.000			



TABLE V (Continued)

Production Practices	Farming Status of Corn Producer			
	Full-Time		Part-Time	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
<b>Distance Between Corn Plants in Row</b>				
Under 6 inches	261	21.1	74	16.7
7 to 9 inches	721	58.2	231	52.3
10 to 12 inches	251	20.3	134	30.3
13 - over inches	6	.5	3	.7
TOTAL	1,239	100.0	442	100.0
	Chi square Test = 19.699 p = 0.000			
<b>Desired Crop Plant Population Per Acre</b>				
Under 17,000 plants	139	10.9	108	24.1
17,001 to 19,000 plants	277	21.6	111	24.7
19,001 to 20,000 plants	319	24.9	102	22.7
20,001 - over plants	545	42.6	128	28.5
TOTAL	1,280	100.0	449	100.0
	Chi square Test = 59.48 p = 0.000			
<b>Was Any Corn Acreage Fertilized by Soil Test</b>				
No	134	10.5	49	10.9
Yes	1,145	89.5	399	89.1
TOTAL	1,279	100.0	448	100.0
	Chi square Test = 0.033 p = 0.854			
<b>Was Any Corn Acreage Limed by Soil Test</b>				
No	243	19.0	100	22.4
Yes	1,037	81.0	346	77.6
TOTAL	1,280	100.0	446	100.0
	Chi square Test = 2.242 p = 0.134			
<b>Was U.T. Soil Test Lab Used</b>				
Dis not use U.T. lab	143	17.1	36	16.4
Part of crop used U.T. lab	224	26.8	53	24.2
All of crop used U.T. lab	468	56.0	130	59.4
TOTAL	835	100.0	219	100.0
	Chi square Test = 0.838 p = 0.657			
<b>Average Pounds Nitrogen Applied Per Acre</b>				
20 to 120 pounds	639	50.7	255	57.8
121 to 200 pounds	622	49.3	186	42.2
TOTAL	1,261	100.0	441	100.0
	Chi square Test = 6.413 p = 0.011			
<b>Average Pounds Phosphate Applied Per Acre</b>				
20 to 66 pounds	553	46.5	211	49.0
67 to 300 pounds	637	53.5	220	51.0
TOTAL	1,190	100.0	431	100.0
	Chi square Test = 0.687 p = 0.406			
<b>Average Pounds Potash Applied Per Acre</b>				
20 to 74 pounds	583	43.3	243	55.4
75 to 200 pounds	705	56.7	196	44.6
TOTAL	1,243	100.0	439	100.0
	Chi square Test = 18.522 p = 0.000			
<b>Average Tons Lime Applied Per Acre</b>				
None limed	779	60.8	315	70.2
1 to 4 tons	496	38.7	131	29.2
No response	6	.5	3	.7
TOTAL	1,281	100.0	449	100.0
	Chi square Test = 13.200 p = 0.001			

### Production Practices

Was corn double cropped. Twenty-six percent of corn producers who farmed full-time double cropped corn in 1985 compared to 13 percent of producers who farmed part-time. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between producers' farming status and whether or not producers double cropped corn. Full-time farmers were more likely than part-time farmers to have double cropped corn in 1985.

Was corn grown no-till. Thirty-five percent of corn producers who farmed full-time grew no-till corn in 1985 compared to 23.4 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationships between producers' farming status and the use of no-till. Full-time farmers were more likely than part-time farmers to be growing corn no-till.

Was corn scouted for insects. Seventy-four percent of corn producers who farmed full-time scouted their corn for insects in 1985 compared to 66 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and whether or not corn was scouted for insects. Full-time farmers were more likely than part-time farmers to have scouted corn for insects in 1985.

Was recommended early season variety planted. Sixty-four percent of corn producers who farmed full-time planted a recommended early season variety of corn compared to 61 percent of producers who farmed part-time. These differences were not significant. Thus there was not a significant relationship between producers' farming status and whether or not producers planted a recommended early season variety corn.

Was recommended mid season variety planted. Seventy-nine percent of corn producers who farmed full-time planted a recommended mid season variety of corn compared to 76 percent of producers who farmed part-time. These differences were not significant. Therefore, there was no significant relationship between producers' farming status and whether or not producers planted a recommended mid season variety of corn.

Was recommended full season variety planted. Eighty-six percent of corn producers who farmed full-time planted a recommended full season variety of corn compared to 84 percent of producers who farmed part-time. These differences were not significant. Therefore, there was not a significant relationship between producers' farming status and whether or not producers planted a recommended full season variety corn.

Was any corn acreage planted in March. Ten percent of corn producers who farmed full-time planted some corn in March compared to 6 percent of producers who farmed part-time. These differences were

significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between producers' farming status and whether or not producers planted corn in March. Full-time farmers were more likely than part-time farmers to have planted some corn in March, 1985.

Was any corn acreage planted in April. Seventy-four percent of corn producers who farmed full-time planted some corn in April compared to 59.4 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and whether or not some corn was planted in April. Full-time farmers were more likely than part-time farmers to have planted some corn in April.

Was any corn acreage planted in May. Sixty percent of corn producers who farmed full-time planted some corn in May compared to 52 percent of producers who farmed part-time. These differences were significant. Thus, there was a significant relationship between producers' farming status and whether or not some corn was planted in May. Full-time farmers were more likely than part-time farmers to have planted some corn in May, 1985.

Was any corn acreage planted in June. Nine percent of corn producers who farmed full-time planted some corn in June compared to 8 percent of producers who farmed part-time. These differences were not significant. Therefore, there was not a significant relationship between producers' farming status and whether or not some corn was planted in June.

Distance between corn rows. Forty-six percent of corn producers who farmed full-time used row spacings of 38 to 40 inches compared to 56 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and the distance between corn rows. Full-time farmers tended to plant corn in rows that were closer together than did part-time farmers.

Distance between corn plants in row. Fifty-eight percent of corn producers who farmed full-time used plant spacings within the row of 7 to 9 inches compared to 52 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and the distance between corn plants in the row. Full-time farmers tended to plant corn closer within the row than did part-time farmers.

Desired corn plant population per acre. Forty-three percent of corn producers who farmed full-time desired a plant population of 20,000 and over plants per acre compared to 29 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and desired corn plant population per acre. Full-time farmers tended to desire larger corn plant population than did the part-time corn producers.



Was any corn acreage fertilized by soil test. Ninety percent of corn producers who farmed full-time in 1985 fertilized some corn acreage by soil test compared to 89 percent of producers who farmed part-time. These differences were not significant as tested by the chi square test. Therefore, there was not a significant relationship between producers' farming status and whether or not they fertilized some of their corn by soil test.

Was any corn acreage limed by soil test. Eighty-one percent of corn producers who farmed full-time limed some of their corn acreage according to soil test compared to 78 percent of producers who farmed part-time. These differences were not significant. Thus, there was not a significant relationship between producers' farming status and liming by soil test.

Was U.T. soil test lab used. Almost 83 percent of corn producers who tested soil and who farmed full-time used the U.T. soil test lab compared to 83.6 percent of producers who farmed part-time. These differences were not significant. Therefore, there was not a significant relationship between producers' farming status and using U.T. soil test lab.

Average pounds nitrogen applied per acre. Fifty-one percent of corn producers who farmed full-time applied 20 to 120 pounds of nitrogen per acre compared to 58 percent of producers who farmed part-time. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant

relationship between producers' farming status and the pounds of nitrogen applied per acre of corn. Full-time farmers tended to apply more pounds of nitrogen per acre of corn grown than did the part-time farmers.

