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Cecil E. Carter, Jr.
Major Professor

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RELATIONSHIPS BETWEEN SELECTED CHARACTERISTICS OF TENNESSEE CORN SILAGE PRODUCERS, THEIR FARM OPERATIONS, EXTENSION CONTACTS, AND THEIR USE OF SELECTED PRODUCTION, HARVESTING, AND STORAGE PRACTICES

A Thesis

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ABSTRACT

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

A total of 515 corn silage producers in 64 Tennessee counties were interviewed by Extension agents during the fall of 1985. The chi square test was used to determine the strength of the relationship between dependent and independent variables. Chi square values achieving the .05 level of probability were accepted as significant.

Major findings include:

1. Ninety-three percent of the corn silage producers were full-time farmers and 78 percent were less than 56 years of age. The mean age was 46.

2. Seventy-four percent of the corn silage producers indicated dairy as their major source of farm income.

3. The mean acres of corn silage harvested was 57 and the mean yield was 18 tons per acre.

4. Farming status was not significantly related to the number of contacts corn silage producers had with Extension agents. Part-time farmers were as likely as full-time farmers to contact Extension.

5. Producers' age was significantly related to the number of contacts producers had with Extension agents. Younger producers (age 40 or less) appeared to have more contacts with Extension than older producers (41 or older). However, the direction of the relationship could not be determined.

6. Producers 40 years and younger were more likely than older producers to plant a recommended early season variety of corn for silage, plant a recommended full season variety, use row spacings of 36 inches or less, and desire a higher corn plant population per acre.

7. Full-time farmers were more likely than part-time farmers to double crop corn silage, plant corn for silage in April, fertilize and lime by soil test recommendations, and use the U.T. soil testing lab. Full-time producers were more likely to harvest corn silage in the dent stage than part-time farmers.

8. Row crop producers were more likely than dairy or other producers to plant a recommended early or mid season variety. Dairy producers were more likely than row crop or other producers to double crop corn, plant some corn for silage in May, fertilize and lime by soil test recommendations, use the U.T. soil testing lab, apply more potash per acre of corn silage grown, apply one or more tons of lime per acre, harvest corn silage in the dent stage, and store corn silage in and upright silo. Row crop and dairy

producers were more likely than others to plant some corn in April and harvest corn silage in the dough stage.

9. Eleven of the 25 selected production, harvesting, and storage practices studied were significantly related to the number of contacts corn silage producers had with Extension agents in 1985. The direction of relationship between Extension contacts and corn silage double cropped was inconclusive. Producers with a higher number of contacts (i.e., 4 or more) were more likely than others to scout corn silage for insects, plant a recommended full season variety, plant corn in rows 37 inches or wider, plant corn plants 7 to 9 inches in the row, fertilize and lime corn silage acreage by soil test, use the U.T. soil testing lab, average applying 101 to 149 pounds of nitrogen fertilizer per acre, average applying one or more tons of lime per acre, and harvest corn silage in the dough stage.

Implications and recommendations were also made.

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CHAPTER I

THE PROBLEM AND ITS SETTING

I. INTRODUCTION

Corn is a major crop for grain producers in Tennessee. It has significant cash value as a grain crop. Corn ranked seventh among agricultural commodities in 1985, with cash receipts of $126,713,000 totaling 4.3% of the states agricultural receipts. (10:10) Tennessee ranks eighteenth in the nation in corn production. Corn also has farm value, which represents the corn fed on the farm. This corn fed on the farm can be utilized as grain or as corn silage. Corn silage has been used by many farmers for many years and is one of the easiest kinds of silage to make. (2:1)

The demand for corn silage comes from dairy and beef producers. In 1985, 125,000 acres of corn silage were harvested with a yield per acre of 16.0 tons and a total production of 2,000,000 tons. (10:44) On the majority of dairy farms and many beef farms, corn silage makes up a large portion of the total ration.

Because corn production is such an important part of Tennessee agriculture, it is important that corn producers

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

have research-verified information available to help increase their production efficiency. Corn silage producers can increase production efficiency with the adoption of recommended production and storage practices. The Tennessee Agricultural Extension Service is committed to the diffusion of research-verified information and encouraging producers to adopt recommended production practices. County Extension agents use a variety of teaching methods to promote the adoption of recommended practices. These include farm visits, group meetings, telephone calls, office visits, letters and mass media.

This study was conducted to characterize corn silage producers as to the nature of their farming operations, their use of selected production, harvesting, and storage practices, and to study the relationships between the number of contacts the producers had with Extension agents during 1985.

II. NEED FOR THE STUDY

As accountability to taxpayers and legislators becomes increasingly important, it is imperative that the Agricultural Extension Service provide evidence that its educational efforts increase the adoption by growers of recommended practices. This study was conducted to help provide such support.

To conduct an educational program, it is first

necessary to assess the needs. This study was to assist county Extension agents in evaluating their educational efforts and establish future priorities and goals.

III. PURPOSE AND OBJECTIVE OF THE STUDY

The objective of this study was to obtain information that might be useful in developing future programs for corn silage producers in Tennessee.

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

Specific objectives were:

1. To characterize the corn silage producers in Tennessee and their farming operations.

2. To determine relationships between corn silage producer characteristics (farming status, age and major source of farm income) and the number of contacts they had with Extension.

3. To determine relationships between characteristics of corn silage producers' farming operations (acres owned, acres cash rented, acres share cropped, acres of corn silage harvested, yield and plans for use of crop) and the total number of contacts they had with Extension agents.

4. To determine relationships between ages of corn

silage producers and their use of selected production, harvesting and storage practices.

5. To determine relationships between the farming status of corn silage producers and their use of selected production, harvesting and storage practices.

6. To determine relationships between corn silage producers' major source of farm income and their use of selected production, harvesting and storage practices.

7. To determine relationships between the number of contacts corn silage producers had with Extension and their use of selected production, harvesting and storage practices.

IV. LIMITATIONS OF THE STUDY

This study was limited to the analysis of data from the 1985 Tennessee Agricultural Extension Service Corn Production Survey conducted in the fall of 1985. The data were obtained by Extension agents through personal interviews with 515 corn silage producers in 64 counties in Tennessee. The number of producers interviewed varied from county to county, depending on the number of corn producers in the county.

V. METHOD OF INVESTIGATION

Population and Sample

The population of this study included corn silage

producers selected from a survey of corn producers in 1985. Producers were asked to indicate if they grew corn for grain or silage. Five hundred fifteen of the 1,759 producers surveyed indicated they grew corn for silage. Data were obtained through personal interviews by Extension agents using interview schedules developed by Specialist at the University of Tennessee. The Nth number technique was used to identify producers to be surveyed. The recommended sample size for each county was as follows:

1. Counties producing 2500 acres or less would interview 20 producers or total population.

2. Counties producing 2501-5000 acres would interview 25 producers.

3. Counties producing 5001-10,000 acres would interview 30 producers.

4. Counties producing 10,000 acres and over would interview 35 producers.

Each producer surveyed was to have grown 20 acres or more corn for grain or silage. Completed surveys were returned to the Agricultural and Extension Education Office.

Survey Instrument

The 1985 Corn Production Survey was developed by The University of Tennessee Agricultural Extension Specialist Staff in the Plant and Soil Science and Agricultural and Extension Education sections. Questions dealt primarily

with producers' use of production practices and the number of Extension contacts the producers had with Extension agents. Data also were obtained regarding the size of their corn operation and yields per acre of corn grown.

Method of Analysis

Data from corn producers in 1985 were processed by computer analysis. Computation and statistical analysis were made using the University of Tennessee Computing Center facilities.

Response to survey questions were summarized using means and frequency counts of producers' responses regarding the use of practices, the number of acres harvested and yields per acre of grain or silage.

The chi square test was used to determine the strength of the relationship between dependent and independent variables. Statistical tables were used to determine the significance of observed relationships. Chi square values achieving the .05 level of probability were judged to be significant.

VI. DEFINITION OF TERMS

1. Corn Silage Producer. This refers to individuals making all or part of their farming income from the production of corn silage either for sale or to be used on their own farm for feed.

2. Extension Contacts. This refers to the number of corn meetings attended, number of telephone calls made to the Extension office, the number of Extension farm visits received and the total number of Extension contacts corn producers reported having with Extension during the previous 12 months of 1985.

3. Recommended Practice. A research verified and commonly accepted production procedure which, if performed correctly and on a regular basis, will increase the yield and/or quality of corn.

4. County Extension Program. Each county in Tennessee has one county Extension program. All Extension work done in the county, including planning, implementing, evaluating and reporting progress is made toward annual (POA) plans and four-year (POWP) objectives and goals. Each county Extension program disseminates information pertaining to Agriculture, Home Economics, 4-H (Youth) and Resource Development.

5. Variable (Dependent). The variable which one wishes to explain as a function of other variables. (Independent). The explanatory variable in a statistical analysis.

CHAPTER II

REVIEW OF RELATED STUDIES

Studies were reviewed concerning the relationships of the characteristics of producers, their farming operations, their contacts with Extension and the use of recommended production practices by producers. Corn and corn silage studies were limited, therefore, several agricultural enterprises were examined.

Review of related studies cited in this chapter are reported as follows: (1) Characteristics of producers and their operations, (2) Relationships between characteristics of producers and the number of contacts they had with Extension agents, and (3) relationships between the number of contacts producers had with Extension agents and their use of recommended production, storage and harvesting practices.

I. CHARACTERISTICS OF PRODUCERS AND THEIR FARMING OPERATIONS

In a 1982 study of Tennessee beef producers, Floyd Rutter found the average age of producers to be 50.8 years. Of the 1024 beef producers who listed their age, 56 or 5.5 percent were less than 30 years old, 387 or 37.8 percent were between 30 and 49 years old and 581 or 56.7 percent were 50 years old and older (9).

In 1978, Pat Freeman found that the average Tennessee Grade A dairyman was 50 years old (3).

Jamieson Jenkins found in his 1977 study of soybean producers that 16 percent were 60 years old and older. The mean age of the soybean producer in his study was 46.5 years (4).

In 1984, Glen Turner found in his study of burley tobacco producers that 70.1 percent had no formal education after high school, 10.8 percent had some education past high school and 12.4 percent were college graduates (11).

In a 1977 study of soybean producers, Jamieson Jenkins found 40 percent of the producers had at least some college training, while the educational level reached by the remaining 60 percent was high school or less (4).

Robert Ary in 1986, found that 83 percent of the dark fired tobacco producers had attained an educational level of high school graduate or less. Those that had received some college education was 13.6 percent and 14.4 percent were college graduates (1).

Jamieson Jenkins reported in his 1977 study of soybean producers that 86 percent of the producers were full-time farmers, 12 percent were employed part-time off the farm and 2 percent reported employment in other businesses (4).

In a 1982 study of beef producers, Floyd Rutter found that 53.2 percent were full-time farm operators, while 46.8 percent were part-time farm operators (9).

Robert Ary Reported in his 1986 study of dark fired tobacco producers that 62.7 percent were full-time farmers, 16.9 percent were employed part-time off the farm and 13.6 percent held full-time employment off the farm (1).

II. RELATIONSHIPS BETWEEN THE CHARACTERISTICS OF PRODUCERS AND THE CONTACTS PRODUCERS HAD WITH EXTENSION

In a 1978 study of Grade A dairy producers, Pat Freeman found that as the age of the producers increased, the total number of contacts producers had with Extension decreased significantly. Freeman also found that as the educational level reached by the dairy producer increased, the total number of contacts producers had with Extension also increased (3).

Solomon Yabaya reported in his 1978 study of corn producers that producers who had more contacts with Extension agents had significantly more acreage and yield for both silage and grain than those who had fewer contacts. Yabaya also found that as the size of the farming operation increased, the number of Extension contacts increased (12).

In a 1972 study of soybean producers, Jamieson Jenkins reported that the major occupation of the producer was significantly related to the total number of Extension meetings the producer attended. Full-time farmers tended to attend more meetings while part-time farmers attended fewer meetings. On the other hand, the occupation of the producer

did not significantly influence the number of office visits or telephone calls the producer made to the Extension office, or the number of farm visits made by Extension agents to the producers (4).

Bret Rayburn reported in his 1983 study of Grade A dairy producers that producers with more cows owned, more full-time workers, more acres of silage harvested and more acres of improved pasture had significantly more total contacts with Extension agents than did smaller producers (8).

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

Ron Johnson found in his 1982 study of corn producers that those producers using most of the production practices had frequent contact with Extension agents (5).

In another study of corn producers, Solomon Yabaya reported in 1978 that the number of producers using five recommended production practices was significantly related to the total number of Extension contacts between producers and Extension agents (12).

In 1982, Floyd Rutter found in a study of beef producers that there was a significant relationship between the total number of contacts beef producers had with

Extension agents and producer use of certain beef production practices (9).

Dewayne Perry determined in a 1980 study of swine producers that there was a significant relationship between the use of recommended swine production practices and the number of contacts producers had with Extension (7).

In a 1985 study of wheat producers, Paul McCallie found that the percent of acreage soil tested for wheat production increased as the number of total contacts producers had with Extension increased (6).

In Robert Ary's study of dark fired tobacco producers in 1986, nine significant relationships were indicated between the number of Extension contacts and producer use of field production practices (1).

CHAPTER III

CHARACTERISTICS OF TENNESSEE CORN SILAGE PRODUCERS, THEIR FARM OPERATIONS, CONTACTS THEY HAD WITH EXTENSION AGENTS, THEIR USE OF SELECTED RECOMMENDED PRODUCTION, HARVESTING, AND STORAGE PRACTICES, AND RELATIONSHIPS BETWEEN PRODUCER CHARACTERISTICS AND THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS

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

Chapter III is organized into four sections:

Section I presents findings regarding characteristics of the corn silage producers, their farming operations, and the number of contacts they had with Extension agents.

Section II presents findings regarding corn silage producers' use of selected recommended production, harvesting and storage practices.

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

Section IV presents findings regarding relationships

between characteristics of corn silage producers' farm operation and the number of contacts they had with Extension agents.

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

This section presents findings regarding selected characteristics of Tennessee corn silage producers, their farm operations, and the number of contacts they had with Extension agents. Findings were organized under three subsections: (1) "Producer Characteristics," (2) "Farm Characteristics," and (3) "Extension Contacts." Findings regarding these characteristics are summarized in Table I. The number and percent of producers are given for each variable. Variations in the number of respondents were due to no responses and/or does not apply situations. The mean is given where appropriate.