Average pounds phosphate applied per acre. Fifty-four percent of corn producers who farmed full-time applied 67 to 300 pounds of phosphate per acre compared to 51 percent of producers who farmed part-time. These differences were not significant. Therefore, there was not a significant relationship between producers' farming status and the pounds of phosphate applied per acre of corn grown.

Average pounds potash applied per acre. Fifty-seven percent of corn producers who farmed full-time applied 75 to 200 pounds of potash per acre compared to 45 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and pounds of potash applied per acre. Full-time farmers tended to apply more pounds of potash per acre of corn grown than did the part-time farmers.

Average tons lime applied per acre. Almost 61 percent of corn producers who farmed full-time applied no lime per acre compared to 70 percent of producers who farmed part-time. These differences were significant. Therefore, there was a significant relationship between producers' farming status and the number of tons of lime applied per acre. Full-time farmers tended to apply more tons of lime per acre than did part-time farmers.

### Summary

Twelve of 20 production practices studied were significantly related to producers' farming status. Full-time farmers were more likely than part-time farmers to be using the recommended practices. These practices included double cropping corn, corn grown no-till, scouting for insects, planting corn in the months of March, April and May, distance in inches between corn rows and between plants within the row, desired plant population per acre, application of recommended pounds of nitrogen, potash, and tons of lime per acre. Those production practices which were not significantly related to producers' farming status included planting early, mid and full season varieties of corn, planting in the month of June, fertilizing and liming according to soil test recommendations, use of the U.T. soil test lab, and application of recommended pounds of phosphate per acre.

### III. RELATIONSHIPS BETWEEN CORN PRODUCERS' MAJOR SOURCE OF FARM INCOME AND THEIR USE OF PRODUCTION PRACTICES

This section presents findings regarding relationships between producers' major source of farm income and their use of 20 selected corn production practices. Findings regarding these relationships are summarized in Table VI.

#### Production Practices

Was corn double cropped. About 13 percent of corn producers who reported crop sales as their major source of farm income double



TABLE VI. Relationships Between Corn Producers' Major Source of Farm Income and Their Use of Production Practices

Production Practices	Corn Producers' Major Source of Farm Income			
	Crop Sales		Dairy-Livestock	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Was Corn Double Cropped				
No	633	86.6	699	70.7
Yes	98	13.4	289	29.3
TOTAL	731	100.0	988	100.0
Chi square Test = 59.56	p = 0.000			
Was Corn Grown No-Till				
No	502	68.9	664	67.4
Yes	227	31.1	321	32.6
TOTAL	729	100.0	985	100.0
Chi square Test = 0.341	p = 0.559			
Was Corn Scouted for Insects				
No	215	30.7	253	26.2
Yes	486	69.3	711	73.8
TOTAL	701	100.0	964	100.0
Chi square Test = 3.717	p = 0.053			
Was Recommended Early Season Variety Planted				
No	255	35.1	365	37.0
Yes	471	64.9	621	63.0
TOTAL	726	100.0	986	100.0
Chi square Test = 0.570	p = 0.450			
Was Recommended Mid Season Variety Planted				
No	125	17.1	240	24.2
Yes	606	82.9	751	75.8
TOTAL	731	100.0	991	100.0
Chi square Test = 12.33	p = 0.000			
Was Recommended Full Season Variety Planted				
No	114	15.7	143	14.5
Yes	613	84.3	846	85.5
TOTAL	727	100.0	989	100.0
Chi square Test = 0.399	p = 0.527			
Was Any Corn Acreage Planted in March				
No	656	89.7	913	92.1
Yes	75	10.3	78	7.9
TOTAL	731	100.0	991	100.0
Chi square Test = 2.678	p = 0.101			
Was Any Corn Acreage Planted in April				
No	151	20.8	355	36.0
Yes	576	79.2	630	64.0
TOTAL	727	100.0	985	100.0
Chi square Test = 46.115	p = 0.000			
Was Any Corn Acreage Planted in May				
No	369	50.8	350	35.5
Yes	357	49.2	636	64.5
TOTAL	726	100.0	986	100.0
Chi square Test = 39.709	p = 0.000			
Was Any Corn Acreage Planted in June				
No	682	93.7	888	90.2
Yes	46	6.3	96	9.8
TOTAL	728	100.0	984	100.0
Chi square Test = 6.055	p = 0.0139			
Distance Between Corn Rows				
Under 36 inches	142	19.7	160	16.3
36 to 37 inches	214	29.6	339	34.6
38 to 40 inches	358	49.6	462	47.1
41 - over inches	8	1.1	19	1.9
TOTAL	722	100.0	980	100.0
Chi square Test = 8.075	p = 0.044			

TABLE VI (Continued)

Production Practices	Corn Producers' Major Source of Farm Income			
	Crop Sales		Dairy-Livestock	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
<b>Distance Between Corn Plants in Row</b>				
Under 6 inches	153	21.3	179	18.8
7 to 9 inches	411	57.1	539	56.5
10 to 12 inches	155	21.5	228	23.9
13 - over inches	1	.1	8	.8
TOTAL	720	100.0	954	100.0
	Chi square Test = 6.049 p = 0.109			
<b>Desired Corn Plant Population Per Acre</b>				
Under 17,000 plants	84	11.5	160	16.1
17,001 to 19,000 plants	136	18.6	252	25.4
19,001 to 20,000 plants	183	25.1	238	24.0
20,001 - over plants	327	44.8	342	34.5
TOTAL	730	100.0	992	100.0
	Chi square Test = 26.627 p = 0.000			
<b>Was Any Corn Acreage Fertilized by Soil Test</b>				
No	79	10.8	101	10.2
Yes	650	89.2	890	89.8
TOTAL	729	100.0	991	100.0
	Chi square Test = 0.124 p = 0.724			
<b>Was Any Corn Acreage Limed by Soil Test</b>				
No	135	18.5	205	20.7
Yes	595	81.5	784	79.3
TOTAL	730	100.0	989	100.0
	Chi square Test = 1.184 p = 0.276			
<b>Was U.T. Soil Test Lab Used</b>				
Did not use U.T. lab	87	19.8	90	14.7
Part of crop used U.T. lab	114	26.0	162	26.5
All of crop used U.T. lab	238	54.2	360	58.8
TOTAL	439	100.0	612	100.0
	Chi square Test = 4.945 p = 0.084			
<b>Average Pounds Nitrogen Applied Per Acre</b>				
20 to 120 pounds	325	45.4	567	57.9
121 to 200 pounds	391	54.6	412	42.1
TOTAL	716	100.0	979	100.0
	Chi square Test = 25.522 p = 0.000			
<b>Average Pounds Phosphate Applied Per Acre</b>				
20 to 66 pounds	339	49.1	420	45.5
67 to 300 pounds	351	50.9	504	54.5
TOTAL	690	100.0	924	100.0
	Chi square Test = 1.997 p = 0.157			
<b>Average Pounds Potash Applied Per Acre</b>				
20 to 74 pounds	342	48.4	434	44.8
75 to 200 pounds	365	51.6	534	55.2
TOTAL	707	100.0	968	100.0
	Chi square Test = 1.917 p = 0.166			
<b>Average Tons Lime Applied Per Acre</b>				
None limed	472	64.6	619	62.4
1 to 4 tons	257	35.2	366	36.9
No response	2	.3	7	.7
TOTAL	731	100.0	992	100.0
	Chi square Test = 2.168 p = 0.338			

cropped corn in 1985 compared to 29.3 percent of producers who reported dairy-livestock as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between corn producers' major source of farm income and whether or not some corn land was double cropped in 1985. The dairy-livestock producers were more likely than row crop producers to double crop corn.