Producer Characteristics

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

Farming status. Data in Table I revealed that of

TABLE I. Characteristics of Tennessee Corn Silage Producers, Their Farm Operations, and Contacts They Had With Extension Agents

Selected Variables	Number of Producers*	Percent of Producers
PRODUCER CHARACTERISTICS		
Farming Status		
Full-Time farm	477	93.2
Part-time farm	35	6.8
TOTAL	512	100.0
Estimated Age Of Corn Silage Producer		
40 - less	187	36.5
41 to 55	215	42.0
56 - over	110	21.5
TOTAL	512	100.0
Mean = 45.67 years (N = 512)		
Major Source of Farm Income		
Crop Sales	51	10.0
Dairy	375	73.7
Other	83	16.3
TOTAL	509	100.0
FARM CHARACTERISTICS		
Acres of 1985 Corn Silage Crop Owned		
39 - less	134	27.9
40 to 120	245	51.0
121 - over	101	21.1
TOTAL	480	100.0
Mean = 96 acres (N = 480)		
Acres of 1985 Corn Silage Crop Cash Rented		
39 - less	92	43.0
40 to 120	83	38.8
121 - over	39	18.2
TOTAL	214	100.0
Mean = 76 acres (N = 214)		
Acres of 1985 Corn Silage Crop Share-Cropped		
39 - less	25	37.3
40 to 120	22	32.8
121 - over	20	29.9
TOTAL	67	100.0
Mean = 84 acres (N = 67)		

TABLE I (Continued)

Selected Variables	Number of Producers*	Percent of Producers
Acres of Corn Silage Harvested		
29 - less	162	31.5
30 to 74	235	45.6
75 - over	118	22.9
TOTAL	515	100.0
Mean = 57 acres (N = 515)		
Yield of Corn Silage in Tons Per Acre		
15 - less	105	20.7
16 to 19	221	43.6
20 - over	181	35.7
TOTAL	507	100.0
Mean = 18.14 tons (N = 507)		
Plans for Use of Corn Silage Crop		
Feed Dairy Cattle	358	71.2
Feed Beef Cattle	89	17.7
Sell at Harvest	13	2.6
Store - Sell Later	25	5.0
Contract	6	1.2
Other	12	2.3
TOTAL	503	100.0
EXTENSION CONTACTS		
Number of Extension Corn Meetings Attended		
Not Any	216	41.9
1	199	38.6
2	78	15.1
3 or more	22	4.4
TOTAL	515	100.0
Mean = .818 meetings (N = 515)		
Number of Office Visits Made		
Not Any	212	41.2
1	129	25.0
2	109	21.2
3 or more	65	12.6
TOTAL	515	100.0
Mean = 1.129 office visits (N = 515)		

TABLE I (Continued)

Selected Variables	Number of Producers*	Percent of Producers
Number of Telephone Calls Made to Extension Office		
Not Any	141	27.5
1	97	18.9
2	128	25.0
3 or more	147	28.6
TOTAL	513	100.0
Mean = 1.934 telephone calls (N = 513)		
Number of Farm Visits Received From Extension Agents		
Not Any	136	26.6
1	132	25.8
2	114	22.3
3 or more	130	25.3
TOTAL	512	100.0
Mean = 1.790 farm visits (N = 512)		
Number of Circular and/or Newsletters Received		
Not Any	46	8.9
1 to 3	147	28.5
4 to 9	173	33.7
10 or more	149	28.9
TOTAL	515	100.0
Mean = 6.387 newsletters (N = 515)		

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

512 farmers, 93.2 percent, were full-time farmers. The remaining 6.8 percent reported farming on a part-time basis.

Estimated age of corn silage producer. Forty-two percent of the 512 corn silage producers were from 41 to 55 years old. Those 40 years of age or less represented 36.5 percent of the producers while 21.5 percent were reported as being 56 or older. The mean age was 45.67 years.

Producer's major source of farm income. Almost 74 percent of the corn silage producers indicated dairy as their major source of farm income compared to 10 percent who indicated crop sales and 16.3 percent who indicated other enterprises as their major source of farm income.

Farm Characteristics

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

Acres of 1985 corn silage crop owned. Almost 28 percent of the corn silage producers owned 39 or less acres while 51 percent owned 40 to 120 acres. Some 101 producers (21.1 percent) owned 121 or more acres. The mean acres of the corn silage crop owned by the 480 producers responding was 96 acres.

Acres of 1985 corn silage crop cash rented. Of the corn silage producers who cash rented (i.e. 214 producers), 43 percent cash rented 39 or less acres of their 1985 silage crop. Almost 39 percent cash rented 40 to 120 acres and 18.2 percent cash rented 121 or more acres. The mean acres cash rented by the 214 producers was 76 acres.

Acres of 1985 corn silage crop share-cropped. Of the corn silage producers who share-cropped (i.e., 67 producers), 37.3 percent share-cropped 39 or less acres while 32.8 percent share-cropped 40 to 120 acres. Almost 30 percent share-cropped 121 or more acres. The mean acres share-cropped by these 67 producers was 84 acres.

Acres of corn silage harvested. Two hundred thirty-five (45.6 percent) of the 515 corn silage producers surveyed harvested from 30 to 74 acres while 31.5 percent harvested 29 or less acres. Almost 23 percent harvested 75 or more acres of corn silage in 1985. The mean acres harvested by the 515 producers was 57 acres.

Yield of corn silage in tons per acre. Almost 44 percent of the corn silage producers indicated a yield from 16 to 19 tons per acre and 35.7 percent indicated a yield of 20 or more tons per acre. A smaller percentage, 20.7, reported a yield of 15 or less tons per acre. The mean

yield of corn silage reported by 507 of the producers was 18 tons per acre.

Plans for use of corn silage crop. Of the 503 corn silage producers responding, 71.2 percent reported they would feed their crop to dairy cattle. Almost 18 percent indicated they would use their crop to feed beef cattle, 2.6 percent would sell at harvest, 5.0 percent would store and sell later, and 1.2 percent would contract their crop. A small percentage, 2.3 percent, indicated they would use their crop for other purposes.

Extension Contacts

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

Number of Extension corn meetings attended. Almost 39 percent of the 515 producers surveyed attended 1 Extension corn meeting, while 15.1 percent attended 2 meetings, and 4.4 percent attended 3 or more Extension corn meetings. Almost 42 percent did not attend any meetings over the same time period. The mean Extension corn meetings attended by the 515 producers was 0.818 meetings.

Number of office visits made. Twenty-five percent made 1 visit to the Extension office, while 21.2 percent made 2 visits, and 12.6 percent made 3 or more visits to the

Extension office. A large percentage, 41.2 percent, did not visit the Extension office in the past 12 months. The mean number of office visits made by the 515 silage producers was 1.13 office visits.

Number of telephone calls to Extension office. Almost 19 percent of the corn silage producers surveyed called the Extension office 1 time, while 25 percent made 2 calls, and 28.6 percent made 3 or more calls. One hundred forty-one (27.5 percent) of the 515 producers surveyed did not call the Extension office during the previous 12 months. The mean number of telephone calls made by 513 pf the silage producers responding was 1.9 calls.

Number of farm visits by Extension agents. Almost 26 percent of the corn silage producers received 1 visit from an Extension agent, while 22.3 percent received 2 visits and 25.3 percent received 3 or more visits during the previous 12 months. Almost 27 percent received no visits during the same time period. The mean number of farm visits made by Extension agents to the 512 producers responding was 1.79 visits.

Number of circular and/or newsletters received. Over one-third (33.7 percent) received 4 to 9 circular and/or newsletters, while 28.5 percent received 1 to 3, and 28.9 percent received 10 or more. Only 8.9 percent of the corn

silage producers indicated they did not receive any kind of circular or newsletter from the Extension office. The mean number received by the 515 corn silage producers was 6.39 circular and/or newsletters.

II. NUMBER AND PERCENT OF CORN SILAGE PRODUCERS USING SELECTED PRODUCTION, HARVESTING, AND STORAGE PRACTICES

The purpose of section II is to present findings regarding the number and percent of corn silage producers using selected production, harvesting and storage practices. These findings are summarized under three subsections: (1) "Corn Silage Production Practices," (2) "Corn Silage Harvesting Practices," and (3) "Corn Silage Storage Practices." The number and percent of producers are given for each variable. Variations in the total number of the respondents among variables were due to no responses and/or does not apply situations. The mean is given where appropriate.

Corn Silage Production Practices

This subsection presents findings regarding 20 selected corn silage production practices. These findings are summarized in Table II.

Corn silage double cropped. Forty-three percent of the

TABLE II. Number and Percent of Corn Silage Producers Using Selected Production, Harvesting and Storage Practices

Selected Practice	Number of Producers*	Percent of Producers
CORN SILAGE PRODUCTION PRACTICES		
Corn Silage Double Cropped		
No	292	56.7
Yes	223	43.3
TOTAL	515	100.0
Mean = 57 acres	(N = 223)	
Corn Silage Grown No-Till		
No	312	60.6
Yes	203	39.4
TOTAL	515	100.0
Mean = 66 acres	(N = 203)	
Corn Silage Scouted for Insects		
No	101	19.6
Yes	414	80.4
TOTAL	515	100.0
Mean = 5.5 times	(N = 414)	
Recommended Early Season Variety Planted		
No	210	69.3
Yes	93	30.7
TOTAL	303	100.0
Recommended Mid Season Variety Planted		
No	145	37.7
Yes	240	62.3
TOTAL	385	100.0
Recommended Full Season Variety Planted		
No	58	12.5
Yes	407	87.5
TOTAL	465	100.0
Corn Silage Acreage Planted in March		
No	474	92.0
Yes	41	8.0
TOTAL	515	100.0
Corn Silage Acreage Planted in April		
No	156	30.3
Yes	359	69.7
TOTAL	515	100.0

TABLE II (Continued)

Selected Practices	Number of Producers*	Percent of Producers
Corn Silage Acreage Planted in April		
No	156	30.3
Yes	359	69.7
TOTAL	515	100.0
Corn Silage Acreage Planted in May		
No	161	31.3
Yes	354	68.7
TOTAL	515	100.0
Corn Silage Acreage Planted in June		
No	457	88.7
Yes	58	11.3
TOTAL	515	100.0
Distance Between Corn Rows		
36-less inches	300	58.9
37 to 38 inches	179	35.2
39-over inches	30	5.9
TOTAL	509	100.0
Mean = 36 inches (N = 509)		
Distance Between Corn Plants in Row		
6-less inches	124	24.9
7 to 9 inches	300	60.2
10-over inches	74	14.9
TOTAL	498	100.0
Mean = 7.7 inches (N = 498)		
Desired Corn Plant Population Per Acre		
20,000-less	300	58.3
20,001-over	215	41.7
TOTAL	515	100.0
Mean = 20,453 plants per acre (N = 515)		
Corn Silage Acres Fertilized by Soil Test		
No	57	11.1
Yes	320	62.1
Soil Not Tested	138	26.8
TOTAL	515	100.0
Mean = 122 acres (N = 320)		

TABLE II (Continued)

Selected Practices	Number of Producers*	Percent of Producers
Corn Silage Acres Limed by Soil Test		
No	97	18.8
Yes	280	54.4
Soil Not Tested	138	26.8
TOTAL	515	100.0
Mean = 100 acres (N = 280)		
Used U.T. Soil Test Lab		
No	89	17.3
Yes	288	55.9
Soil Not Tested	138	26.8
TOTAL	515	100.0
Average Pounds of Nitrogen Applied Per Acre		
100 - less	109	21.3
101 to 149	238	46.5
150 - over	165	32.2
TOTAL	512	100.0
Mean = 128 pounds (N = 512)		
Average Pounds of Phosphate Applied Per Acre		
60 - less	179	37.3
61 to 79	42	8.7
80 - over	259	54.0
TOTAL	480	100.0
Mean = 77 pounds (N = 480)		
Average Pounds of Potash Applied Per Acre		
60 - less	146	37.3
61 to 79	42	8.7
80 - over	259	54.0
TOTAL	506	100.0
Mean = 88 pounds (N = 506)		
Average Tons of Lime Applied Per Acre		
None Limed	292	56.8
1 or 2	182	35.5
3 - over	39	7.7
TOTAL	513	100.0
Mean = 2.1 tons (N = 221)		

TABLE II (Continued)

Selected Practices	Number of Producers*	Percent of Producers
CORN SILAGE HARVESTING PRACTICES		
Acres Harvested in Milk Stage		
1 to 20	20	4.7
21 - over	7	1.6
None Harvested in Milk Stage	400	93.7
TOTAL	427	100.0
Mean = 22.4 acres	(N = 27)	
Acres Harvested in Dough Stage		
1 to 49	165	35.6
50 - over	69	14.9
None Harvested in Dough Stage	229	49.5
TOTAL	463	100.0
Mean = 44 acres	(N = 234)	
Acres Harvested in Dent Stage		
1 to 29	141	29.3
30 to 79	181	37.6
80 - over	63	13.1
None Harvested in Dent Stage	97	20.1
TOTAL	482	100.0
Mean = 56 acres	(N = 385)	
CORN SILAGE STORAGE PRACTICES		
Corn Silage Stored in Upright Silo		
No	118	24.2
Yes	370	75.8
TOTAL	488	100.0
Mean = 57 acres	(N = 370)	
Corn Silage Stored in Horizontal Silo		
No	260	54.9
Yes	214	45.1
TOTAL	474	100.0
Mean = 43 acres	(N = 214)	

*Variations in the total number of respondents among variables was due to no responses and/or does not apply situations.

corn silage producers double-cropped in 1985. The mean acres of the 223 producers who double-cropped was 57 acres.

Corn silage grown no-till. Almost 61 percent (312 producers) of the total producers surveyed did not grow corn silage no-till compared to 39.4 percent who did. The mean acres grown no-till by the 203 producers responding was 66 acres.

Corn silage scouted for insects. Over 80 percent of the corn silage producers surveyed scouted for insects. Of those who scouted (414 producers), the mean number of scoutings were 5.5 times.

Recommended early season variety planted. Almost 70 percent (210 producers) of the corn silage producers who planted an early season variety did not use a recommended variety. Just over 30 percent (93 producers) of the corn silage producers planted one of the following recommended early-season varieties: Pioneer 3389, McCurdy 7676, Asgrow/O's Gold 2570, FFR 788C, Pioneer 3358, USS 7001, Funk G-4522, Asgrow/O's Gold 3344, FFR 799C, FFR 717C, N.K. PX79, Coker 19, or P.A.G. SX333.

Recommended mid season variety planted. Just over 62 percent (240 producers) of the producers responding (385 producers) planted one of the following recommended mid season varieties: DeKalb Pfizer DK-747, DeKalb Pfizer

DK-689, Pioneer 3320, Beck's 85XA, McCurdy 8150, Coker 21, RA 1502, Pioneer 3184, Asgrow/O's Gold 5509, McCurdy 84AA, Golden Harvest H-2686A, Funk G-4733, Coker 19A, FFR 848C, Golden Harvest H-2680, RA 1604, or Asgrow/O's Gold 2680W. Almost 38 percent of the 385 producers who planted a mid season variety did not plant a recommended variety.

Recommended full season variety planted. Nearly 88 percent (407 producers) of the producers responding (465 producers) planted a recommended full season variety for silage. These include: Pioneer 3165, Pioneer 3147, DeKalb-Pfizer DK-789, McCurdy 8172, FFR 955C, GK 900, Cargill 980, Paymaster 8990, USS 2020, DeKalb-Pfizer XL-394, Funk G-4740A, Zimmerman Z-11W, Zimmerman Z-14W, GK 927W, Princeton SX910, RA 2606W, Golden Harvest H-2660W, FFR 929W, Asgrow RX962W, or Zimmerman Z-52W.

Corn silage acreage planted in March. Only 8 percent of the producers surveyed planted some corn silage acreage in March, compared to 92 percent who planted later.

Corn silage acreage planted in April. Almost 70 percent of the corn silage producers planted some acreage in April, while just over 30 percent did not plant corn silage acreage in April.

Corn silage acreage planted in May. Almost 69 percent

of the 515 corn silage producers responding planted some acreage in May while 31.3 percent did not plant in May.

Corn silage acreage planted in June. Only 11.3 percent of the corn silage producers planted some corn silage acreage in June compared to over 88 percent who planted earlier in the year.

Distance between corn rows. Less than 6 percent of the corn silage producers planted at row widths of 39 or more inches, while almost 59 percent planted at 36 or less inches. Data showed the mean inches between corn silage rows to be 36 inches (509 producers responding).

Distance between corn plants in the row. The mean inches for distance between plants in rows was 7.7 inches (498 producers responding). Over 60 percent of the corn silage producers had plant spacings of 7 to 9 inches. Almost 25 percent had plant spacings of 6 inches or less.

Desired corn plant population per acre. Fifty-eight percent of the producers surveyed desired 20,000 or less plants per acre compared to 42 percent who desired over 20,000 plants per acre. The mean number of plants desired per acre by the 515 producers was 20,453 plants.

Corn silage acres fertilized by soil test. Sixty-two percent of the corn silage producers surveyed fertilized

their corn silage acreage by soil test, while only 11.1 percent did not. Almost 27 percent of the producers did not soil test their corn silage acreage. The mean acres fertilized by the 320 producers who tested their soil was 122 acres.

Corn silage acres limed by soil test. Findings show that 54.4 percent of corn silage producers limed by soil test compared to 18.8 percent who did not. Almost 27 percent did not test their corn silage acreage. The mean acres limed for the 280 producers who limed by soil test was 100 acres.

U.T. soil test lab used. Fifty-six percent (288 producers) of the corn silage producers surveyed used the U.T. lab compared to 17.3 percent who tested but did not use the U.T. lab. Almost 27 percent (138 producers) did not test their soil.

Pounds of nitrogen applied per acre. Over 46 percent (238 producers) of the 512 responding to the survey applied 101 to 149 pounds of nitrogen per acre while 32 percent (165 producers) applied 150 pounds or over per acre and 21 percent (109 producers) applied 100 or less pounds per acre. The mean pounds of nitrogen applied per acre by the 512 producers responding was 128 pounds.

Pounds of phosphate applied per acre. Over half (54

percent) of the corn silage producers applied 80 or more pounds of phosphate per acre; whereas, 37 percent applied 60 or less pounds per acre. Only a small percentage, 8.7 percent, applied 61 to 79 pounds per acre. The mean pounds of phosphate applied by the 480 producers responding was 77 pounds per acre.

Pounds of potash applied per acre. Fifty-four percent (259 producers) applied 80 or more pounds of potash per acre to their corn silage acreage compared to 37 percent (146 producers) that applied 60 or less pounds of potash per acre. Forty-two producers (8.7 percent) applied from 61 to 79 pounds per acre. The mean pounds of potash applied per acre by the 506 producers responding was 88 pounds.

Tons of lime applied per acre. Almost 57 percent (292 producers) of those who grew corn silage applied no lime compared to 43 percent (221 producers) who applied one ton or more. The mean tons for those applying lime (221 producers) was 2.1 tons per acre.

Corn Silage Harvesting Practices

The variables in this subsection include: (1) acres harvested in milk stage, (2) acres harvested in dough stage, and (3) acres harvested in dent stage.

Acres harvested in milk stage. Almost 94 percent of the corn silage producers did not harvest any corn silage in

the milk stage. Five percent harvested 20 acres or less, while 2 percent harvested 21 acres or more. Of the 27 producers (6.3 percent) harvesting in the milk stage, the mean acres harvested was 22.4 acres.

Acres harvested in dough stage. Thirty-six percent (165 producers) or the corn silage producers harvested 49 or less acres in the dough stage compared to 15 percent who harvested 50 or more acres. Two hundred twenty-nine (49.5 percent) producers indicated they did not harvest in the dough stage. Of the 50.5 percent (234 producers) harvesting in the dough stage, the mean acres harvested was 44 acres.

Acres harvested in dent stage. Twenty-nine percent of the corn silage producers harvested 29 or less acres, while 37.6 percent harvested 30 to 79 acres and 13.1 percent harvested 80 or more acres. Ninety-seven producers (20.1 percent) indicated they harvested no corn silage in the dent stage. Of the 385 producers (79.9 percent) harvesting in the dent stage, the mean acres harvested was 56 acres.

Corn Silage Storage Practices

The variables in this subsection dealt with whether or not corn silage producers: (1) stored corn silage in an upright silo, and (2) stored corn silage in a horizontal silo.

Corn silage stored in upright silo. Just over three-

fourths (75.8 percent) of the corn silage producers used an upright silo for storage compared to 24.2 percent who did not. Of the 370 producers using an upright silo for storage, the mean acres stored was 56 acres.

Corn silage stored in horizontal silo. Forty-five percent of the corn silage producers stored corn silage in a horizontal silo while 55 percent did not use a horizontal silo. Of the 214 producers using a horizontal silo for storage, the mean acres stored was 43 acres.

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

Presented in this section are findings regarding relationships between corn silage producer characteristics and the total number of contacts they had with Extension in a 12 month time period. Selected producer characteristics presented in Table III include farming status, estimated age of producer, and major source of farm income. The chi square test was used to determine the relationship between independent and dependent variables. The .05 probability level was used to determine significant relationships.

Farming Status

Fifty-nine percent of the corn silage producers characterized as being full-time farmers had 4 or more contacts with Extension compared to 54.3 percent of the

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

	Total Number of Extension Contacts							
	None		1 to 3		4-over		Total	
Producer Characteristics	no. of Prod.	% of Prod.	no. of Prod.	% of Prod.	no. of Prod.	% of Prod.	no. of Prod.	% of Prod.
Farming Status								
Full-time farm	15	3.2	178	37.7	279	59.1	472	93.1
Part-time farm	2	5.7	14	40.0	19	54.3	35	6.9
Chi square Test = 0.799 p = 0.671								
Estimated Age of Producer								
40-less	6	3.2	57	30.6	123	66.1	186	36.7
41 to 55	10	4.7	87	41.2	114	54.0	211	41.6
56-over	1	0.9	48	43.6	61	55.5	110	21.7
Chi square Test = 10.064 p = 0.039								
Major Source of Farm Income								
Crop Sales	2	3.9	21	41.2	28	54.9	51	10.1
Dairy	11	3.0	136	36.7	224	60.4	371	73.6
Other	3	3.7	34	41.5	45	54.9	82	16.3
Chi square Test = 1.273 p = 0.866								

part-time farmers. These differences were not significant ($p<.05$) as tested by the chi square test. The farming status of producers was not significantly related to the number of contacts they had with Extension. Part-time farmers were as likely as full-time farmers to contact Extension.

Estimated Age of Producer

Sixty-six percent of those producers age 40 or less had 4 or more contacts with Extension compared to 54 percent of the producers 41 to 55 years of age and 55 percent of the producers age 56 and older. These differences were significant as tested by the chi square test. The age of producer was significantly related to the number of contacts producers had with Extension. Younger producers (e.g., 40 or less) appeared to have more contacts with Extension than producers 41 and older. However, the direction of relationship was inconclusive.

Major Source of Farm Income

Over 60 percent of the corn silage producers indicating dairy as their major source of farm income had 4 or more contacts with Extension annually compared to almost 55 percent of those indicating crop sales and 55 percent of those reporting other sources of farm income. These differences were not significant. There was not a significant relationship between major source of farm income

and the number of contacts corn silage producers had with Extension agents. Producers indicating dairy as their major source of farm income were no more likely than other producers to contact Extension agents.

Table Summary

The corn silage producers' age was significantly related to the number of contacts they had with Extension. Results of analysis presented in this table are inconclusive as to the direction of the relationship between age of corn silage producers and the number of contacts they had with Extension agents. Farming status and major source of farm income were not significantly related to the number of contacts corn silage producers had with Extension agents. Part-time farmers did not differ from full-time silage producers as to the total number of contacts they had over a 12 month time period with Extension agents.

IV. RELATIONSHIPS BETWEEN CHARACTERISTICS OF CORN SILAGE PRODUCERS' FARM OPERATION AND THE TOTAL NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS

This section presents findings regarding selected characteristics of Tennessee corn silage producers' farm operation and the total number of contacts (included are meetings, office visits, telephone calls, farm visits, circular letters and newsletters) they had with Extension

agents in a 12 month time period. The chi square test was used to determine the relationship between independent and dependent variables. The .05 probability level was used to determine significant relationships. These findings are summarized in Table IV.

Acres of 1985 Corn Silage Crop Owned

Of the 475 producers who owned their corn silage crop, over half (51.3 percent) owned from 40 to 120 acres. Fifty-nine percent of the corn silage producers who owned from 40 to 120 acres had 4 or more contacts with Extension agents compared to 57.3 percent who owned 39 acres or less and 56 percent who owned 121 acres and over. When tested by the chi square test, these differences were not significant. Producers who owned a large acreage (121-over acres) of corn silage were no more likely to receive Extension contacts than producers with fewer acres.

Acres of 1985 Corn Silage Crop Cash Rented

Sixty-eight percent of the corn silage producers who cash rented 121 or more acres of their 1985 crop had 4 or more contacts with Extension agents compared to 55.6 percent of the producers who cash rented 39 or less acres. These differences were not significant as tested by the chi square test. Producers who cash rented a small acreage (39-less

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

Farm Operations	Total Number of Extension Contacts: None no. of Prod.	None % of Prod.	1 to 3 no. of Prod.	1 to 3 % of Prod.	4-over no. of Prod.	4-over % of Prod.	Total no. of Prod.	Total % of Prod.
Acres of 1985 Corn Silage Crop Owned								
39-less	3	2.3	53	40.5	75	57.3	131	27.6
40 to 120	9	3.7	91	37.3	144	59.0	244	51.3
121-over	3	3.0	41	41.0	56	56.0	100	21.1
Chi square Test = 1.018 p = 0.907								
Acres of 1985 Corn Silage Crop Cash Rented								
39-less	4	4.4	36	40.0	50	55.6	90	42.7
40 to 120	4	4.8	32	38.6	47	56.6	83	39.3
121-over	0	0	12	31.6	26	68.4	38	18.0
Chi square Test = 3.112 p = 0.539								
Acres of 1985 Corn Silage Crop Share-Cropped								
39-less	0	0	7	28.0	18	72.0	25	37.3
40 to 120	1	4.5	11	50.0	10	45.5	22	32.8
121-over	1	5.0	11	55.0	8	40.0	20	29.9
Chi square Test = 5.946 p = 0.203								
Acres of Corn Silage Harvested								
29-less	4	2.5	69	43.1	87	54.4	160	31.4
30 to 74	12	5.2	87	37.3	134	57.5	233	45.7
75-over	3	2.6	37	31.6	77	65.8	117	22.9
Chi square Test = 6.304 p = 0.178								

TABLE IV (Continued)

Farm Operations	Total Number of Extension Contacts: None no. of Prod.	None % of Prod.	1 to 3 no. of Prod.	1 to 3 % of Prod.	4-over no. of Prod.	4-over % of Prod.	Total no. of Prod.	Total % of Prod.
Yield of Corn Silage in Tons Per Acre								
15-less	6	5.7	45	42.9	54	51.4	105	20.9
16 to 19	7	3.2	72	32.9	140	63.9	219	43.6
20-over	6	3.4	72	40.4	100	56.2	178	35.5
Chi square Test = 5.927 p = 0.205								
Plans for Use of Corn Silage Crop								
Feed Dairy Cattle	10	2.8	124	35.1	219	62.0	353	70.9
Feed Beef Cattle	4	4.5	38	42.7	47	52.8	89	17.9
Sell at Harvest	1	7.7	5	38.5	7	53.8	13	2.6
Store-Sell Later	2	8.0	10	40.0	13	52.0	25	5.0
Contract	0	0	4	66.7	2	33.7	6	1.2
Other	0	0	7	58.3	5	41.7	12	2.4
Chi square Test = 10.120 p = 0.430								

acres) were as likely to have contacts with Extension agents as producers who cash rented more acres.

Acres of 1985 Corn Silage Crop Share Cropped

Only 67 (13 percent) of the 515 producers surveyed indicated they share cropped some acres of their 1985 corn silage crop. Seventy-two percent of the corn silage producers who share cropped 39 or less acres of their 1985 corn silage crop received 4 or more contacts from Extension agents compared to 40 percent of the producers who share cropped 121 or more acres. When tested by the chi square test, these differences were not significant. Producers who share cropped a large acreage (121-over acres) of corn silage were as likely to have contacts with Extension agents as producers who share cropped fewer acres.

Acres of Corn Silage Harvested

Almost 66 percent of the corn silage producers who harvested 75 or more acres had 4 or more contacts with Extension agents compared to 54.4 percent of the producers harvesting 29 or less acres. These differences were not significant as tested by the chi square test. Large producers (75-over acres) were no more likely than producers with fewer acres to have contacts with Extension agents.

Yield of Corn Silage in Tons Per Acre

Sixty-four percent of corn silage producers with yields of 16 to 19 tons per acre received 4 or more Extension contacts compared to 51.4 percent of producers with yields of 15 or less tons per acre. When tested by the chi square test, these differences were not significant. Producers who had low yields (15-less tons) were as likely as producers with higher yields to have contacts with Extension agents.

Plans For Use of Corn Silage Crop

Sixty-two percent of the corn silage producers who planned to feed their corn silage crop to dairy cattle had 4 or more contacts with Extension agents compared to 33.3 percent of the producers who indicated they would contract the corn silage crop they produced. These differences, however, were not significant as tested by the chi square test. Producers who planned to feed dairy cattle were no more likely to have contacts with Extension agents than producers who had other plans for use of their corn silage crop.

Table Summary

Of the six variables studied regarding corn silage producers' farm operation, none were significantly related to the total number of contacts producers had with Extension agents during the past 12 months. The number of contacts corn silage producers had with Extension did not differ as

to the acres of corn silage crop owned, acres of corn silage crop cash rented, acres of corn silage crop share cropped, acres of corn silage harvested, yield of corn silage in tons per acre, or plans the producers had for use of the corn silage crop.

CHAPTER IV

RELATIONSHIPS BETWEEN TENNESSEE CORN SILAGE PRODUCERS' AGE, THEIR FARMING STATUS, THEIR MAJOR SOURCE OF FARM INCOME, THE NUMBER OF CONTACTS THEY HAD WITH EXTENSION AGENTS AND THEIR USE OF SELECTED PRODUCTION, HARVESTING AND STORAGE PRACTICE

This chapter presents findings regarding relationships between Tennessee corn silage producers' age, their farming status, their major source of farm income, the number of contacts they had with Extension agents and their use of selected production, harvesting and storage practices.

Chapter IV is divided into four sections:

Section I deals with the relationships between age of corn silage producers and their use of selected production, harvesting and storage practices.

Section II presents findings regarding relationships between the farming status of corn silage producers and their use of selected production, harvesting and storage practices.

Section III deals with the relationships between corn silage producers' major source of farm income and their use of selected production, harvesting and storage practices.

Section IV presents findings regarding relationships between the number of contacts corn silage producers had

with Extension agents and their use of selected production, harvesting and storage practices.

I. RELATIONSHIPS BETWEEN AGE OF CORN SILAGE PRODUCERS AND THEIR USE OF SELECTED PRODUCTION, HARVESTING, AND STORAGE PRACTICES

This section presents findings regarding the relationships between ages of corn silage producers and their use of 25 selected corn silage production, harvesting, and storage practices. Section I is organized into three subsections: (1) "Corn Silage Production Practices," (2) "Corn Silage Harvesting Practices," and (3) "Corn Silage Storage Practices." Findings regarding these practices are summarized in Table V. The chi square test was used to determine the relationship between independent and dependent variables. The .05 probability level was used to determine significant relationships.

Corn Silage Production Practices

This subsection deals with findings regarding relationships between corn silage producers' age and their use of 20 selected corn silage production practices.