Was corn grown no-till. About 31 percent of corn producers who reported crop sales as their major source of farm income grew no-till corn in 1985 compared to 32.6 percent of producers who reported dairy-livestock as their major source of farm income. This difference was not significant at the .05 level of probability. Therefore, there was not a significant relationship between corn producers' major source of farm income and whether or not corn was grown no-till.

Was corn scouted for insects. Almost 74 percent of corn producers who reported dairy-livestock as their major source of farm income scouted for insects compared to 69.3 percent of producers who reported crop sales as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between producers' major source of farm income and scouting for insects. Dairy-livestock producers were more likely than the row crop producers to have scouted corn for insects.

Was recommended early season variety planted. Sixty-five percent of corn producers who reported crop sales as their major source of

farm income planted an early season variety of corn compared to 63.0 percent of producers who reported dairy-livestock as their major source of farm income. These differences were not significant. Thus, there was not a significant relationship between producers' major source of farm income and planting a recommended early season variety.

Was recommended mid-season variety planted. Almost 83 percent of corn producers who reported crop sales as their major source of farm income planted a recommended mid-season variety corn compared to 75.8 percent of producers who reported dairy-livestock as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between producers' major source of farm income and planting a recommended mid-season variety of corn. Producers with crop sales as their major source of farm income were more likely than other producers to have planted a recommended mid-season corn variety.

Was recommended full season variety planted. Almost 86 percent of corn producers who reported dairy-livestock as their major source of farm income planted a recommended full season variety corn compared to 84.3 percent who reported crop sales as their major source of farm income. These differences were not significant. Thus, there was not a significant relationship between producers' major source of farm income and planting a recommended full season variety of corn.

Was any corn acreage planted in March. About 10 percent (10.3) of corn producers who reported crop sales as their major source of farm income planted some of their corn acreage in March compared to 7.9 percent who reported dairy-livestock as their major source of farm income. These differences were not significant as tested by the chi square test ( $p < .05$ ). Therefore, there was not a significant relationship between producers' major source of farm income and planting corn in March.

Was any corn acreage planted in April. About 79 percent (79.2) of corn producers who reported crop sales as their major source of farm income planted some of their corn acreage in April compared to 64.0 percent who reported dairy-livestock as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between producers' major source of farm income and planting corn in April. Producers who reported crop sales as their major source of farm income in 1985 were more likely than the dairy-livestock producers to plant corn in April.

Was any corn acreage planted in May. Almost 65 percent of corn producers who reported dairy-livestock as their major source of farm income planted some of their corn acreage in May compared to 49.2 percent of producers who reported crop sales as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between producers' major source of farm



income and planting corn in May. Producers who reported dairy-livestock as their major source of farm income were more likely than other producers to have planted some corn in May.

Was any corn acreage planted in June. Almost 10 percent of corn producers who reported dairy-livestock as their major source of farm income planted some corn in June compared to 6.3 percent of producers who reported crop sales as their major source of farm income. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between producers' major source of farm income and planting corn in June. Producers reporting dairy-livestock as their major source of farm income were more likely than row crop producers to have planted some corn in June.

Distance between crop rows. Almost 50 percent of corn producers who reported crop sales as their major source of farm income used row spacings of 38 to 40 inches compared to 47.1 percent of producers who reported dairy-livestock as their major source of farm income. When tested these differences were significant. Thus, there was a significant relationship between producers' major source of farm income and the distance between corn rows. The direction of relationship could not be determined from findings presented in Table VI.

Distance between corn plants in the row. About 78 percent of corn producers who reported crop sales as their major source of farm income used plant spacings within the row of under 9 inches compared

to 75 percent of producers who reported dairy-livestock as their major source of farm income. These differences were not significant as tested by the chi square test ( $p < .05$ ). Therefore, there was not a significant relationship between producers' major source of farm income and the plant spacings within the row.

Desired corn plant population per acre. Almost 45 percent of corn producers who reported crop sales as their major source of farm income desired a plant population of 20,001 and over per acre compared to 34.5 percent of producers who reported dairy-livestock as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between producers' major source of farm income and the desire to have a corn plant population of 20,001 and over. Corn producers with crop sales as their major source of income tended to desire higher corn plant populations per acre than dairy-livestock producers.

Was any corn acreage fertilized by soil test. Almost 90 (89.8) percent of corn producers who reported dairy-livestock as their major source of farm income fertilized some corn land by soil test compared to 89.2 percent of producers who reported crop sales as their major source of income. These differences were not significant. Thus, there was not a significant relationship between the producers' major source of farm income and fertilizing by soil test.

Was any corn acreage limed by soil test. Almost 82 percent of corn producers who reported crop sales as their major source of farm

income limed their acreage according to soil test compared to 79.3 percent of producers who reported dairy-livestock as their major source of income. These differences were not significant. Therefore, there was not a significant relationship between the producers' major source of farm income and liming according to soil test.

Was U.T. soil test lab used. Forty-one percent of corn producers who took a soil test and who reported dairy-livestock as their major source of farm income used the U.T. soil test lab compared to 45.8 percent of producers who reported crop sales as their major source of farm income. These differences were not significant. Therefore, there was not a significant relationship between the corn producers' major source of farm income and using the U.T. soil test lab.

Average pounds nitrogen applied per acre. Almost 55 percent of corn producers who reported crop sales as their major source of farm income applied 121 to 200 pounds of nitrogen per acre compared to 42.1 percent who reported dairy-livestock as their major source of farm income. These differences were significant. Therefore, there was a significant relationship between the producers' major source of farm income and the pounds of nitrogen applied per acre. Corn producers who reported crop sales as their major source of farm income tended to apply more nitrogen than did the dairy-livestock producers.

Average pounds of phosphate applied per acre. Almost 55 percent of corn producers who reported dairy-livestock as their major source of farm income applied 67 to 300 pounds of phosphate per acre compared



to 50.9 percent of producers who reported crop sales as their major source of farm income. These differences were not significant. Therefore, there was not a significant relationship between the producers' major source of farm income and the pounds of phosphate applied per acre.

Average pounds potash applied per acre. About 55 percent of corn producers who reported dairy-livestock as their major source of farm income applied 75 to 200 pounds of potash per acre compared to 51.6 percent of producers who reported crop sales as their major source of farm income. These differences were not significant. Therefore, there was not a significant relationship between the producers' major source of farm income and the pounds of potash applied per acre.

Average tons lime applied per acre. Almost 65 percent of corn producers who reported crop sales as their major source of farm income did not apply any lime in 1985 compared to 62.4 percent of producers who reported dairy-livestock as their major source of farm income. These differences were not significant. Therefore, there was not a significant relationship between the producers' major source of farm income and the tons of lime applied per acre of corn land.

#### Summary

Eight of the 20 selected corn production practices studied were significantly related to the producers' major source of farm income. These practices included double cropping, scouting for insects, planting of recommended mid season variety, planting in the months

of April, May and June, distance in inches between corn rows, plant populations per acre, and application of recommended pounds of nitrogen applied per acre. Those production practices not significantly related to producers' major source of farm income include growing no-till corn, planting early and full season varieties of corn, planting in the month of March, distance in inches of corn plants within the row, fertilizing and liming according to soil test recommendations, use of the U.T. soil test lab, application of the recommended pounds per acre of phosphate, and potash, and the application of the recommended tons of lime per acre.

Although there was a significant relationship between the use of eight of the practices and producers' major source of farm income the direction of relationship varied depending upon specific practices. Row crop producers were more likely than dairy-livestock producers to double crop corn, use a recommended mid-season variety, plant some corn in April, desire a higher corn plant population per acre, and apply more pounds of nitrogen per acre of corn grown. On the other hand, the corn producers whose major source of farm income was dairy-livestock were more likely than the row crop producers to have scouted for insects, to have planted some corn in May, 1985 and to have planted some corn in June. The direction of relationship could not be determined for the variable regarding distance between corn rows.

IV. RELATIONSHIPS BETWEEN THE TOTAL NUMBER OF CONTACTS CORN  
PRODUCERS HAD WITH EXTENSION AGENTS AND THEIR USE OF  
PRODUCTION PRACTICES

This section presents findings regarding relationships between the total number of contacts corn producers had with Extension agents during the past year and their use of 20 selected corn production practices. Findings regarding these relationships are summarized in Table VII.

Production Practices

Was corn double cropped. Just over 25 percent (25.3) of those producers in the high contact group (i.e., 6-over contacts) double cropped corn in 1985 compared to 12.5 percent of producers with no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and whether or not corn was double cropped in 1985. Producers in the high contact group were more likely than others to use double cropping.

Was corn grown no-till. Thirty-four percent of those producers in the high contact group (i.e., 6-over contacts) grew no-till corn in 1985 compared to 27.7 percent of producers who had no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension

TABLE VII. Relationships Between the Total Number of Contacts Corn Producers Had With Extension Agents and Their Use of Production Practices

Production Practices	Total Number of Extension Contacts				
	None Number of Producers	Percent of Producers	1 to 5 Number of Producers	Percent of Producers	6-Over Number of Producers
Was Corn Double Cropped					
No	105	87.5	360	80.4	824
Yes	15	12.5	88	19.6	279
TOTAL	120	100.0	448	100.0	1,103
Chi square Test = 13.640					
p = 0.001					
Was Corn Grown No-Till					
No	86	72.3	332	73.9	724
Yes	33	27.7	117	26.1	375
TOTAL	119	100.0	449	100.0	1,099
Chi square Test = 10.448					
p = 0.005					
Was Corn Scouted for Insects					
No	62	60.2	154	35.2	234
Yes	41	39.8	283	64.8	842
TOTAL	103	100.0	437	100.0	1,076
Chi square Test = 85.453					
p = 0.000					
Was Recommended Early Season Variety Planted					
No	58	48.3	174	38.7	390
Yes	62	51.7	276	61.3	705
TOTAL	120	100.0	450	100.0	1,095
Chi square Test = 7.925					
p = 0.019					
Was Recommended Mid Season Variety Planted					
No	34	28.3	112	24.9	227
Yes	86	71.7	338	75.1	878
TOTAL	120	100.0	450	100.0	1,105
Chi square Test = 6.235					
p = 0.044					
Was Recommended Full Season Variety Planted					
No	28	23.5	85	18.9	142
Yes	91	76.5	365	81.1	957
TOTAL	119	100.0	450	100.0	1,099
Chi square Test = 15.501					
p = 0.000					
Was Any Corn Acreage Planted in March					
No	114	95.0	412	91.6	1,002
Yes	6	5.0	38	8.4	102
TOTAL	120	100.0	450	100.0	1,104
Chi square Test = 2.502					
p = 0.2861					

TABLE VII (Continued)

Production Practices	Total Number of Extension Contacts					
	None		1 to 5		6-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Was Any Corn Acreage Planted in April						
No	26	21.7	156	34.8	305	27.8
Yes	94	78.3	292	65.2	793	72.2
TOTAL	120	100.0	448	100.0	1,098	100.0
Chi square Test = 11.208						
p = 0.003						
Was Any Corn Acreage Planted in May						
No	69	57.5	194	43.6	450	40.9
Yes	51	42.5	251	56.4	650	59.1
TOTAL	120	100.0	445	100.0	1,100	100.0
Chi square Test = 12.311						
p = 0.002						
Was Any Corn Acreage Planted in June						
No	113	95.8	400	89.5	1,009	91.8
Yes	5	4.2	47	10.5	90	8.2
TOTAL	118	100.0	447	100.0	1,099	100.0
Chi square Test = 5.204						
p = 0.074						
Distance Between Corn Rows						
Under 36 inches	32	26.7	74	16.7	188	17.2
36 to 37 inches	45	37.5	124	27.9	364	33.4
38 to 40 inches	41	34.2	235	52.9	524	48.1
41 - over inches	2	1.7	11	2.5	14	1.3
TOTAL	120	100.0	444	100.0	1,090	100.0
Chi square Test = 19.541						
p = 0.003						
Distance Between Corn Plants in Row						
Under 6 inches	11	9.2	92	21.2	220	20.5
7 to 9 inches	62	52.1	203	46.8	655	61.1
10 to 12 inches	45	37.8	134	30.9	195	18.2
13 - over inches	1	.8	5	1.2	2	.2
TOTAL	119	100.0	434	100.0	1,072	100.0
Chi square Test = 59.021						
p = 0.000						

TABLE VII (Continued)

Production Practices	Total Number of Extension Contacts					
	None		1 to 5		6-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Desired Corn Plant Population Per Acre						
Under 17,000 plants	19	15.8	106	23.6	111	10.1
17,001 to 19,000 plants	32	26.7	117	26.0	234	21.2
19,001 to 20,000 plants	29	24.2	88	19.6	295	26.7
20,001 - over plants	40	33.3	139	30.9	464	42.0
TOTAL	120	100.0	450	100.0	1,104	100.0
Chi square Test = 63.523						
p = 0.000						
Was Any Corn Acreage Fertilized by Soil Test						
No	19	15.8	56	12.4	109	9.9
Yes	101	84.2	394	87.6	993	90.1
TOTAL	120	100.0	450	100.0	1,102	100.0
Chi square Test = 5.204						
p = 0.074						
Was Any Corn Acreage Limed by Soil Test						
No	30	25.0	98	21.8	205	18.6
Yes	90	75.0	351	78.2	897	81.4
TOTAL	120	100.0	449	100.0	1,102	100.0
Chi square Test = 4.161						
p = 0.124						
Was U.T. Soil Test Lab Used						
Did not use U.T. lab	21	36.2	50	26.5	104	13.5
Part of crop used U.T. lab	19	32.8	40	21.2	214	27.9
All of crop used U.T. lab	18	31.0	99	52.4	450	58.6
TOTAL	58	100.0	189	100.0	768	100.0
Chi square Test = 38.656						
p = 0.000						
Average Pounds Nitrogen Applied Per Acre						
20 to 120 pounds	74	64.3	237	53.6	563	51.7
121 to 200 pounds	41	35.7	205	46.4	526	48.3
TOTAL	115	100.0	442	100.0	1,089	100.0
Chi square Test = 6.748						
p = 0.034						

TABLE VII (Continued)

Production Practices	Total Number of Extension Contacts					
	None		1 to 5		6-Over	
	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers	Number of Producers	Percent of Producers
Average Pounds Phosphate Applied Per Acre						
20 to 66 pounds	64	55.2	232	55.9	449	43.3
67 to 300 pounds	52	44.8	183	44.1	589	56.7
TOTAL	116	100.0	415	100.0	1,038	100.0
	Chi square Test = 21.987 p = 0.000					
Average Pounds Potash Applied Per Acre						
20 to 74 pounds	72	61.0	253	58.3	435	40.4
75 to 200 pounds	46	39.0	181	41.7	641	59.6
TOTAL	118	100.0	434	100.0	1,076	100.0
	Chi square Test = 50.168 p = 0.000					
Average Tons Lime Applied Per Acre						
None limed	97	80.8	336	74.7	629	56.9
1 to 4 tons	21	17.5	114	25.3	567	42.3
No response	2	1.7	-	-	9	.8
TOTAL	120	100.0	450	100.0	1,105	100.0
	Chi square Test = 65.039 p = 0.000					



agents over a 12 month period and growing corn no-till. Producers in the high contact group were more likely than others to plant no-till corn.