Corn silage double cropped. Forty-seven percent of the corn silage producers age 40 or less double cropped corn silage in 1985 compared to 39.1 percent who were 41 to 55 years old and 43.6 percent who were 56 or older. These

TABLE V. Relationships Between Age of Corn Silage Producers and Their Use of Selected Production, Harvesting, and Storage Practices

Selected Practices	Age of Corn Silage Producer: 40-less no. of Prod.	40-less % of Prod.	41 to 55 no. of Prod.	41 to 55 % of Prod.	56-over no. of Prod.	56-over % of Prod.
CORN SILAGE PRODUCTION PRACTICES						
Corn Silage Double Cropped						
No	99	52.9	131	60.9	62	56.4
Yes	88	47.1	84	39.1	48	43.6
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 2.630			p = 0.268			
Corn Silage Grown No-Till						
No	103	55.1	136	63.3	73	66.4
Yes	84	44.9	79	36.7	37	33.6
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 4.541			p = 0.103			
Corn Silage Scouted for Insects						
No	33	17.6	38	17.7	29	26.4
Yes	154	82.4	177	82.3	81	73.6
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 4.161			p = 0.125			
Recommended Early Season Variety Planted						
No	70	61.4	86	71.1	51	78.5
Yes	44	38.6	35	28.9	14	21.5
TOTAL	114	100.0	121	100.0	65	100.0
Chi square Test = 6.039			p = 0.048			
Recommended Mid Season Variety Planted						
No	48	34.0	62	37.8	35	45.5
Yes	93	66.0	102	62.2	42	54.5
TOTAL	141	100.0	164	100.0	77	100.0
Chi square Test = 2.757			p = 0.252			
Recommended Full Season Variety Planted						
No	17	9.9	21	10.8	19	19.6
Yes	154	90.1	173	89.2	78	80.4
TOTAL	171	100.0	194	100.0	97	100.0
Chi square Test = 6.032			p = 0.049			
Corn Silage Acreage Planted in March						
No	175	93.6	197	91.6	99	90.0
Yes	12	6.4	18	8.4	11	10.0
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 1.274			p = 0.529			
Corn Silage Acreage Planted in April						
No	54	28.9	62	28.8	36	32.7
Yes	133	71.1	153	71.2	74	67.3
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 0.620			p = 0.733			
Corn Silage Acreage Planted in May						
No	48	25.7	68	31.6	42	38.2
Yes	139	74.3	147	68.4	68	61.8
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 5.185			p = 0.075			
Corn Silage Acreage Planted in June						
No	163	87.2	187	87.0	99	90.0
Yes	24	12.8	28	13.0	11	10.0
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 0.693			p = 0.707			

TABLE V (Continued)

Selected Practices	Age of Corn Silage Producer: 40-less no. of Prod.	40-less % of Prod.	41 to 55 no. of Prod.	41 to 55 % of Prod.	56-over no. of Prod.	56-over % of Prod.
Distance Between Corn Rows						
36-less inches	128	68.8	128	60.7	43	39.4
37 to 38 inches	52	28.0	69	32.7	57	52.3
39-over inches	6	3.2	14	6.6	9	8.3
TOTAL	186	100.0	211	100.0	109	100.0
Chi square Test = 25.935			p = 0.000			
Distance Between Corn Plants in Row						
6-less inches	37	20.1	58	27.9	28	27.2
7 to 9 inches	118	64.1	117	56.3	64	62.1
10-over inches	29	15.8	33	15.9	11	10.7
TOTAL	184	100.0	208	100.0	103	100.0
Chi square Test = 5.190			p = 0.268			
Desired Corn Plant Population Per Acre						
20,000-less plants	99	52.9	125	58.1	74	67.3
20,001-over plants	88	47.1	90	41.9	36	32.7
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 5.848			p = 0.054			
Corn Silage Acreage Fertilized by Soil Test						
No	21	11.2	22	10.2	14	12.7
Yes	124	66.3	132	61.4	62	56.4
Soil Not Tested	42	22.5	61	28.4	34	30.9
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 3.751			p = 0.441			
Corn Silage Acreage Limed By Soil Test						
No	34	18.2	37	17.2	26	23.6
Yes	110	58.8	119	55.3	50	45.5
Soil Not Tested	43	23.0	59	27.4	34	30.9
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 5.740			p = 0.219			
U.T. Soil Test Lab Used						
No	25	13.4	20	9.3	14	12.7
Yes	109	58.3	121	56.3	56	50.9
Soil Not Tested	53	28.3	74	34.4	40	36.4
TOTAL	187	100.0	215	100.0	110	100.0
Chi square Test = 4.033			p = 0.402			
Pounds Nitrogen Applied Per Acre						
100-less pounds	38	20.5	45	21.0	24	21.8
101 to 149 pounds	89	48.1	94	43.9	54	49.1
150-over pounds	58	31.4	75	35.0	32	29.1
TOTAL	185	100.0	214	100.0	110	100.0
Chi square Test = 1.516			p = 0.824			
Pounds Phosphate Applied Per Acre						
60-less pounds	62	36.3	72	35.0	44	44.0
61 to 79 pounds	13	7.6	22	10.7	7	7.0
80-over pounds	96	56.1	112	54.4	49	49.0
TOTAL	171	100.0	206	100.0	100	100.0
Chi square Test = 3.644			p = 0.456			
Pounds Potash Applied Per Acre						
60-less pounds	49	26.8	55	25.8	41	38.3
61 to 90 pounds	60	32.8	74	34.7	25	23.4
91-over pounds	74	40.4	84	39.4	41	38.3
TOTAL	183	100.0	213	100.0	107	100.0
Chi square Test = 7.398			p = 0.116			

TABLE V (Continued)

Selected Practices	Age of Corn Silage Producer: 40-less no. of Prod.	40-less % of Prod.	41 to 55 no. of Prod.	41 to 55 % of Prod.	56-over no. of Prod.	56-over % of Prod.
Tons Lime Applied Per Acre						
None Limed	102	54.9	125	58.4	62	56.4
1 or 2 tons	67	36.0	77	35.9	38	34.5
3-over tons	17	9.1	12	5.7	10	9.1
TOTAL	186	100.0	215	100.0	110	100.0
Chi square Test = 3.662			p = 0.722			
CORN SILAGE HARVESTING PRACTICES						
Acres Corn Silage Harvested in Milk Stage						
None	143	91.7	169	93.9	87	96.7
20-less acres	8	5.1	9	5.0	3	3.3
21-over acres	5	3.2	2	1.1	0	0
TOTAL	156	100.0	180	100.0	90	100.0
Chi square Test = 4.713			p = 0.319			
Acres Corn Silage Harvested in Dough Stage						
None	77	46.1	101	51.5	51	52.0
49-less acres	61	36.5	69	35.2	33	33.7
50-over acres	29	17.4	26	13.3	14	14.3
TOTAL	167	100.0	196	100.0	98	100.0
Chi square Test = 1.870			p = 0.760			
Acres Corn Silage Harvested in Dent Stage						
None	36	20.5	41	20.6	20	19.2
29-less acres	51	29.0	55	27.6	32	30.8
30 to 79 acres	68	38.6	74	37.2	39	37.5
80-over acres	21	11.9	29	14.6	13	12.5
TOTAL	176	100.0	199	100.0	104	100.0
Chi square Test = 0.898			p = 0.989			
CORN SILAGE STORAGE PRACTICES						
Corn Silage Stored in Upright Silo						
No	42	23.1	46	22.9	30	29.1
Yes	140	76.9	155	77.1	73	70.9
TOTAL	182	100.0	201	100.0	103	100.0
Chi square Test = 1.672			p = 0.434			
Corn Silage Stored in Horizontal Silo						
No	91	53.2	112	56.0	56	55.4
Yes	80	46.8	88	44.0	45	44.6
TOTAL	171	100.0	200	100.0	101	100.0
Chi square Test = 0.305			p = 0.858			

differences were not significant when tested by the chi square test ($p<.05$). Older producers (41-over) were as likely as younger producers (40-less) to double crop corn silage.

Corn silage grown no-till. Almost 45 percent of the corn silage producers 40 or less years of age grew corn no-till compared to 33.6 percent of the producers 56 and older. These differences in age of producers growing corn silage no-till were not significant when tested by the chi square test. Older producers (56-over) were just as likely as younger producers (55-less) to grow corn silage no-till.

Corn silage scouted for insects. Over 82 percent of the corn silage producers 40 or less years of age scouted their corn silage crop for insects compared to 73.6 percent of the producers 56 and older. These differences were not significant. Younger producers (40-less) were no more likely to scout their corn silage crop for insects than older producers (41-over).

Recommended early season variety planted. Almost 39 percent of the corn silage producers 40 or less years of age planted a recommended early season variety compared to 21.5 percent of the producers 56 and older. When tested by the chi square test, these differences were found to be significant at the .05 level. Younger producers (40-less)

were more likely than older producers (41-over) to plant a recommended early season variety of corn for silage.

Recommended mid season variety planted. Sixty-six percent of the corn silage producers age 40 or less planted a recommended mid season variety compared to 54.5 percent of the producers who were 56 and older. These differences were not significant. Older producers (56-over) were as likely as younger producers (55-less) to plant a recommended mid season variety of corn for silage.

Recommended full season variety planted. Just over 90 percent of the corn silage producers age 40 or less planted a recommended full season variety compared to 80.4 percent of the producers who were 56 and older. These differences were significant when tested by the chi square test ($p<.05$). Younger producers (40-less) were more likely than older producers (56-over) to plant a recommended full season variety.

Corn silage acreage planted in March. Only 41 producers (8 percent) of the 515 surveyed planted some corn for silage in March. Ten percent of the corn silage producers 56 and older planted some corn for silage in March compared to 8.4 percent of the producers aged 41 to 55 and 6.4 percent of the producers 40 or less years of age. These differences were not significant. Younger producers (40-

less) were as likely as older producers (41-over) to plant some corn for silage in March.

Corn silage acreage planted in April. Seventy-one percent of the corn silage producers age 40 or less planted some corn in April compared to 67.3 percent of the producers who were 56 and older. The chi square test determined that these differences were not significant at the .05 level. Younger producers (40-less) were no more likely than older producers (41-over) to have planted some corn for silage in April.

Corn silage acreage planted in May. Seventy-four percent of the corn silage producers age 40 or less planted some corn silage acreage in May, while 61.8 percent of the producers age 56 and older planted some corn silage acreage in May. These differences were not significant. Older producers (56-over) were as likely as younger producers (55-less) to plant some corn silage acreage in May.

Corn silage acreage planted in June. Only 63 producers (12.2 percent) of the 515 surveyed planted some corn for silage in June. Thirteen percent of the corn silage producers age 40 or less and the same percent of producers 41 to 55 years old planted some corn silage acreage in June compared to 10 percent of the producers age 56 and older. When tested by the chi square test, these differences were

not significant at the .05 level. Younger producers (40-less) were no more likely than older producers (41-over) to have planted some corn for silage in June.

Distance between corn rows. Sixty-nine percent of the corn silage producers age 40 or less planted corn for silage in rows which were 36 or less inches apart compared to 39.4 percent of those 56 years of age or older. These differences were significant. Younger producers (40-less) tended to plant corn for silage at closer row spacings than older producers (those 41-over).

Distance between corn plants in row. Only 73 producers (14.1 percent) of the 515 surveyed had plant spacings within the row of 10 or more inches. Over 84 percent of the corn silage producers age 40 or less had plant spacings within the row of 9 inches or less compared to 89.3 percent of the producers age 56 or older. These differences were not significant at the .05 level when tested by the chi square test. Younger producers (40-less) were no more likely than older producers (41-over) to use narrow plant spacing in the row.

Desired corn plant population per acre. Forty-seven percent of the corn silage producers age 40 or less desired a plant population per acre of 20,001 and over compared to 32.7 percent of the producers age 56 or older. These

differences were significant. Younger producers (40-less) were more likely than older producers (41-over) to desire a high corn plant population.

Corn silage acreage fertilized by soil test. Almost 27 percent of the total producers (515) surveyed did not test their soil. Sixty-six percent of the corn silage producers age 40 or less fertilized their corn silage acreage by soil test compared to 56.4 percent of the producers who were 56 or older. These differences were not significant. Older producers (41-over) were as likely as younger producers (40-less) to fertilize their corn silage acreage by soil test.

Corn silage acreage limed by soil test. Almost 59 percent of the corn silage producers age 40 or less limed their corn silage acreage by soil test compared to 45.5 percent of the producers who were 56 or older. These differences were not significant. Older producers (41-over) were as likely as younger producers (40-less) to lime their corn silage acreage by soil test.

U.T. soil test lab used. Over 58 percent of the corn silage producers age 40 or less used the U.T. soil test lab compared to almost 51 percent of the producers 56 and older. These differences were not significant when tested by the chi square test ($p<.05$). Younger producers (40-less) were

no more likely than older producers (41-over) to use the U.T. soil test lab.

Pounds of nitrogen applied per acre. Thirty-five percent of the corn silage producers age 41 to 55 applied 150 or more pounds of nitrogen per acre of corn silage grown compared to 29.1 percent of the producers 56 or older and 31.4 percent of those 40 and less years old. These differences were not significant. Younger producers (40-less) were no more likely than older producers (41-over) to apply a high or a low rate of nitrogen to their corn silage.

Pounds of phosphate applied per acre. Fifty-six percent of the corn silage producers age 40 or less applied 80 or more pounds of phosphate per acre compared to 49 percent of the producers age 56 or older. These differences were not significant. Younger producers (40-less) were no more likely than older producers (41-over) to apply high rates of phosphate fertilizer to their corn silage.

Pounds of potash applied per acre. Forty percent of the corn silage producers age 40 or less averaged applying 91 or more pounds of potash per acre compared to 38.3 percent of the producers age 56 or older. These differences were not significant at the .05 level when tested by the chi square test. Younger producers (40-less) were no more

likely to apply high rates of potash per acre of corn silage than older producers (41-over).

Tons of lime applied per acre. Fifty-six percent (289 producers) of the corn silage producers did not apply lime to their corn silage acreage in 1985. Just over 45 percent of the producers age 40 or less averaged applying one or more tons of lime per acre compared to 43.6 percent of the producers age 56 and older. These differences were not significant. Younger and older producers did not differ as to the amount of lime applied to their corn silage acreage.

Corn Silage Harvesting Practices

This subsection deals with the relationships between corn silage producer's age and their use of 3 harvesting practices.

Acres corn silage harvested in milk stage. Three hundred ninety-nine producers (77.4 percent) did not harvest any corn silage in the milk stage. About 8 percent of those producers age 40 or less harvested corn silage in the milk stage compared to 3.3 percent of the producers age 56 and older. These differences were not significant. Younger producers (40-less) were no more likely than older producers (41-over) to harvest corn silage in the milk stage.

Acres corn silage harvested in dough stage. Forty-four percent (229 producers) of the corn silage producers

surveyed indicated they did not harvest any corn silage in the dough stage. Almost 54 percent of those producers age 40 or less harvested corn silage in the dough stage compared to 48 percent of the producers 56 years of age and older. When tested by the chi square test, these differences were not significant at the .05 level. Older producers (41-over) were as likely as younger producers (40-less) to harvest corn silage in the dough stage.

Acres corn silage harvested in dent stage. Almost 80 percent of those producers age 40 or less harvested corn silage in the dent stage compared to just over 80 percent of the producers 56 and older. These differences were not significant. Younger producers (40-less) were no more likely than older producers (41-over) to harvest corn silage in the dent stage.

Corn Silage Storage Practices

This subsection deals with the relationships between corn silage producer's age and 2 storage practices.

Corn silage stored in upright silo. Almost 77 percent of the corn silage producers age 40 or less stored corn silage in an upright silo compared to 70.9 percent of the producers 56 and older. These differences were not significant at the .05 level when tested by the chi square test. Younger producers (40-less) were no more likely than

older producers (41-over) to store their corn silage crop in an upright silo.

Corn silage stored in horizontal silo. Almost 47 percent of the corn silage producers age 40 or less stored corn silage in a horizontal silo compared to 44.6 percent of the producers 56 and older. These differences were not significant. Older producers (41-over) were as likely as younger producers (40-less) to store corn silage in a horizontal silo.

Table Summary

Use of four of the 20 production practices studied was significantly related to corn silage producers' age. Younger producers (40-less) were more likely than older producers (41-over) to be using these 4 practices. These practices include planting a recommended early season variety, planting a recommended full season variety, distance between corn rows in inches, and desired plant population per acre. Practices not significantly related to producers' age include corn silage double cropped, corn silage grown no-till, scouting for insects, planting a recommended mid season variety, planting in the months of March, April, May, and June, distance between plants in the row, fertilizing and liming according to soil test recommendations, use of the U.T. soil test lab, average

application in pounds per acre of nitrogen, phosphate, and potash, and average tons of lime applied per acre.

Use of three harvesting and two storage practices were studied. None of these were significantly related to producers' age. Harvesting practices include stage of harvest (milk,dough, or dent) and storage practices include storage in an upright and a horizontal silo.

II. RELATIONSHIPS BETWEEN THE FARMING STATUS OF CORN SILAGE PRODUCERS AND THEIR USE OF SELECTED PRODUCTION, HARVESTING, AND STORAGE PRACTICES

This section presents findings regarding the relationships between the farming status of corn silage producers and their use of 25 selected corn silage production, harvesting , and storage practices. Section II is organized into three subsections: (1) "Corn Silage Production Practices," (2) "Corn Silage Harvesting Practices," and (3) "Corn Silage Storage Practices." The chi square test was used to determine the relationship between independent and dependent variables. The .05 probability level was used to determine significant relationships. Findings regarding these practices are summarized in Table VI.