Was corn scouted for insects. Over 78 percent (78.3) of those producers in the high contact group (i.e., 6-over contacts) scouted corn for insects in 1985 compared to 39.8 percent of producers who had no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and scouting corn for insects. Producers in the high contact group were more likely than others to scout corn for insects.

Was recommended early season variety planted. Over sixty-four percent (64.4) of those producers in the high contact group (i.e., 6-over contacts) planted a recommended early season variety corn in 1985 compared to 51.7 percent of producers with no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and planting a recommended early season variety corn. Producers who were in the high Extension contact group were more likely than others to plant recommended early season varieties.

Was recommended mid season variety planted. Eighty percent of those producers in the high contact group (i.e., 6-over contacts) planted a recommended mid season variety corn in 1985 compared to

71.7 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and planting a recommended mid season variety corn. Producers who had more contacts with Extension agents were more likely than others to use a recommended mid season variety of corn.

Was recommended full season variety planted. Eighty-seven percent of those producers in the high contact group (i.e., 6-over contacts) planted a recommended full season variety corn in 1985 compared to 76.5 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and planting a recommended full season variety corn. Producers in the high Extension contact group were more likely than others to have planted a recommended full season variety of corn.

Was any corn planted in March. Over 9 percent (9.2) of those producers in the high contact group (i.e., 6-over contacts) planted some corn in the month of March in 1985 compared to 5.0 percent of producers with no Extension contacts. These differences were not significant. Therefore, there was not a significant relationship

between the total number of contacts producers had with Extension agents over a 12 month period and planting some corn in March.

Was any corn acreage planted in April. Over 72 percent (72.2) of those producers in the high contact group (i.e., 6-over contacts) planted corn in the month of April in 1985 compared to 78.3 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and planting some corn in April. However, the direction of relationship was not conclusive.

Was any corn acreage planted in May. Fifty-nine percent of those producers in the high contact group (i.e., 6-over contacts) planted corn in the month of May compared to 42.5 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and their use of the production practice of planting corn in May. Corn producers who were in the high Extension contact group were more likely than others to plant some corn in May.

Was any corn acreage planted in June. Over 8 percent (8.2) of those producers in the high contact group (i.e., 6-over contacts)

planted some corn in the month of June compared to 4.2 percent of producers who had no Extension contacts. These differences were tested not significant by the chi square test ( $p < .05$ ). Therefore, there was not a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and planting some corn in June.

Distance between corn rows. Forty-eight percent of those producers in the high contact group (i.e., 6-over contacts) planted corn rows 38 to 40 inches apart compared to 34.2 percent of producers who had no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and planting rows 38 to 40 inches apart. However, the direction of relationship was not conclusive.

Distance between corn plants in row. Sixty-one percent of those producers in the high contact group (i.e., 6-over contacts) planted corn plants in the row 7 to 9 inches apart compared to 52.1 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and plant spacings in the row. However, the direction of relationship was inconclusive.

Desired corn plant population per acre. Forty-two percent of those producers in the high contact group (i.e., 6-over contacts) desired a corn plant populations of 20,001 and over per acre compared to 33.3 percent of producers who had no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and the desired corn plant population per acre. Producers who were in the high Extension contact group were more likely than others to desire a high corn plant population per acre.

Was any corn acreage fertilized by soil test. Ninety percent of those producers in the high contact group (i.e., 6-over contacts) fertilized corn acreage by soil test in 1985 compared to 84.2 percent of producers with no Extension contacts. These differences were not significant as tested by the chi square test ( $p < .05$ ). Therefore, there was not a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and applying fertilizer according to soil test recommendations.

Was any corn acreage limed by soil test. Over 81 percent (81.4) of those producers in the high contact group (i.e., 6-over contacts) limed corn acreage according to soil test recommendations in 1985 compared to 75.0 percent of producers who had no Extension contacts. These differences were not significant. Therefore, there was not a

significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and liming according to soil test recommendations.

Was U.T. soil test lab used. Forty-one percent of those producers in the high contact group (i.e., 6-over contacts) who used a soil test used the U.T. soil test lab for their 1985 corn crop compared to 31.0 percent of producers who had no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents in a 12 month period and using the U.T. soil test lab for their corn crop. Producers in the high contact group were more likely than others to use the U.T. soil test lab.

Average pounds nitrogen applied per acre. Almost 52 percent (51.7) of those producers in the high contact group (i.e., 6-over contacts) applied 20 to 120 pounds of nitrogen in 1985 compared to 64.3 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and the amount of nitrogen applied per acre of corn grown. Producers in the high Extension contact group were more likely than others to apply more pounds of nitrogen per acre of corn grown.

Average pounds phosphate applied per acre. Almost 57 percent (56.7) of those producers in the high contact group (i.e., 6-over contacts)



applied 67 to 300 pounds of phosphate per acre in 1985 compared to 44.8 percent of producers with no Extension contacts. These differences were significant as tested by the chi square test ( $p < .05$ ). Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a 12 month period and applying recommended pounds of phosphate per acre. Producers in the high contact group were more likely than others to apply larger amounts of phosphate per acre corn grown.

Average pounds potash applied per acre. Almost 60 percent of those producers in the high contact group (i.e., 6-over contacts) applied 75 to 200 pounds of potash per acre in 1985 compared to 39.0 percent of producers who had no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the number of contacts producers had with Extension agents and the pounds of potash applied per acre of corn grown. Producers in the high Extension contact group were more likely than others to apply large amounts of potash per acre of corn grown.

Average tons lime applied per acre. About 42 percent (42.3) of those producers in the high contact group (i.e., 6-over contacts) applied 1 to 4 tons of lime per acre in 1985 compared to 17.5 percent of producers who had no Extension contacts. These differences were significant. Therefore, there was a significant relationship between the total number of contacts producers had with Extension agents over a



12 month period and the tons of limestone applied per acre of corn grown. Producers in the high contact group were more likely than others to apply larger amounts of limestone per acre of corn grown.

#### Summary

Sixteen of the 20 selected production practices studied were significantly related to the number of contacts producers had with Extension agents over a 12 month period in 1985. These production practices include double cropping, no-till, scouting for insects, planting early season varieties, planting mid season varieties, planting full season varieties, planting in the month of April, planting in the month of May, distance in inches between corn rows, distance in inches between corn plants in row, desired corn plant populations per acre, use of U.T. soil test lab, average pounds of nitrogen applied per acre, average pounds of phosphate applied per acre, average pounds of potash applied per acre and average tons of lime applied per acre. Those production practices not significantly related to the number of contacts producers had with Extension agents included planting in the months of March and June and applying fertilizer and lime according to soil test recommendations. The direction of relationship between Extension contacts and the planting of corn in April and the distance between corn rows and between plants in the row was inconclusive. For the other significant practices it was found that producers who were in the high contact group were more likely than others to use double cropping, to use no-till, to scout for insects, to use recommended varieties, to plant some corn in

May, to desire a larger plant population per acre of corn, to use the U.T. soil testing lab and to apply larger amounts of nitrogen, phosphate and potash and limestone per acre of corn grown.