TABLE VI. Relationships Between the Farming Status of Corn Silage Producers and Their Use of Selected Production, Harvesting and Storage Practices

Selected Practices	Farming Status of Corn Silage Producer: Full-Time no. of Producers	Full-Time % of Producers	Part-Time no. of Producers	Part-Time % of Producers
CORN SILAGE PRODUCTION PRACTICES				
Corn Silage Double Cropped				
No	263	55.1	28	80.0
Yes	214	44.9	7	20.0
TOTAL	477	100.0	35	100.0
Chi square Test = 7.235	p = 0.007			
Corn Silage Grown No-Till				
No	286	60.0	25	71.4
Yes	191	40.0	10	28.6
TOTAL	477	100.0	35	100.0
Chi square Test = 1.350	p = 0.245			
Corn Silage Scouted for Insects				
No	89	18.7	10	28.6
Yes	388	81.3	25	71.4
TOTAL	477	100.0	35	100.0
Chi square Test = 1.468	p = 0.226			
Recommended Early Season Variety Planted				
No	200	69.7	8	57.1
Yes	87	30.3	6	42.9
TOTAL	287	100.0	14	100.0
Chi square Test = 0.484	p = 0.487			
Recommended Mid Season Variety Planted				
No	135	37.6	10	41.7
Yes	224	62.4	14	58.3
TOTAL	359	100.0	24	100.0
Chi square Test = 0.032	p = 0.857			
Recommended Full Season Variety Planted				
No	53	12.1	5	20.0
Yes	384	87.9	20	80.0
TOTAL	437	100.0	25	100.0
Chi square Test = 0.714	p = 0.398			
Corn Silage Acreage Planted in March				
No	436	91.4	35	100.0
Yes	41	8.6	0	0
TOTAL	477	100.0	35	100.0
Chi square Test = 2.208	p = 0.137			
Corn Silage Acreage Planted in April				
No	132	27.7	19	54.3
Yes	345	72.3	16	45.7
TOTAL	477	100.0	35	100.0
Chi square Test = 9.863	p = 0.002			
Corn Silage Acreage Planted in May				
No	144	30.2	14	40.0
Yes	333	69.8	21	60.0
TOTAL	477	100.0	35	100.0
Chi square Test = 1.047	p = 0.306			
Corn Silage Planted in June				
No	417	87.4	32	91.4
Yes	60	12.6	3	8.6
TOTAL	477	100.0	35	100.0
Chi square Test = 0.185	p = 0.667			

TABLE VI. (Continued)

Selected Practices	Farming Status of Corn Silage Producer: Full-Time no. of Producers	Full-Time % of Producers	Part-Time no. of Producers	Part-Time % of Producers
Distance Between Crop Rows				
36 inches-less	275	58.4	23	65.7
37 to 38 inches	167	35.4	11	31.4
39 inches-over	29	6.2	1	2.9
TOTAL	471	100.0	35	100.0
Chi square Test = 1.046		p = 0.593		
Distance Between Corn Plants in Row				
6 inches-less	111	24.0	12	36.4
7 to 9 inches	284	61.5	15	45.5
10 inches-over	67	14.5	6	18.2
TOTAL	462	100.0	33	100.0
Chi square Test = 3.478		p = 0.176		
Desired Crop Plant Population Per Acre				
20,000-less plants	278	58.3	20	57.1
20,001-over plants	199	41.7	15	42.9
TOTAL	477	100.0	35	100.0
Chi square Test = 0.000		p = 1.000		
Corn Silage Acreage Fertilized by Soil Test				
No	51	10.7	5	14.3
Yes	305	63.9	14	40.0
Not Tested	121	25.4	16	45.7
TOTAL	477	100.0	35	100.0
Chi square Test = 8.430		p = 0.015		
Corn Silage Acreage Limed by Soil Test				
No	89	18.7	7	20.0
Yes	267	56.0	12	34.3
Soil Not Tested	121	25.3	16	45.7
TOTAL	477	100.0	35	100.0
Chi square Test = 7.891		p = 0.019		
U.T. Soil Test Lab Used				
No	57	11.9	2	5.7
Yes	274	57.4	13	37.1
Soil Not Tested	146	30.6	20	57.1
TOTAL	477	100.0	35	100.0
Chi square Test = 10.579		p = 0.005		
Average Pounds of Nitrogen Applied Per Acre				
100-less pounds	102	21.5	6	17.1
101 to 149 pounds	221	46.6	16	45.7
150-over pounds	151	31.9	13	37.1
TOTAL	474	100.0	35	100.0
Chi square Test = 0.583		p = 0.747		
Average Pounds of Phosphate Applied Per Acre				
60-less pounds	170	38.4	9	26.5
61 to 79 pounds	36	8.1	5	14.7
80-over pounds	237	53.5	20	58.8
TOTAL	443	100.0	34	100.0
Chi square Test = 2.949		p = 0.229		
Average Pounds of Potash Applied Per Acre				
60-less pounds	137	29.2	9	26.5
61 to 90 pounds	143	30.5	15	44.1
91-over pounds	189	40.3	10	29.4
TOTAL	469	100.0	34	100.0
Chi square Test = 2.906		p = 0.234		

TABLE VI. (Continued)

Selected Practices	Farming Status of Corn Silage Producer: Full-Time no. of Producers	Full-Time % of Producers	Part-Time no. of Producers	Part-Time % of Producers
Tons of Lime Applied Per Acre				
None Limed	268	56.3	21	60.0
1 or 2 tons	172	36.2	10	28.6
3-over tons	35	7.5	4	11.4
TOTAL	476	100.0	35	100.0
Chi square Test = 1.386	p = 0.709			
CORN SILAGE HARVESTING PRACTICES				
Acres of Corn Silage Harvested in Milk Stage				
Not Any	373	93.5	26	96.3
20-less acres	20	5.0	0	0
21-over acres	6	1.5	1	3.7
TOTAL	399	100.0	27	100.0
Chi square Test = 2.120	p = 0.347			
Acres of Corn Silage Harvested in Dough Stage				
Not Any	213	49.3	15	51.7
49-less acres	155	35.9	9	31.0
50-over acres	64	14.8	5	17.3
TOTAL	432	100.0	29	100.0
Chi square Test = 0.318	p = 0.853			
Acres of Corn Silage Harvested in Dent Stage				
Not Any	86	19.2	11	34.4
29-less acres	125	28.0	13	40.6
30 to 79 acres	177	39.6	4	12.5
80-over acres	59	13.2	4	12.5
TOTAL	447	100.0	32	100.0
Chi square Test = 10.854	p = 0.013			
CORN SILAGE STORAGE PRACTICES				
Corn Silage Stored in Upright Silo				
No	109	24.0	9	28.1
Yes	345	76.0	23	71.9
TOTAL	454	100.0	32	100.0
Chi square Test = 0.097	p = 0.755			
Corn Silage Stored in Horizontal Silo				
No	243	55.0	16	53.3
Yes	199	45.0	14	46.7
TOTAL	442	100.0	30	100.0
Chi square Test = 0.000	p = 1.000			

Corn Silage Production Practices

This subsection presents findings regarding relationships between corn silage producers' farming status and their use of 20 selected corn silage production practices.

Corn silage double cropped. Forty-five percent of the corn silage producers who farmed full-time double cropped corn silage in 1985 compared to 20 percent of the producers who farmed part-time. When tested by the chi square test, these differences were significant at the .05 level. Full-time farmers were more likely than part-time farmers to have double cropped corn silage in 1985.

Corn silage grown no-till. Forty percent of the corn silage producers who farmed full-time grew corn no-till compared to 28.6 percent of the producers farming part-time. These differences were not significant when tested by the chi square test ($p<.05$). Part-time farmers were as likely as full-time farmers to grow corn silage no-till.

Corn silage scouted for insects. Over 81 percent of the corn silage producers who farmed full-time scouted their corn silage crop for insects compared to 71.4 percent of the producers who farmed part-time. These differences were not significant at the .05 level. Full-time farmers were no

more likely than part-time farmers to scout their corn silage crop for insects.

Recommended early season variety planted. Almost 43 percent of the corn silage producers who farmed part-time planted a recommended early season variety compared to 30.3 percent of the producers who farmed full-time. When tested by the chi square test, these differences were not significant. Full-time farmers were as likely as part-time farmers to plant a recommended early season variety of corn for silage.

Recommended mid season variety planted. Sixty-two percent of the corn silage producers who farmed full-time planted a recommended mid season variety compared to 58.3 percent of the producers who farmed part-time. These differences were not significant. Part-time producers were as likely as full-time producers to plant a recommended mid season variety of corn for silage.

Recommended full season variety planted. Eighty-eight percent of the corn silage producers who farmed full-time planted a recommended full season variety of corn for silage compared to 80 percent of the producers who farmed part-time. These differences were not significant. Part-time farmers were as likely as full-time farmers to plant a recommended full season variety.

Corn silage acreage planted in March. Only 8 percent (41 producers) of the 515 producers surveyed planted some corn for silage in March. These 41 producers were all full-time farmers. Only 9 percent of the producers who farmed full-time planted some corn silage acreage in March compared to no producers who farmed part-time. However, these differences were not significant as tested by the chi square test ($p<.05$). Full-time producers were no more likely than part-time producers to plant some corn for silage in March.

Corn silage acreage planted in April. Seventy-two percent of the corn silage producers who farmed full-time planted some corn for silage in April compared to 45.7 percent of the producers who farmed part-time. The chi square test determined that these differences were significant at the .05 level. Full-time producers were more likely than part-time producers to have planted some corn for silage in April in 1985.

Corn silage acreage planted in May. Seventy percent of the corn silage producers who farmed full-time planted some corn silage acreage in May, while 60 percent of the producers who farmed part-time planted some corn silage acreage in May. These differences were not significant. Part-time farmers were as likely as full-time farmers to plant corn silage acreage in May.

Corn silage acreage planted in June. Only 12 percent (63 producers) of the total producers surveyed planted some corn for silage in June. Almost 13 percent of the corn silage producers who farmed full-time planted corn silage in June compared to 8.6 percent of the producers who farmed part-time. When tested by the chi square test, these differences were not significant at the .05 level. Full-time producers were no more likely than part-time producers to have planted some corn for silage in June.

Distance between corn rows. Almost 66 percent of the corn silage producers who farmed part-time used row spacings of 36 inches or less compared to 58.4 percent of the producers who farmed full-time. These differences were not significant. Full-time farmers were as likely as part-time farmers to use narrow row spacings.

Distance between corn plants in row. Sixty-one percent of the corn silage producers who farmed full-time had plant spacings within the row of 7 to 9 inches compared to 45.5 percent of the producers who farmed part-time. These differences were not significant as tested by the chi square test. Full-time farmers were no more likely than part-time farmers to use narrow plant spacings within the row.

Desired corn plant population per acre. Fifty-eight percent of the corn silage producers who farmed full-time

desired a plant population per acre of 20,000 or less compared to 57.1 percent of the producers who farmed part-time. These differences were not significant. Full-time producers were no more likely than part-time producers to desire a corn plant population of 20,000 or less plants per acre.

Corn silage acreage fertilized by soil test. One hundred thirty-seven producers (26.8 percent) of those surveyed (515 producers) did not soil test their corn silage acreage in 1985. Sixty-four percent of the corn silage producers who farmed full-time fertilized their corn silage by soil test compared to 40 percent of the producers who farmed part-time. When tested by the chi square test, these differences were significant at the .05 level. Full-time farmers were more likely to fertilize by soil test than part-time farmers.

Corn silage acreage limed by soil test. Almost 27 percent (137 producers) of the total surveyed (515 producers) did not test their soil in 1985. Fifty-six percent of the full-time producers limed their corn silage acreage by soil test compared to 34.3 percent of the producers who farmed part-time. These differences were significant. Full-time farmers were more likely than part-time farmers to lime their corn silage acreage by soil test.

U.T. soil test lab used. Over 57 percent of the corn silage producers who farmed full-time used the U.T. soil test lab compared to 37.1 percent of the producers who farmed part-time. The chi square test indicated a significant relationship. Full-time farmers were more likely to use the U.T. soil test lab than part-time farmers.

Pounds of nitrogen applied per acre. Almost 47 percent of the corn silage producers who farmed full-time averaged applying 101 to 149 pounds of nitrogen per acre compared to 45.7 percent of the producers farming part-time. These differences were not significant. Full-time producers were no more likely than part-time farmers to apply high or low rates of nitrogen fertilizer per acre of corn silage grown.

Pounds of phosphate applied per acre. Almost 59 percent of the corn silage producers who farmed part-time averaged applying 80 or more pounds of phosphate per acre compared to 53.5 percent of the producers who farmed full-time. These differences were not significant. Part-time producers were as likely as full-time producers to apply high or low rates of phosphate fertilizer to their corn silage.

Pounds of potash applied per acre. Forty percent of the corn silage producers who farmed full-time averaged applying 91 or more pounds of potash per acre compared to

29.4 percent of the producers who farmed part-time. These differences were not significant at the .05 level when tested by the chi square test. Full-time farmers were no more likely than part-time farmers to apply high or low rates of potash per acre of corn silage grown.

Tons of lime applied per acre. Two hundred sixty-eight (56 percent) of the 515 corn silage producers surveyed did not apply any lime to their corn silage acreage in 1985. Almost 44 percent of the full-time producers averaged applying one or more tons of lime per acre compared to 40 percent of the producers who farmed part-time. These differences were not significant. Full-time producers were no more likely than part-time producers to apply lime to their corn silage acreage.

Corn Silage Harvesting Practices

This subsection presents findings regarding the relationships between corn silage producers' farming status and their use of 3 harvesting practices.

Acres corn silage harvested in milk stage. Only 27 of the total producers surveyed harvested some corn silage in the milk stage. Almost 7 percent of the silage producers who farmed full-time harvested 20 or more acres of corn silage in the milk stage compared to 3.7 percent of the part-time producers. These differences were not significant

at the .05 level of probability. Full-time farmers were no more likely than part-time farmers to harvest corn silage in the milk stage.

Acres corn silage harvested in dough stage. Almost 50 percent of those producers who farmed full-time harvested corn silage in the dough stage compared to 48.3 percent of the producers who farmed part-time. When tested by the chi square test, these differences were not significant at the .05 level. Part-time producers were as likely as full-time producers to harvest corn silage in the dough stage.

Acres corn silage harvested in dent stage. Almost 81 percent of the corn silage producers who farmed full-time harvested corn silage in the dent stage compared to 65.6 percent of the producers who farmed part-time. When measured by the chi square test, these differences were significant. Full-time farmers were more likely than part-time farmers to harvest corn silage in the dent stage.

Corn Silage Storage Practices

This subsection deals with the relationships between corn silage producer's farming status and their use of 2 storage practices.

Corn silage stored in upright silo. Seventy-six percent of the corn silage producers who farmed full-time stored corn silage in an upright silo compared to 71.9

percent of the producers who farmed part-time. These differences were not significant at the .05 level when tested by the chi square test. Full-time farmers were no more likely than part-time farmers to store their corn silage crop in an upright silo.

Corn silage stored in horizontal silo. Almost 47 percent of the corn silage producers who farmed part-time stored corn silage in a horizontal silo compared to 45 percent of the producers who farmed full-time. These differences were not significant. Part-time producers were as likely as full-time producers to store corn silage in a horizontal silo.

Table Summary

Five of the 20 production practices studied were significantly related to corn silage producers' farming status. Full-time farmers were more likely than part-time farmers to be using these practices. These 5 practices include corn silage double cropped, corn silage acreage planted in April, corn silage acreage fertilized by soil test, corn acreage limed by soil test, and U.T. soil test lab used. Practices not significantly related to producers' farming status include corn silage grown no-till, scouting for insects, recommended early, mid, and full season varieties planted, planting in the months of March, May, and June, distance between corn rows and plants in the row,

desired plant population per acre, average application in pounds per acre of nitrogen, phosphate, and potash fertilizers, and average tons of lime applied per acre. Three harvesting and two storage practices were studied. Only one harvesting practice, corn silage harvested in dent stage, was significantly related to producers' farming status. Full-time producers were more likely to harvest in the dent stage than were part-time farmers. Harvesting and storage practices not significantly related to producers' farming status include harvesting in the milk or dough stages and storing corn silage in an upright or a horizontal silo.

III. RELATIONSHIPS BETWEEN CORN SILAGE PRODUCERS' MAJOR SOURCE OF FARM INCOME AND THEIR USE OF SELECTED PRODUCTION, HARVESTING AND STORAGE PRACTICES

This section presents findings regarding relationships between producers' major source of farm income and their use of 25 selected production, harvesting and storage practices. Section III is organized into three subsections: (1) "Corn Silage Production Practices," (2) "Corn Silage Harvesting Practices," and (3) "Corn Silage Storage Practices." Findings regarding these relationships are summarized in Table VII. The chi square test was used to determine the relationship between independent and dependent variables.

TABLE VII. Relationships Between Corn Silage Producers' Major Source of Farm Income and Their Use of Selected Production, Harvesting and Storage Practices

Selected Practices	Corn Silage Producers' Major Source of Farm Income: Crop Sales no. of Prod.	Crop Sales % of Prod.	Dairy no. of Prod.	Dairy % of Prod.	Other no. of Prod.	Other % of Prod.
CORN SILAGE PRODUCTION PRACTICES						
Corn Silage Double Cropped						
No	43	84.3	183	48.8	64	77.1
Yes	8	15.7	192	51.2	19	22.9
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 39.498 p = 0.000						
Corn Silage Grown No-Till						
No	31	60.8	219	58.4	58	69.9
Yes	20	39.2	156	41.6	25	30.1
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 3.750 p = 0.153						
Corn Silage Scouted for Insects						
No	16	31.4	67	17.9	17	20.5
Yes	35	68.6	308	82.1	66	79.5
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 5.231 p = 0.073						
Recommended Early Season Variety Planted						
No	14	48.3	160	71.7	30	66.7
Yes	15	51.7	63	28.3	15	33.3
TOTAL	29	100.0	223	100.0	45	100.0
Chi square Test = 6.675 p = 0.036						
Recommended Mid Season Variety Planted						
No	9	20.5	109	39.9	26	41.9
Yes	35	79.5	164	60.1	36	58.1
TOTAL	44	100.0	273	100.0	62	100.0
Chi square Test = 6.587 p = 0.037						
Recommended Full Season Variety Planted						
No	6	14.6	44	12.5	7	10.4
Yes	35	85.4	307	87.5	60	89.6
TOTAL	41	100.0	351	100.0	67	100.0
Chi square Test = 0.429 p = 0.807						
Corn Silage Acreage Planted in March						
No	46	90.2	347	92.5	76	91.6
Yes	5	9.8	28	7.5	7	8.4
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 0.384 p = 0.825						
Corn Silage Acreage Planted in April						
No	12	23.5	104	27.7	36	43.4
Yes	39	76.5	271	72.3	47	56.6
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 9.022 p = 0.011						
Corn Silage Acreage Planted in May						
No	19	37.3	104	27.7	34	41.0
Yes	32	62.7	271	72.3	49	59.0
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 6.669 p = 0.036						
Corn Silage Acreage Planted in June						
No	45	88.2	325	86.7	76	91.6
Yes	6	11.8	50	13.3	7	8.4
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 1.524 p = 0.467						

TABLE VII (Continued)

Selected Practices	Corn Silage Producers' Major Source of Farm Income: Crop Sales no. of Prod.	Crop Sales % of Prod.	Dairy no. of Prod.	Dairy % of Prod.	Other no. of Prod.	Other % of Prod.
Distance Between Corn Rows						
36-less inches	23	46.0	229	61.7	43	52.4
37 to 38 inches	25	50.0	120	32.4	33	40.2
39-over inches	2	4.0	22	5.9	6	7.3
TOTAL	50	100.0	371	100.0	82	100.0
Chi square Test = 7.612 p = 0.107						
Distance Between Corn Plants in Row						
6-less inches	13	26.0	89	24.5	18	22.8
7 to 9 inches	31	62.0	221	60.9	47	59.5
10-over inches	6	12.0	53	14.6	14	17.7
TOTAL	50	100.0	363	100.0	79	100.0
Chi square Test = 0.901 p = 0.924						
Desired Corn Plant Population Per Acre						
20,000-less plants	30	58.8	219	58.4	49	59.0
20,001-over plants	21	41.2	156	41.6	34	41.0
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 0.013 p = 0.994						
Corn Silage Acreage Fertilized by Soil Test						
No	6	11.8	39	10.4	12	14.5
Yes	29	56.8	250	66.7	37	44.5
Soil Not Tested	16	31.4	86	22.9	34	41.0
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 15.333 p = 0.004						
Corn Silage Acreage Limed By Soil Test						
No	9	17.6	69	18.4	19	22.9
Yes	27	52.9	219	58.4	30	36.1
Soil Not Tested	15	29.4	87	23.2	34	41.0
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 15.183 p = 0.004						
U.T. Soil Test Lab Used						
No	8	15.7	43	11.5	7	8.4
Yes	23	45.1	228	60.8	34	41.0
Soil Not Tested	20	39.2	104	27.7	42	50.6
TOTAL	51	100.0	375	100.0	83	100.0
Chi square Test = 19.097 p = 0.001						
Pounds Nitrogen Applied Per Acre						
100-less pounds	7	14.0	83	22.2	17	20.7
101 to 149 pounds	20	40.0	180	48.1	36	43.9
150-over pounds	23	46.0	111	29.7	29	35.4
TOTAL	50	100.0	374	100.0	82	100.0
Chi square Test = 6.139 p = 0.189						
Pounds Phosphate Applied Per Acre						
60-less pounds	24	50.0	120	34.2	32	42.7
61 to 79 pounds	4	8.3	32	9.1	6	8.0
80-over pounds	20	41.7	199	56.7	37	49.3
TOTAL	48	100.0	351	100.0	75	100.0
Chi square Test = 5.809 p = 0.214						
Pounds Potash Applied Per Acre						
60-less pounds	24	47.1	91	24.7	29	36.3
61 to 90 pounds	15	29.4	117	31.7	26	32.5
91-over pounds	12	23.5	161	43.6	25	31.3
TOTAL	51	100.0	369	100.0	80	100.0
Chi square Test = 15.988 p = 0.003						

TABLE VII (Continued)

Selected Practices	Corn Silage Producers' Major Source of Farm Income: Crop Sales no. of Prod.	Crop Sales % of Prod.	Dairy no. of Prod.	Dairy % of Prod.	Other no. of Prod.	Other % of Prod.
Tons Lime Applied Per Acre						
None Limed	31	60.8	197	52.7	61	73.5
1 or 2 tons	19	37.3	145	38.8	16	19.3
3-over tons	1	2.0	31	8.3	6	7.2
TOTAL	51	100.0	374	100.0	83	100.0
Chi square Test = 15.433			p = 0.017			
CORN SILAGE HARVESTING PRACTICES						
Acres Corn Silage Harvested in Milk Stage						
None	42	95.5	291	93.0	63	95.5
20-less acres	0	0	17	5.4	3	4.5
21-over acres	2	4.5	5	1.6	0	0
TOTAL	44	100.0	313	100.0	66	100.0
Chi square Test = 5.786			p = 0.216			
Acres Corn Silage Harvested in Dough Stage						
None	22	48.9	163	47.7	41	57.7
49-less acres	23	51.1	116	33.9	24	33.8
50-over acres	0	0	63	18.4	6	8.5
TOTAL	45	100.0	342	100.0	71	100.0
Chi square Test = 15.990			p = 0.003			
Acres Corn Silage Harvested in Dent Stage						
None	13	28.3	58	16.5	25	32.1
29-less acres	19	41.3	88	25.0	32	41.0
30 to 79 acres	11	23.9	152	43.2	16	20.5
80-over acres	3	6.5	54	15.3	5	6.4
TOTAL	46	100.0	352	100.0	78	100.0
Chi square Test = 34.330			p = 0.000			
CORN SILAGE STORAGE PRACTICES						
Corn Silage Stored in Upright Silo						
No	21	43.8	70	19.6	27	34.6
Yes	27	56.3	288	80.4	51	65.4
TOTAL	48	100.0	358	100.0	78	100.0
Chi square Test = 18.725			p = 0.000			
Corn Silage Stored in Horizontal Silo						
No	21	47.7	199	56.4	38	52.8
Yes	23	52.3	154	43.6	34	47.2
TOTAL	44	100.0	353	100.0	72	100.0
Chi square Test = 1.353			p = 0.508			

The .05 probability level was used to determine significant relationships.

Corn Silage Production Practices

This subsection contains data regarding the relationships between corn silage producers' major source of farm income (i.e., crop sales, dairy, other) and their use of 20 selected corn silage production practices.

Corn silage double cropped. Fifty-one percent of the corn silage producers who reported dairy as their major source of farm income double cropped corn silage in 1985 compared to 15.7 percent of the producers who reported crop sales and 22.9 percent of the producers reporting other agricultural enterprises as their major source of farm income. These differences were significant. Dairy producers were more likely than row crop or other producers to double crop corn silage.

Corn silage grown no-till. Almost 42 percent of the corn silage producers who reported dairy as their major source of farm income grew corn silage no-till compared to 30.1 percent who reported other agricultural enterprises and 39.2 percent who reported crop sales as their major source of farm income. This difference was not significant when tested by the chi square test. Dairy producers were no more

likely to grow corn no-till than row crop or other producers.

Corn silage scouted for insects. Eighty-two percent of the corn silage producers who reported dairy as their major source of farm income scouted for insects compared to 68.6 percent of the producers who reported crop sales and 79.5 percent who reported other as their major source of farm income. These differences were not significant. Row crop or other producers were as likely as dairy producers to scout their corn silage crop.

Recommended early season variety planted. Only 93 (31 percent) of the 297 producers responding planted an early season variety for silage. Fifty-two percent of the corn silage producers who reported crop sales as their major source of farm income planted an early season variety compared to 28.3 percent who reported dairy and 33.3 percent reporting other as their major source of farm income. These differences were significant. Producers with crop sales as their major source of farm income were more likely than dairy or other producers to have planted a recommended early season variety for silage.

Recommended mid season variety planted. Almost eighty percent of the corn silage producers who reported crop sales as their major source of farm income planted a recommended

mid season variety in 1985 compared to 60.1 percent reporting dairy and 58.1 percent of the producers who reported other agricultural enterprises as their major source of farm income. These differences were significant. Producers with crop sales as their major source of farm income were more likely than dairy or other producers to have planted a recommended mid season variety.

Recommended full season variety planted. Almost ninety percent of the corn silage producers who reported other as their major source of farm income planted a recommended full season variety in 1985 compared to 87.5 percent who reported dairy and 85.4 percent who reported crop sales as their major source of farm income. These differences were not significant. Row crop producers were as likely as dairy or other producers to have planted a recommended full season variety of corn for silage.

Corn silage acreage planted in March. Only 8 percent (40 producers) of those surveyed planted any corn silage in March. Almost ten percent of the corn silage producers who reported crop sales as their major source of farm income planted some of their corn silage in March compared to 8.4 percent who reported other agricultural enterprises and 7.5 percent who reported dairy as their major source of farm income. When tested by the chi square test, these differences were not significant at the .05 level. Dairy or

other producers were as likely as producers reporting crop sales to plant corn for silage in March.

Corn silage acreage planted in April. Over 76 percent of the corn silage producers who reported crop sales and 72.3 percent of the producers who reported dairy as their major source of farm income planted some of their corn silage in April compared to 56.6 percent of the producers who reported other agricultural enterprises as their major source of farm income. These differences were significant. Producers who reported crop sales or dairy as their major source of farm income were more likely than other producers to have planted corn for silage in April.

Corn silage acreage planted in May. Seventy-two percent of the corn silage producers who reported dairy as their major source of farm income planted some of their corn silage in May compared to 62.7 percent who reported crop sales and 59.0 percent who reported other agricultural enterprises as their major source of farm income. These differences were significant. Producers who reported dairy as their major source of farm income were more likely than row crop or other producers to have planted corn for silage in May.

Corn silage acreage planted in June. Only 12 percent (63 producers) of the 509 producers responding planted any

corn silage in March. Just over 13 percent of the corn silage producers who reported dairy as their major source of farm income planted some of their corn silage in June compared to 11.8 percent who reported crop sales and 8.4 percent who reported other agricultural enterprises as their major source of farm income. These differences were not significant. Producers indicating dairy as their major source of farm income were no more likely than row crop or other producers to plant corn for silage in June.

Distance between corn rows. Almost 62 percent of the corn silage producers who reported dairy as their major source of farm income used row spacings of 36 inches or less compared to 52.4 percent of the producers reporting other and 46.0 percent who reported crop sales as their major source of farm income. These differences, however, were not significant. Dairy producers were no more likely to plant corn in rows that were closer together or wider apart than row crop or other producers.

Distance between corn plants in row. Eighty-eight percent of the corn silage producers who reported crop sales as their major source of farm income used plant spacings within the row of 9 inches or less compared to 82.3 percent of the producers who reported other agricultural enterprises and 85.4 percent or the producers who reported dairy as their major source of farm income. These differences were

not significant. Producers with crop sales as their major source of farm income were no more likely than dairy or other producers to use plant spacings within the row of 9 inches or less.

Desired corn plant population per acre. Fifty-nine percent of the corn silage producers who reported other agricultural enterprises as their major source of farm income desired a plant population of 20,000 or less compared to 58.8 percent who reported crop sales and 58.4 percent of the producers who reported dairy as their major source of farm income. These differences were not significant. Dairy producers were just as likely as row crop or other producers to desire a plant population of 20,000 or less.

Corn silage acreage fertilized by soil test. Almost 27 percent (136 producers) of the total surveyed (509 producers) did not have their corn silage acreage soil tested in 1985. Almost 67 percent of the corn silage producers who reported dairy as their major source of farm income fertilized some corn silage acreage by soil test compared to 56.8 percent who reported crop sales and 44.5 percent who reported other agricultural enterprises as their major source of farm income. When tested by the chi square test, these differences were significant at the .05 level. Producers reporting dairy as their major source of farm

income were more likely than row crop or other producers to have fertilized their corn silage acreage by soil test.

Corn silage acreage limed by soil test. Almost 27 percent (136 producers) of the total surveyed (509 producers) did not have their corn silage acreage soil tested. Fifty-eight percent of the corn silage producers who reported dairy as their major source of farm income limed some corn silage acreage by soil test compared to 52.9 percent of the corn silage producers reporting crop sales and 36.1 percent who reported other agricultural enterprises as their major source of farm income. These differences were significant. Dairy producers were more likely to have limed their corn silage acreage than row crop or other producers.

U.T. soil test lab used. Almost 61 percent of the corn silage producers who reported dairy as their major source of farm income used the U.T. soil test lab compared to 45.1 percent reporting crop sales and 41 percent who reported other agricultural enterprises as their major source of farm income. These differences were significant at the .05 level. Producers reporting dairy as their major source of farm income were more likely than row crop or other producers to have used the U.T. soil test lab.

Pounds of nitrogen applied per acre. Eighty-six percent of the corn silage producers who reported crop sales as their major source of farm income averaged applying 101 pounds or more of nitrogen per acre compared to 79.3 percent who reported other agricultural enterprises and 77.8 percent who reported dairy as their major source of farm income. These differences were not significant. Producers with crop sales as their major source of farm income were no more likely than dairy or other producers to apply high or low rates of nitrogen fertilizer.

Pounds of phosphate applied per acre. Almost 66 percent of the corn silage producers who reported dairy as their major source of farm income averaged applying 61 or more pounds of phosphate per acre compared to 57.3 percent who reported other and 50 percent who reported crop sales as their major source of farm income. These differences were not significant. Producers reporting dairy as their major source of farm income were no more likely than row crop or other producers to apply high or low rates of phosphate fertilizer.

Pounds of potash applied per acre. Over 75 percent of the corn silage producers who reported dairy as their major source of farm income averaged applying 61 or more pounds of potash per acre compared to 63.8 percent who reported other agricultural enterprises and 52.9 percent who reported crop

sales as their major source of farm income. When tested by the chi square test, these differences were significant at the .05 level. Dairy producers were more likely than row crop or other producers to apply 61 or more pounds of potash fertilizer to corn silage acreage.