## CHAPTER V

### SUMMARY OF MAJOR FINDINGS

This study was directed toward providing information useful to Tennessee county Extension agents and state Extension specialists in the identification of priority audiences of corn producers and priority corn production practices to emphasis in future Extension programs. Also, it was believed that the study would provide some evidence of the effectiveness of the Extension corn production programs in Tennessee.

#### I. PURPOSE AND SPECIFIC OBJECTIVES

##### Purpose

The purpose of this study was to characterize Tennessee corn producers as to their farming operations, use of recommended production practices, their contacts with Extension agents, and to determine the relationships among these variables.

##### Specific Objectives

The specific objectives of this study were.

1. To characterize corn producers in Tennessee and their farming operations.
2. To determine the relationships between corn producer characteristics and the number of contacts they had with Extension agents.

3. To determine relationships between characteristics of corn producers' farming operations and the number of contacts they had with Extension agents.

4. To determine relationships between age of corn producers and their use of production practices.

5. To determine relationships between the farming status of corn producers and their use of production practices.

6. To determine relationships between corn producers' major sources of farm income and their use of production practices.

7. To determine relationships between the number of contacts corn producers had with Extension agents and their use of production practices.

## II. PROCEDURES

### Population and Data Collection

The population of this study included corn producers in Tennessee who grew 20 or more acres of corn in 1985. The data for this study were obtained in personal interviews with corn producers using survey schedules developed by Extension specialists at the University of Tennessee. County Extension agents in each county conducted personal interviews with randomly selected corn producers in the fall of 1985. Each agent was instructed to use the "nth" number technique to randomly select corn producers depending upon the number of producers in each county. Agents interviewed from 20 to 35 producers per county. A total of 1,759 corn producers were surveyed.

### Method of Analysis

Data were coded and processed for computer analysis. Computations for statistical analysis were made by the University of Tennessee Computer Center. Frequencies, percentages and means were used to summarize the characteristics of the corn producers and their farming operations. Chi square test was used to analyze relationships between variables. Differences which achieved the .05 level of probability were accepted as being statistically significant.

## III. MAJOR FINDINGS

### Relationships Between Corn Producer Characteristics and the Number of Contacts They Had With Extension Agents

1. Farming status was significantly related to the number of contacts corn producers had with Extension agents. Full-time farmers tended to have more contacts with Extension agents than did part-time farmers.

2. Producers' age was significantly related to the number of Extension contacts. Producers over 40 tended to have fewer Extension contacts than those under 40.

3. Producers' major source of farm income was significantly related to the number of Extension contacts. Dairy producers tended to have more contacts with Extension agents than did livestock (i.e., beef, swine) or row crop producers.

Relationships Between Characteristics of Corn Producers'  
Farm Operation and the Total Number of Contacts They Had  
With Extension Agents

1. Harvesting yellow corn for grain was not significantly related to the total number of contacts of all types producers had with Extension agents.

2. Harvesting white corn for grain was significantly related to the number of contacts producers had with Extension agents. Corn producers who harvested white corn for grain tended to have more contacts with Extension agents than did producers not harvesting white corn.

3. Corn producers who grew silage tended to have more contacts with Extension agents than did those not harvesting corn for silage.

4. There was not a significant relationship between acres of corn crop owned and the total number of contacts with Extension.

5. There was not a significant relationship between acres of corn crop cash rented and the total number of contacts producers had with Extension.

6. Acres of corn share-cropped was significantly related to the total number of Extension contacts. Producers who share-cropped more acres in 1985 had more contacts with Extension than did producers who share-cropped fewer acres.

Relationship Between Age of Corn Producers and Their  
Use of Production Practices

Twelve production practices were significantly related to age:

1. Corn producers 47 years of age and younger used more of the recommended production practices than did older producers. Twelve of the 20 production practices studied were significantly related to age of producers. The practices were: double cropping corn, corn grown no-till, scouted for insects, planted some corn in the month of March, planted some corn in the month of April, distance between corn rows, distance between corn plants in the row, desired plant populations per acre, and pounds of nitrogen, phosphate, potash and lime applied per acre. Younger producers were generally more likely to be using the above 12 practices than were older producers.

2. Eight production practices were not significantly related to producers' age. These practices were as follows: planted recommended early season variety, planted recommended mid season variety, planted recommended full season variety, planted some corn in the month of May, planted some corn in the month of June, applied fertilizer according to soil test recommendations, applied lime according to soil test recommendations, and used U.T. soil test lab.

#### Relationships Between the Farming Status of Corn Producers and Their Use of Production Practices

1. Full-time farmers were more likely than were part-time farmers to be using 12 of the 20 corn production practices studied. These 12 practices were as follows: double cropping corn, corn grown no-till, scouted for insects, planted some corn in the month of March,



planted some corn in the month of April, planted some corn in the month of May, planted recommended distance between corn rows, planted recommended distance between corn plants in the row, desired plant populations per acre, pounds of nitrogen fertilizer applied per acre, and pounds of potash and lime applied per acre of corn grown.

2. Farming status was not significantly related to the use of 8 corn production practices. They include planting early season varieties, planting mid season varieties, planting full season varieties, planting in the month of June, fertilizing according to soil test recommendations, applying lime according to soil test recommendations, using U.T. soil test lab, and pounds of phosphate applied per acre of corn grown.

Relationships Between Corn Producers' Major Source  
of Farm Income and Their Use of Production Practices

1. Eight of the 20 selected production practices studied were significantly related to the producers' major source of farm income. The direction of relationship varied however depending upon specific practices. Row crop producers were more likely than dairy-livestock producers to double crop corn, use a recommended mid-season variety, plant some corn in April, desire a higher plant population per acre, and apply more pounds of nitrogen per acre of corn grown. On the other hand, the corn producers whose major source of farm income was

dairy-livestock were more likely than row crop producers to have scouted insects, to have planted some corn in May and to have planted some corn in June. The direction of relationship could not be determined for the variable regarding distance between corn rows.

2. Corn production practices not significantly related to producers' major source of farm income included corn grown no-till, early season variety corn grown, full season variety corn grown, planted some corn in March, distance between corn plants within the row, fertilized according to soil test recommendations, limed according to soil test recommendations, use of U.T. soil test lab, and pounds of phosphate, potash and lime applied per acre.

Relationships Between the Total Number of Contacts Corn Producers Had With Extension Agents and Their Use of Production Practices

1. Sixteen of the 20 selected production practices studied were significantly related to the number of contacts producers had with Extension agents over a 12 month period. The direction of relationship between Extension contacts and planting of corn in April and the distance between corn plants in the row was inconclusive. For the other practices it was found that producers who were in the high Extension contact group were more likely than others to use double cropping, to use no-till, to scout for insects, to use recommended varieties, to plant some corn in May, to plant corn in rows 38 to 40 inches apart, to desire a larger corn plant population

per acre, to use the U.T. soil testing lab and to apply larger amounts of nitrogen, phosphate, potash and limestone per acre of corn grown.