Tons of lime applied per acre. Almost 57 percent (289 producers) of the total producers surveyed (508 producers) did not apply lime to their corn silage acreage. Just over 47 percent of the corn silage producers who reported dairy as their major source of farm income averaged applying 1 or more tons of lime per acre compared to 39.3 percent reporting crop sales and 26.5 percent who reported other agricultural enterprises as their major source of farm income. These differences were significant. Producers reporting dairy as their major source of farm income were more likely than row crop or other producers to have applied one or more tons of lime to their corn silage acreage.

Corn Silage Harvesting Practices

This subsection contains data regarding the relationships between corn silage producers' major source of farm income and their use of 3 selected corn silage harvesting practices. Variables in this subsection include: (1) acres harvested in milk stage, (2) acres harvested in dough stage, and (3) acres harvested in dent stage.

Acres harvested in milk stage. Almost 94 percent (396 producers) of the total responding (423 producers) did not harvest any corn silage acreage in the milk stage. Seven percent of the corn silage producers who reported dairy as their major source of farm income harvested some corn silage in the milk stage compared to 4.5 percent reporting other and 4.5 percent of the producers reporting crop sales as their major source of farm income. These differences were not significant. Producers reporting dairy as their major source of farm income were no more likely than row crop or other producers to have harvested some corn silage in the milk stage.

Acres harvested in dough stage. Two hundred twenty-six producers (49.3 percent) indicated they did not harvest any corn silage in the dough stage. Fifty-one percent of the corn silage producers who reported crop sales and 51.3 percent of the producers who reported dairy as their major source of farm income harvested some corn silage in the dough stage compared to 42.3 percent who reported other agricultural enterprises as their major source of farm income. These differences were significant. Row crop and dairy farmers were more likely than other farmers to harvest corn silage in the dough stage.

Acres harvested in dent stage. Over 83 percent of the corn silage producers who reported dairy as their major

source of farm income harvested some corn silage in the dent stage compared to 71.7 percent of the producers who reported crop sales and 67.9 percent of the producers who reported other agricultural enterprises as their major source of farm income. These differences were significant. Producers reporting dairy as their major source of farm income were more likely than row crop or other producers to have harvested corn silage in the dent stage.

Corn Silage Storage Practices

This subsection contains data regarding the relationships between corn silage producers' major source of farm income and their use of 2 selected corn silage storage practices. Variables in this subsection include: (1) corn silage stored in upright silo, and (2) corn silage stored in horizontal silo.

Corn silage stored in upright silo. Eighty percent of the corn silage producers who reported dairy as their major source of farm income stored corn silage in an upright silo compared to 65.4 percent reporting other and 56.3 percent who reported crop sales as their major source of farm income. These differences were significant. Dairy producers were more likely than row crop or other producers to have stored their corn silage in an upright silo.

Corn silage stored in horizontal silo. Fifty-two percent of the corn silage producers who reported crop sales as their major source of farm income stored their corn silage crop in a horizontal silo compared to 47.2 percent who reported other agricultural enterprises and 43.6 percent who reported dairy as their major source of farm income. These differences were not significant. Producers with crop sales as their major source of farm income were no more likely than dairy or other producers to have stored their corn silage crop in a horizontal silo.

Table Summary

Ten of the 20 selected production practices studied were significantly related to corn silage producers' major source of farm income. These practices included corn silage double cropped, recommended early and mid season varieties planted, corn silage acreage planted in April and May, corn silage acreage fertilized and limed by soil test, U.T. soil test lab used, average pounds of potash applied per acre, and average tons of lime applied per acre. Those production practices not significantly related to producers' major source of farm income include corn silage grown no-till, scouting for insects, recommended full season varieties planted, planting in the months of March and June, distance between corn rows and plants in the row, desired plant

population per acre, and average application in pounds per acre of nitrogen and phosphate fertilizers.

While there was significant relationship between the use of ten of the practices and producers' major source of farm income, the direction of the relationship varied depending upon specific practices. Producers who received their major source of income from crop sales were more likely than dairy or other producers to plant a recommended early or mid season variety. However, the corn silage producers who indicated dairy as their major source of farm income were more likely than row crop or other producers to double crop corn, plant some corn for silage in May, fertilize and lime by soil test, use the U.T. soil testing lab, apply more potash per acre of corn silage grown, and apply one or more tons of lime per acre. Row crop and dairy producers were more likely than other producers to plant some corn for silage in April.

Three harvesting and two storage practices were studied. Two of the three harvesting practices, corn silage harvested in dough stage and corn silage harvested in the dent stage, were significantly related to producers' major source of farm income. Row crop and dairy producers were more likely to harvest in the dough stage while dairy producers were more likely to harvest in the dent stage. A practice not significantly related to producers' major source of farm income was harvesting in the milk stage.

Dairy producers were more likely to store corn silage in an upright silo while storing corn silage in a horizontal silo was not significantly related to producers' major source of farm income.

IV. RELATIONSHIPS BETWEEN THE TOTAL NUMBER OF CONTACTS CORN SILAGE PRODUCERS HAD WITH EXTENSION AND THEIR USE OF SELECTED PRODUCTION, HARVESTING, AND STORAGE PRACTICES

This section presents findings regarding relationships between the total number of contacts corn silage producers had with Extension and their use of selected production, harvesting, and storage practices. Section IV is organized into three subsections: (1) "Corn Silage Production Practices," (2) "Corn Silage Harvesting Practices," and (3) "Corn Silage Storage Practices." Findings regarding these relationships are summarized in Table VIII. The chi square test was used to determine the strength of relationships between independent and dependent variables. The .05 probability level was used to determine significant relationships.

Corn Silage Production Practices

This subsection deals with the relationships between the total number of contacts (i.e., none, 1 to 3, 4 or more)

TABLE VIII. Relationships Between the Total Number of Contacts Corn Silage Producers Had With Extension and Their Use of Production, Harvesting and Storage Practices

Selected Practices	Number of Extension Contacts: None no. of Prod.	None % of Prod.	1 to 3 no. of Prod.	1 to 3 % of Prod.	4-over no. of Prod.	4-over % of Prod.
CORN SILAGE PRODUCTION PRACTICES						
Corn Silage Double Cropped						
No	10	52.6	127	65.8	151	50.7
Yes	9	47.4	66	34.2	147	49.3
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 11.030			p = 0.004			
Corn Silage Grown No-Till						
No	12	63.2	125	64.8	173	58.1
Yes	7	36.8	68	35.2	125	41.9
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 2.261			p = 0.323			
Corn Silage Scouted for Insects						
No	10	52.6	49	25.4	41	13.8
Yes	9	47.4	144	74.6	257	86.2
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 23.705			p = 0.000			
Recommended Early Season Variety Planted						
No	12	85.7	77	65.8	120	70.6
Yes	2	14.3	40	34.2	50	29.4
TOTAL	14	100.0	117	100.0	170	100.0
Chi square Test = 2.578			p = 0.276			
Recommended Mid Season Variety Planted						
No	8	50.0	59	41.8	77	34.2
Yes	8	50.0	82	58.2	148	65.8
TOTAL	16	100.0	141	100.0	225	100.0
Chi square Test = 3.220			p = 0.200			
Recommended Full Season Variety Planted						
No	4	23.5	32	18.2	22	8.2
Yes	13	76.5	144	81.8	245	91.8
TOTAL	17	100.0	176	100.0	267	100.0
Chi square Test = 11.426			p = 0.003			
Corn Silage Acreage Planted in March						
No	18	94.7	176	91.2	275	92.3
Yes	1	5.3	17	8.8	23	7.7
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 0.394			p = 0.821			
Corn Silage Acreage Planted in April						
No	8	42.1	62	32.1	83	27.9
Yes	11	57.9	131	67.9	215	72.1
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 2.395			p = 0.302			
Corn Silage Acreage Planted in May						
No	7	36.8	60	31.1	90	30.2
Yes	12	63.2	133	68.9	208	69.8
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 0.383			p = 0.826			
Corn Silage Acreage Planted in June						
No	15	78.9	168	87.0	263	88.3
Yes	4	21.1	25	13.0	35	11.7
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 1.456			p = 0.483			

TABLE VIII (Continued)

Selected Practices	Number of Extension Contacts: None — no. of Prod.	None — % of Prod.	1 to 3 — no. of Prod.	1 to 3 — % of Prod.	4-over — no. of Prod.	4-over — % of Prod.
Distance Between Corn Rows						
36-less inches	14	73.7	108	56.2	174	59.4
37 to 38 inches	5	26.3	60	31.3	113	38.6
39-over inches	0	0	24	12.5	6	2.0
TOTAL	19	100.0	192	100.0	293	100.0
Chi square Test = 25.621			p = 0.000			
Distance Between Corn Plants in Row						
6-less inches	3	15.8	44	23.3	75	26.3
7 to 9 inches	7	36.8	107	56.6	183	64.2
10-over inches	9	47.4	38	20.1	27	9.5
TOTAL	19	100.0	189	100.0	285	100.0
Chi square Test = 26.292			p = 0.000			
Desired Corn Plant Population Per Acre						
20,000-less plants	11	57.9	121	62.7	166	55.7
20,001-over plants	8	42.1	72	37.3	132	44.3
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 2.358			p = 0.308			
Corn Silage Acreage Fertilized by Soil Test						
No	2	10.5	30	15.5	25	8.4
Yes	6	31.6	88	45.6	221	74.2
Soil Not Tested	11	57.9	75	38.9	52	17.4
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 50.538			p = 0.000			
Corn Silage Acreage Limed by Soil Test						
No	1	5.3	49	25.3	47	15.8
Yes	7	36.8	69	35.8	200	67.1
Soil Not Tested	11	57.9	75	38.9	51	17.1
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 57.733			p = 0.000			
U.T. Soil Test Lab Used						
No	4	21.1	33	17.1	22	7.4
Yes	4	21.1	73	37.8	207	69.4
Soil Not Tested	11	57.8	87	45.1	69	23.2
TOTAL	19	100.0	193	100.0	298	100.0
Chi square Test = 57.406			p = 0.000			
Pounds of Nitrogen Applied Per Acre						
100-less pounds	6	31.6	55	28.8	47	15.8
101 to 149 pounds	6	31.6	70	36.6	160	53.9
150-over pounds	7	36.8	66	34.6	90	30.3
TOTAL	19	100.0	191	100.0	297	100.0
Chi square Test = 19.307			p = 0.001			
Pounds of Phosphate Applied Per Acre						
60-less pounds	9	47.4	74	43.0	93	32.7
61 to 79 pounds	3	15.8	13	7.6	26	9.2
80-over pounds	7	36.8	85	49.4	165	58.1
TOTAL	19	100.0	172	100.0	284	100.0
Chi square Test = 7.593			p = 0.108			
Pounds of Potash Applied Per Acre						
60-less pounds	7	36.8	63	33.5	75	25.5
61 to 90 pounds	7	36.8	54	28.7	98	33.3
91-over pounds	5	26.2	71	37.8	121	41.2
TOTAL	19	100.0	188	100.0	294	100.0
Chi square Test = 5.077			p = 0.280			

TABLE VIII (Continued)

Selected Practices	Number of Extension Contacts: None — no. of Prod.	None — % of Prod.	1 to 3 — no. of Prod.	1 to 3 — % of Prod.	4-over — no. of Prod.	4-over — % of Prod.
Tons of Lime Applied Per Acre						
None	13	68.4	135	69.9	142	47.9
1 to 2 tons	5	26.3	49	25.4	125	42.2
3-over tons	1	5.3	9	4.7	29	9.9
TOTAL	19	100.0	193	100.0	297	100.0
Chi square Test = 25.066			p = 0.000			
CORN SILAGE HARVESTING PRACTICES						
Acres of Corn Silage Harvested in Milk Stage						
None	17	100.0	157	95.8	224	91.8
20-less acres	0	0	4	2.4	16	6.6
21-over acres	0	0	3	1.8	4	1.6
TOTAL	17	100.0	164	100.0	244	100.0
Chi square Test = 4.919			p = 0.296			
Acres of Corn Silage Harvested in Dough Stage						
None	10	55.6	107	60.5	111	41.9
49-less acres	7	38.9	59	33.3	98	37.0
50-over acres	1	5.5	11	6.2	56	21.1
TOTAL	18	100.0	177	100.0	265	100.0
Chi square Test = 25.020			p = 0.000			
Acres of Corn Silage Harvested in Dent Stage						
None	7	36.8	32	18.3	57	20.1
29-less acres	3	15.8	52	29.7	85	29.9
30 to 79 acres	7	36.8	61	34.9	111	39.1
80-over acres	2	10.6	30	17.1	31	10.9
TOTAL	19	100.0	175	100.0	284	100.0
Chi square Test = 7.982			p = 0.239			
CORN SILAGE STORAGE PRACTICES						
Corn Silage Stored in Upright Silo						
No	5	27.8	42	22.8	70	24.8
Yes	13	72.2	142	77.2	212	75.2
TOTAL	18	100.0	184	100.0	282	100.0
Chi square Test = 0.375			p = 0.829			
Corn Silage Stored in Horizontal Silo						
No	9	50.0	102	57.6	147	53.6
Yes	9	50.0	75	42.4	127	46.4
TOTAL	18	100.0	177	100.0	274	100.0
Chi square Test = 0.877			p = 0.645			

corn silage producers had with Extension and their use of 20 selected corn silage production practices.

Corn silage double cropped. Forty-nine percent of those producers with 4 or more contacts double cropped corn for silage in 1985 compared to 34.2 percent of the producers who had 1 to 3 Extension contacts. Just over 47 percent of the producers who had no contacts with Extension agents used this practice. These differences were significant as tested by the chi square test ($p<.05$). Findings were inconclusive as to the direction of the relationship.

Corn silage grown no-till. Forty-two percent of those producers with 4 or more contacts grew no-till corn for silage compared to 35.2 percent of the producers who had 1 to 3 contacts and 36.8 percent of those who had no contact with Extension agents during the past 12 months. These differences were not significant. Producers with high Extension contacts (4 or more) were no more likely than producers with fewer contacts to grow corn no-till for silage.

Corn silage scouted for insects. Eighty-six percent of the corn silage producers with 4 or more contacts scouted their corn silage for insects compared to 47.4 percent who had no Extension contacts and 74.6 precent of those with 1 to 3 contacts. These differences were significant at the

.05 level. Producers with Extension contacts were more likely than those with no contacts to scout corn silage for insects.

Recommended early season variety planted. Thirty-four percent of those producers with 1 to 3 contacts and 29.4 percent of those with 4 or more contacts planted a recommended early season variety for silage compared to 14.3 percent of the producers with no Extension contacts. These differences were not significant. Producers with Extension contacts were no more likely than those with no contacts to plant an early season variety for silage.

Recommended mid season variety planted. Almost 66 percent of the corn silage producers with 4 or more contacts and 58.2 percent of those with 1 to 3 contacts planted a recommended mid season variety compared to 50 percent of the producers with no Extension contacts. When tested by the chi square test, these differences were not significant at the .05 level. Producers with Extension contacts were no more likely than those with no contacts with Extension agents during the past 12 months to use a mid season variety for silage.

Recommended full season variety planted. Almost 92 percent of those producers with 4 or more contacts and 81.8 percent of those with 1 to 3 contacts planted a recommended

full season variety compared to 76.5 percent of the producers with no Extension contacts. These differences were significant. Producers with Extension contacts were more likely than those with no contacts to have planted a full season variety of corn for silage.

Corn silage acreage planted in March. Only 41 producers (8 percent) planted some corn silage in the month of March in 1985. Almost 9 percent of those producers with 1 to 3 contacts and 7.7 percent of those with 4 or more contacts planted some corn in March compared to 5.3 percent of the producers with no Extension contacts. These differences were not significant. Producers with Extension contacts were no more likely than producers with no contacts to plant some corn for silage in March.

Corn silage acreage planted in April. Seventy-two percent of the corn silage producers with 4 or more contacts and 67.9 percent of those with 1 to 3 contacts planted corn for silage in the month of April compared to 57.9 percent of the producers with no Extension contacts. These differences were not significant. Producers with Extension contacts were no more likely than those with no contacts to plant some corn in April for silage.

Corn silage acreage planted in May. Almost 70 percent of those producers with Extension contacts planted some corn

for silage in May compared to 63.2 percent of the producers with no Extension contacts. When tested by the chi square test, these differences were not significant at the .05 level. Producers with no Extension contacts were just as likely as those with contacts to plant some corn for silage in May.