2. The production practices not significantly related to the number of contacts producers had with Extension agents included planted some corn in March, planted some corn in June, and fertilized and limed according to soil test.

#### IV. IMPLICATIONS AND RECOMMENDATIONS

The findings of this study seem to suggest that the staff of the University of Tennessee Agricultural Extension Service did help to influence the adoption of corn production practices. Those corn producers who had more contacts with Extension agents were using more of the recommended production practices than those who had fewer contacts. Thus, it would seem important that the Extension service continue to serve all corn producers as effectively as possible. Perhaps even more important, however, agents should place higher priority on reaching corn producers who are hesitant to contact the Agricultural Extension Service.

The results of this study showed that 48 percent of the corn producers did not attend any Extension meetings, 45 percent did not visit the Extension office, 33 percent did not telephone the Extension office, and 33 percent did not receive any farm visits from Extension agents over a 12 month period. Again, this finding implies that a large number of corn producers are not having any contact with Extension

through meetings, office visits, telephone calls, or farm visits. For this reason, it is important that Extension find out who these people are and how they can better serve their needs.

Also, this study showed that age, farming status, and major source of farm income were significantly related to the producers' use of selected corn production practices. Corn producers under 47 years of age were more likely than those over this age to be using 8 of the 20 corn production practices. It may be implied from this finding that Extension should make special efforts to increase practice use among corn producers who are in the older age group (47 years and over), however, younger producers should continue to be a primary Extension target.

Study findings also indicate that full-time farmers were more likely than part-time farmers to be using 12 of the 20 corn production practices. These findings suggest that educational efforts should be directed toward encouraging part-time farmers to adopt more production practices.

This study also showed that those producers who indicated dairy-livestock as their major source of farm income were more likely than those with other agricultural enterprises as their major source of farm income to be using 9 of the 20 corn production practices. These findings suggest the need for continued educational efforts to encourage all farmers to adopt recommended practices.

## V. RECOMMENDATIONS FOR FURTHER STUDY

1. Studies should be conducted over a period of years in Tennessee counties to determine which teaching methods are the most effective in the producers' adoption of corn production practices.

2. Studies should be conducted to determine why some producers do not adopt recommended practices.

3. Studies should be conducted to determine which teaching methods are most effective in the adoption process.

4. Studies should be conducted to determine variations in the use of production practices across Tennessee Extension districts.

61100  
1884  
LANCASTER BOND  
100% COTTON

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SILVER  
LANCASTER  
100% COTTON FIBRE

**APPENDIX**

1985 CORN PRODUCTION SURVEY  
(See Instructions on Last Page)



Card No. 1  
(1)

County Name \_\_\_\_\_

Respondent No. 0 0 0  
(2) (3) (4)

Co. TEMIS No. (5) (6) (7)

PART I: GENERAL INFORMATION

1. How many acres of corn did you harvest in 1985?
  - a. For grain:
    - (8-11) \_\_\_\_\_ 1. YELLOW CORN?
    - (12-14) \_\_\_\_\_ 2. WHITE CORN?
  - b. FOR SILAGE?
    - (15-17) \_\_\_\_\_
2. What was your average yield per acre of corn harvested in 1985?
  - (18-20) \_\_\_\_\_ a. BUSHELS PER ACRE OF CORN HARVESTED FOR GRAIN? (999 = none grown)
  - (21-22) \_\_\_\_\_ b. TONS OF CORN SILAGE PER ACRE HARVESTED? (99 = none grown)
3. HOW MANY ACRES OF CORN (GRAIN AND/OR SILAGE) WERE DOUBLE CROPPED IN 1985?
  - (23-25) \_\_\_\_\_
4. HOW MANY ACRES OF CORN (GRAIN AND/OR SILAGE) WERE GROWN NO-TILL IN 1985?
  - (26-28) \_\_\_\_\_
5. How many no-till acres of corn were planted in:
  - (29-31) \_\_\_\_\_ a. SMALL GRAIN STUBBLE? (999 = not any no-till)
  - (32-34) \_\_\_\_\_ b. CORN STUBBLE? (999 = not any no-till)
  - (35-37) \_\_\_\_\_ c. SOYBEAN STUBBLE? (999 = not any no-till)
  - (38-40) \_\_\_\_\_ d. PASTURE OR SOD? (999 = not any no-till)
  - (41-43) \_\_\_\_\_ e. OTHER? (999 = not any no-till)
6. How many acres of corn were:
  - (44-46) \_\_\_\_\_ a. PLANTED ON THE CONTOUR? (999 if none planted on side slopes)
  - (47-49) \_\_\_\_\_ b. STRIP CROPPED? (999 if none planted on side slopes)

PART II: INSECT CONTROL

- (50) \_\_\_\_\_ 1. WHICH INSECT CAUSED THE GREATEST PROBLEM (REDUCED CORN YIELD) THIS YEAR? (1 = cutworm; 2 = Spring armyworm; 3 = Fall armyworm; 4 = European corn borer; 5 = Southwestern corn borer; 6 = Northern corn rootworm; 7 = Japanese beetle; 8 = other; 9 = no problem with insects)

Coding Instructions

1. Fill each column (e.g. 0 0 4 7 ) with a numeral and right justify.  
(7) (8) (9) (10)
2. A zero (0) in all columns = none (e.g. 0 0 0 0 )  
(7) (8) (9) (10)
3. A nine (9) in all columns = does not apply (e.g. 9 9 9 9 )  
(7) (8) (9) (10)

- (51-53) \_\_\_\_\_ 2. What percent of your 1985 corn crop was treated for:
  - a. CUTWORMS?
- (54-56) \_\_\_\_\_ b. EUROPEAN CORN BORER?
- (57-59) \_\_\_\_\_ c. SPRING ARMYWORMS?
- (60-62) \_\_\_\_\_ d. FALL ARMYWORMS?
- (63-65) \_\_\_\_\_ e. CORN EARWORMS?
- (66) \_\_\_\_\_ 3. HOW WERE INSECTICIDES APPLIED? (1 = in the row at planting; 2 = as a spray or granule after the corn was up and growing; 9 = none applied)
- (67-68) \_\_\_\_\_ 4. HOW MANY TIMES WAS YOUR 1985 CORN CROP SCOUTED FOR INSECTS?

Card No. 2  
 (1)  
 Respondent No. 0 0 0  
 (2) (3) (4)

County No. (5) (6) (7)

**PART III: PRODUCTION PRACTICES**

**A. Varieties Planted**

What percentage of your total 1985 corn crop was planted using a recommended: (See Bulletin 634)

- (8-10) \_\_\_\_\_ a. EARLY SEASON VARIETY? (000 = did not plant a recommended variety; 999 = did not plant any early season corn)
- (11-13) \_\_\_\_\_ b. MID-SEASON VARIETY? (000 = did not plant a recommended variety; 999 = did not plant any mid-season corn)
- (14-16) \_\_\_\_\_ c. FULL-SEASON VARIETY? (000 = did not plant a recommended variety; 999 = did not plant any full-season corn)

**B. Planting Dates**

How many acres of corn were planted in:

- (17-19) \_\_\_\_\_ a. MARCH?
- (20-22) \_\_\_\_\_ b. APRIL?
- (23-25) \_\_\_\_\_ c. MAY?
- (26-28) \_\_\_\_\_ d. JUNE?

**C. Plant Population**

1. For your 1985 corn crop, what distance was corn planted:

- (29-30) \_\_\_\_\_ a. BETWEEN ROWS? (inches)
- (31-32) \_\_\_\_\_ b. BETWEEN PLANTS IN ROW? (inches)
- (33-37) \_\_\_\_\_ 2. WHAT PLANT POPULATION DID YOU WANT?

**D. Fertilize and Lime**

1. How many of your 1985 corn acres were:

- (38-40) \_\_\_\_\_ a. FERTILIZED BY SOIL TEST? (000 = none fertilized as recommended by soil tests; 999 = none tested)
- (41-43) \_\_\_\_\_ b. LIMED BY SOIL TEST? (000 = none limed as recommended by soil tests; 999 = none tested)

- (44) \_\_\_\_\_ 2. DID YOU USE THE UT SOIL TEST LAB? (1 = no - tested but did not use UT lab; 2 = yes - used on part of crop; 3 = yes - used on all of crop; 9 = did not test soil this year)

- (45-47) \_\_\_\_\_ 3. AVERAGE POUNDS OF ACTUAL N APPLIED/ACRE? (000 = none applied)
- (48-50) \_\_\_\_\_ 4. AVERAGE POUNDS OF P<sub>2</sub>O<sub>5</sub> APPLIED/ACRE? (000 = none applied)
- (51-53) \_\_\_\_\_ 5. AVERAGE POUNDS OF K<sub>2</sub>O APPLIED/ACRE? (000 = none applied)
- (54-56) \_\_\_\_\_ 6. AVERAGE TONS OF LIME APPLIED/ACRE? (000 = no corn land was limed this year)
- (57) \_\_\_\_\_ 7. WHAT METHOD(S) WAS USED TO APPLY MIXED AND/OR BLENDED FERTILIZER? (1 = broadcast only; 2 = banded with seed only; 3 = banded beside and below seed; 4 = combination broadcast and banded; 9 = none used)
- (58) \_\_\_\_\_ 8. WHAT METHOD(S) WAS USED TO APPLY NITROGEN? (1 = broadcast at planting only; 2 = banded at planting only; 3 = sidedressed only; 4 = broadcast over top only; 5 = broadcast and banded at planting; 6 = broadcast at planting and sidedressed; 9 = none applied)
- (59) \_\_\_\_\_ 9. IF CORN WAS SIDEDRESSED, WHAT NITROGEN SOURCE WAS USED? (1 = anhydrous ammonia; 2 = ammonium nitrate; 3 = urea; 4 = liquid (ammonium nitrate-urea); 5 = other; 9 = none sidedressed)

E. Weed Control

Acres of corn land where:

- (60-62) \_\_\_\_\_ a. CHEMICALS WERE THE ONLY METHOD USED TO CONTROL WEEDS?
- (63-65) \_\_\_\_\_ b. CULTIVATION WAS THE ONLY METHOD USED TO CONTROL WEEDS?
- (66-68) \_\_\_\_\_ c. BOTH CHEMICALS AND CULTIVATION WERE USED?

Card No. 3  
(1)

County No. (5) (6) (7)

Respondent No. 0 0 0  
(2) (3) (4)

PART IV: HARVESTING AND STORAGE OF CORN SILAGE

- 1. How many acres of corn silage were harvested in the:
  - (8-10) \_\_\_\_\_ a. MILK OR ROASTING EAR STAGE? (000 = none harvested in this stage; 999 = not any corn silage harvested)
  - (11-13) \_\_\_\_\_ b. DOUGH STAGE? (000 = none harvested in this stage; 999 = not any corn silage harvested)
  - (14-16) \_\_\_\_\_ c. HARD DENT STAGE? (000 = none harvested in this stage; 999 = not any corn silage harvested)
- 2. How many acres of corn silage were:
  - (17-19) \_\_\_\_\_ a. STORED IN UPRIGHT SILO(S)? (000 = not any stored in upright silo; 999 = did not grow corn silage)
  - (20-22) \_\_\_\_\_ b. STORED IN HORIZONTAL SILO(S)? (000 = not any stored in horizontal silo; 999 = did not grow corn silage)

PART V. EXTENSION CONTACTS

Note: Agent and/or farmer may estimate the number of contacts the farmer had with Extension agents over the past 12-months.

- (23) \_\_\_\_\_ 1. NUMBER OF CORN MEETINGS ATTENDED?
- (24) \_\_\_\_\_ 2. NUMBER OF OFFICE VISITS MADE? (regarding corn)
- (25) \_\_\_\_\_ 3. NUMBER OF TELEPHONE CALLS MADE? (regarding corn)

- (26) \_\_\_\_\_ 4. NUMBER OF FARM VISITS RECEIVED? (regarding corn)
- (27-28) \_\_\_\_\_ 5. NUMBER OF EXTENSION CIRCULAR LETTERS AND/OR NEWSLETTERS RECEIVED? (total number)

**PART VI: GENERAL FARM AND FARM OPERATOR'S SITUATION**

- (29) \_\_\_\_\_ 1. FARMING STATUS? (1 = full-time farm; 2 = part-time farm)
- (30-31) \_\_\_\_\_ 2. ESTIMATED AGE OF FARM OPERATOR?
- (32) \_\_\_\_\_ 3. MAJOR SOURCE OF FARM INCOME? (1 = crop sales; 2 = dairy; 3 = beef; 4 = swine; 5 = other)
4. How many acres of your 1985 corn crop were:
- (33-35) \_\_\_\_\_ a. OWNED?
- (36-38) \_\_\_\_\_ b. CASH RENTAL?
- (39-41) \_\_\_\_\_ c. SHARE-CROPPED?
- (42) \_\_\_\_\_ 5. WHAT DID YOU DO, OR PLAN TO DO, WITH THIS YEAR'S CORN CROP? (1 = feed to dairy cattle; 2 = feed to livestock (swine and/or beef cattle); 3 = sell at harvest; 4 = store and sell later; 5 = contract with grain elevator or other buyer; 6 = other)

**PART VII: SURVEY INSTRUCTIONS**

1. Date due: January 1986.
2. Disposition: To Associate District Supervisor.
3. Counties to be surveyed: All Tennessee counties.
4. Sample size: Counties producing 2500 acres or less, interview 20 producers or total population; counties producing 2501-5000 acres, interview 25 producers; counties producing 5001-10,000 acres, interview 30 producers; counties producing 10,000 acres-over, interview 35 producers.
5. Survey population: Producers who grew at least 20 acres of corn in 1985 for either grain or silage.
6. Sampling procedure: Nth number technique.

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## VITA

John Adrian (Chip) Jones was born in Madison County, Tennessee on October 22, 1947. He is the son of Betty W. Jones and the late Haskell Jones. He is presently employed with The University of Tennessee Agricultural Extension Service as an Associate Extension Agent. He is an area pest management agent with responsibilities in Henry, Carroll, Henderson, Chester, Hardin, and McNairy counties of West Tennessee. While he attended public schools in Madison County, he was active in the familys' farming operations. He served in the U.S. Army from 1967 to 1969. During those years, he served in Vietnam.

He earned an Associate of Science Degree from Jackson State Community College in 1971. He earned a Bachelor of Science Degree from Lambuth College (1974) with a major in Biology. He also completed work (1980) for a Bachelor of Science Degree in Agriculture at The University of Tennessee at Martin.

He is a member of Epsilon Sigma Phi, the national Extension workers professional society, the Tennessee Association of Agriculture Agents, and the University of Tennessee Century Club.

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