Corn silage acreage planted in June. Only 64 producers (12.5 percent) of the 510 producers responding planted some corn for silage in June. Twenty-one percent of those producers with no Extension contacts planted some corn for silage in June compared to 11.7 percent of the producers with 4 or more contacts and 13 percent of those with 1 to 3 contacts. These differences were not significant. Producers with no Extension contacts were no more likely than those with contacts to plant some corn for silage in June.

Distance between corn rows. Almost 41 percent of those producers with 4 or more contacts and 43.8 percent of those with 1 to 3 contacts used row spacings of 37 inches or more apart compared to 26.3 percent of the producers with no Extension contacts. These differences were significant. Producers with Extension contacts were more likely than those with no contacts to use wide row spacings.

Distance between corn plants in row. Almost 91 percent of the corn silage producers with 4 or more contacts over a 12 month period and 79.9 percent of those with 1 to 3 contacts planted corn plants in the row 9 or less inches apart compared to 52.6 percent of the producers with no Extension contacts. When tested by the chi square test, these differences were significant at the .05 level. Producers with Extension contacts were more likely than producers with no contacts to use close spacing of corn plants (9 or less inches apart in the row).

Desired corn plant population per acre. Forty-four percent of those producers with 4 or more Extension contacts and 37.3 percent of those with 1 to 3 contacts desired a corn plant population of 20,001 and over per acre for silage compared to 42.1 percent of the producers with no contacts. These differences were not significant. Producers with Extension contacts were no more likely than those with no contacts to desire a high corn plant population per acre.

Corn silage acreage fertilized by soil test. Over 74 percent of the corn silage producers with 4 or more contacts and 45.6 percent of those with 1 to 3 contacts fertilized corn silage acreage by soil test in 1985 compared to 31.6 percent of the producers with no Extension contacts. These differences were significant. Producers with Extension

contacts were more likely than those with no contacts to fertilize according to soil test recommendations.

Corn silage acreage limed by soil test. Sixty-seven percent of the corn silage producers with 4 or more contacts limed corn silage acreage according to soil test recommendations compared to less than 37 percent of the producers with 3 or less Extension contacts. These differences were significant. Producers with high Extension contacts (4 or more) were more likely than others to lime according to soil test recommendations.

U.T. soil test lab used. Over sixty-nine percent of the producers with 4 or more contacts and 37.8 percent of those with 1 to 3 contacts used the U.T soil test lab for their 1985 corn silage crop compared to 21.1 percent of the producers with no Extension contacts. When tested by the chi square test, these differences were significant at the .05 level. Producers with Extension contacts were more likely than those with no contacts to use the U.T. soil test lab.

Pounds of nitrogen applied per acre. Over 84 percent of the corn silage producers with 4 or more contacts and 70.2 percent of those with 1 to 3 contacts averaged applying over 100 pounds of nitrogen per acre to their corn silage acreage compared to 68.4 percent of the producers with no

Extension contacts. These differences were significant. Producers with Extension contacts were more likely than those with no contacts to apply over 100 pounds of nitrogen per acre of corn silage grown.

Pounds of phosphate applied per acre. Fifty-eight percent of those producers with 4 or more contacts and 49.4 percent of those with 1 to 3 contacts applied 80 or more pounds of phosphate per acre compared to 36.8 percent of the producers with no Extension contacts. These differences were not significant. Producers with no Extension contacts were just as likely as those with contacts to apply high amounts of phosphate fertilizer per acre of corn silage grown.

Pounds of potash applied per acre. Forty-one percent of those producers with 4 or more contacts and 37.8 percent of those with 1 to 3 contacts applied 91 or more pounds of potash per acre in 1985 compared to 26.2 percent of the producers with no Extension contacts. These differences were not significant. Producers with Extension contacts were no more likely than those with no contacts with Extension agents during the past 12 months to apply larger amounts of potash per acre of corn silage grown.

Tons of lime applied per acre. Fifty-two percent of those producers with high Extension contacts (4 or more)

applied 1 or more tons of lime per acre compared to about 31 percent of the producers with less than 4 Extension contacts. When tested by the chi square test, these differences were significant at the .05 level. Producers with high Extension contacts (4 or more) were more likely than those with fewer contacts to apply lime to their corn silage acreage.

Corn Silage Storage Practices

This subsection presents findings regarding relationships between the total number of contacts corn silage producers had with Extension and their use of 3 harvesting practices.

Acres of corn silage harvested in milk stage. Only 27 (6.4 percent) producers of the 425 responding harvested some corn silage in the milk stage. Over 8 percent of the corn silage producers with 4 or more contacts and 4.2 percent or those with 1 to 3 contacts harvested silage in the milk stage compared to no producers with no Extension contacts. These differences, however, were not significant. Producers with Extension contacts were just as likely as those with no contacts to harvest some corn silage in the milk stage.

Acres of corn silage harvested in dough stage. Twenty-one percent of the corn silage producers with 4 or more contacts harvested 50 or more acres of corn silage in the

dough stage in 1985 compared to 6.2 percent of those with 1 to 3 contacts and 5.5 percent of the producers with no Extension contacts. These differences were significant. Producers with 4 or more Extension contacts were more likely than those with 3 or less contacts to have harvested some corn silage in the dough stage.

Acres of corn silage harvested in dent stage. Almost 37 percent of the corn silage producers with no Extension contacts did not harvest corn in the dent stage compared to 20 percent or less of the producers with Extension contacts. These differences were not significant. Producers with Extension contacts were no more likely than others to harvest corn silage in the dent stage.

Corn Silage Storage Practices

This subsection deals with the relationships between the total number of contacts corn silage producers had with Extension and their use of 2 corn storage practices.

Corn silage stored in upright silo. Over seventy-five percent of the producers with Extension contacts stored corn silage in an upright silo compared to 72.2 percent of the producers with no Extension contacts. These differences were not significant. Producers with Extension contacts were no more likely than others to have stored corn silage in an upright silo.

Corn silage stored in horizontal silo. Fifty percent of the corn silage producers with no Extension contacts stored corn silage in a horizontal silo in 1985 compared to 40.4 percent (202 of 451) of the producers with Extension contacts. These differences were not significant. Producers with no Extension contacts were no more likely than those with contacts to store corn silage in a horizontal silo.

Table Summary

Ten of the 20 selected production practices studied were significantly related to the number of contacts corn silage producers had with Extension agents over a 12 month period in 1985. In all significant relationships except one, producers with Extension contacts were more likely to be using the production practice than those producers with no contacts during the past 12 months. These practices included corn silage scouted for insects, recommended full season variety planted, distance in inches between corn rows, distance in inches between corn plants in the row, corn silage acreage fertilized and limed by soil test, U.T. soil test lab used, average pounds of nitrogen applied per acre, and average tons of lime applied per acre. The direction of relationship could not be determined for the variable regarding corn silage double cropped. Those production practices not significantly related to the number

of contacts corn silage producers had with Extension agents include corn silage grown no-till, recommended early and mid season varieties planted, planting in the months of March, April, May, and June, desired plant population per acre, and average application in pounds per acre of phosphate and potash fertilizers. Three harvesting and two storage practices were studied. Only one of the three harvesting practices, corn silage harvested in dough stage was significantly related to the number of contacts producers had with Extension agents over a 12 month period of time. Producers with Extension contacts were more likely than those with no contacts to harvest in the dough stage. Practices not significantly related to the number of Extension contacts were acres harvested in the milk and dent stages. Two storage practices, corn silage stored in upright silo and corn silage stored in horizontal silo, were not significantly related to the number of contacts silage producers had with Extension agents over a 12 month period of time in 1985.

CHAPTER V

SUMMARY OF MAJOR FINDINGS

1. PURPOSE AND SPECIFIC OBJECTIVES

Purpose

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

Specific Objectives

The specific objectives of the study were:

1. To characterize the corn silage producers in Tennessee and their farming operations.

2. To determine relationships between corn silage producer characteristics and the number of contacts they had with Extension.

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

4. To determine relationships between ages of corn silage producers and their use of selected production, harvesting and storage practices.

5. To determine relationships between the farming

status of corn silage producers and their use of selected production, harvesting and storage practices.

6. To determine relationships between corn silage producers' major source of farm income and their use of selected production, harvesting, and storage practices.

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

II. PROCEDURES

Population and Data Collection

The population of this study included corn silage producers selected from a survey of corn producers who grew a minimum of 20 acres in 1985. Producers were asked to indicate if they grew corn for grain or silage. Five hundred fifteen of the 1,759 producers surveyed indicated they grew corn for silage. Data were obtained through personal interviews by Extension agents using interview schedules developed by Specialist at the University of Tennessee. The Nth number technique was used to identify producers to be surveyed. The recommended sample size for each county was as follows:

1. Counties producing 2500 acres or less would interview 20 producers or total population.

2. Counties producing 2501-5000 acres would interview 25 producers.

3. Counties producing 5001-10,000 acres would interview 30 producers.

4. Counties producing 10,000 acres and over would interview 35 producers.

Each producer surveyed was to have grown 20 acres or more corn for grain or silage. Completed surveys were returned to the Agricultural Extension Education Office.

Survey Instrument

The 1985 Corn Production Survey was developed by The University of Tennessee Agricultural Extension Specialist Staff in Plant and Soil Sciences and Extension Education departments. Questions dealt primarily with producers use of production practices and the number of Extension contacts the producers had with Extension agents. Data also were obtained regarding the size of their corn operation and yields per acre of corn grown.

Method of Analysis

Data on the situation of corn producers in 1985 were processed by computer. Computation and statistical analysis were made using the University of Tennessee Computing Center facilities.

Response to survey questions were summarized using means and frequency counts of producers' responses regarding

the use of practices and the number of acres harvested and yields per acre of grain or silage.

The chi square test was used to determine the relationship between dependent and independent variables. Statistical tables were used to determine the significance of observed relationships. Chi square values achieving the .05 level of probability were judged to be significant.

III. MAJOR FINDINGS

Major findings were arranged and presented under seven subsections which relate to the specific objectives discussed in the text of this study.

Characteristics of Corn Silage Producers, Their Farming Operation Characteristics, and Contacts They Had With Extension Agents

Producer characteristics were:

1. Seventy-eight percent of the corn silage producers were 55 or less years of age.

2. Seventy-four percent of the producers indicated dairy as their major source of farm income.

3. Ninety-three percent of the producers were full-time farmers.

Farm characteristics were:

1. Fifty-one percent of the corn silage producers owned between 40 and 120 acres of corn silage.

2. Forty-five percent of the producers harvested between 30 and 74 acres of corn silage.

3. Forty-three percent of the producers had a yield of 16 to 19 tons per acre.

4. Seventy-one percent of the producers planned to feed their corn silage to dairy cattle.

Extension contacts were:

1. Fifty-eight percent of the producers attended one or more Extension corn meetings.

2. Fifty-nine percent of the producers made one or more visits to the Extension office.

3. Seventy-two percent of the producers made one or more telephone calls to the Extension office.

4. Seventy-three percent of the producers received one or more farm visits from Extension agents.

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

1. Farming status was not significantly related to the number of contacts corn silage producers had with Extension. Full-time and part-time farmers did not differ as to the number of contacts they had with Extension agents.

2. Producers' age was significantly related to the number of contacts producers had with Extension agents. Younger producers (age 40 or less) appeared to have more

contacts with Extension than older producers (41 or older). However, the direction of the relationship was inconclusive.

3. Producers' major source of farm income was not significantly related to the total number of Extension contacts. Producers with different sources of income (crop sales, dairy, or other) did not differ as to the number of contacts they had with Extension.

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

None of the six variables studied were significantly related to the total number of contacts producers had with Extension agents. The number of contacts corn silage producers had with Extension did not differ as to the acres of corn silage crop owned, acres of corn silage crop cash rented, acres of corn silage crop share cropped, acres of corn silage harvested, yield of silage in tons per acre, or plans the producer had for use of the corn silage crop.

Relationships Between Age of Corn Silage Producers and Their Use of Selected Production, Harvesting, and Storage Practices

1. Use of four production practices was significantly related to age. Younger producers were more likely than older producers to be using these practices. Practices were: planting a recommended early season variety, planting

a recommended full season variety, distance between corn rows in inches, and desired plant population per acre.

2. Sixteen production practices were not significantly related to producers' age. These include corn silage double cropped, corn silage grown no-till, corn silage scouted for insects, planting a recommended mid season variety, planting in the months of March, April, May, and June, distance between plants in the row, fertilizing and liming according to soil test recommendations, use of the U.T. soil test lab, average application in pounds per acre of nitrogen, phosphate, and potash, and average tons of lime applied per acre.

3. Use of three harvesting practices, harvesting in the milk, dough, or dent stage, was not significantly related to producers' age.

4. Storage of corn silage in an upright and storage in a horizontal silo did not differ as to producers' age.

Relationships Between the Farming Status of Corn Silage Producers and Their Use of Selected Production, Harvesting, and Storage Practices

1. Use of five production practices was significantly related to farming status. Full-time farmers were more likely than part-time farmers to be using these practices. These five practices included corn silage double cropped, corn silage acreage planted in April, corn silage fertilized

by soil test, corn silage limed by soil test, and U.T. soil test lab used.

2. Use of fifteen of the selected production practices was not significantly related to producers' farming status. They include corn silage grown no-till, corn silage scouted for insects, recommended early, mid, and full season varieties planted, planting in the months of March, May, and June, distance between corn rows and plants in the row, desired plant population per acre, average application in pounds per acre of nitrogen, phosphate, and potash fertilizers, and average tons of lime applied per acre.

3. Full-time producers were more likely to harvest corn silage in the dent stage. Corn silage harvested in the milk or dough stages were not significantly related to producers' farming status.

4. Storage of corn silage in an upright silo or a horizontal silo was not significantly related to farming status.

Relationships Between Corn Silage Producers' Major Source of Farming Income and Their Use of Selected Production, Harvesting, and Storage Practices

1. Use of ten of the 20 selected production practices studied was significantly related to corn silage producers' major source of farm income. The direction of the relationship depended upon specific practices. Row crop

producers were more likely than dairy or other producers to plant a recommended early or mid season variety. Dairy producers were more likely than row crop or other producers to double crop corn, plant some corn for silage in May, fertilize and lime by soil test, use the U.T. soil testing lab, apply more potash per acre of corn silage grown, and apply one or more tons of lime per acre. Row crop and dairy producers were more likely than others to plant some corn for silage in April.

2. Use of corn silage production practices not significantly related to producers' major source of farm income included corn silage grown no-till, scouting corn silage for insects, recommended full season varieties planted, planting in the months of March and June, distance between corn rows and plants in the row, desired plant population per acre, and average application in pounds per acre of nitrogen and phosphate fertilizers.

3. Corn silage harvested in the dough stage and corn silage harvested in the dent stage were significantly related to producers' major source of farm income. Row crop and dairy producers were more likely to harvest corn silage in the dough stage while dairy producers were more likely to harvest in the dent stage. Corn silage harvested in the milk stage was not significantly related.

4. Dairy producers were more likely to store corn silage in an upright silo while storing corn silage in a

horizontal silo was not significantly related to producers' major source of farm income.

Relationships Between the Total Number of Contacts Corn Silage Producers Had With Extension and Their Use of Selected Production, Harvesting, and Storage Practices

1. Use of eleven of the 20 selected production practices studied were significantly related to the number of contacts corn silage producers had with Extension agents over a 12 month time period in 1985. For all practices except one, it was found that producers with Extension contacts were more likely than those with no contacts during the past 12 months to scout corn silage for insects, to plant a recommended full season variety, to plant corn in rows 37 inches or wider, to plant corn plants 9 inches or less in the row, to fertilize and lime corn silage acreage by soil test, to use the U.T. soil test lab, to apply 100 or more pounds of nitrogen fertilizer per acre, to apply one or more tons of lime per acre, and harvest corn silage in the dough stage. The direction of relationship between Extension contacts and double cropping corn silage was inconclusive.

2. Those selected production practices not significantly related to the number of contacts corn silage producers had with Extension agents included corn silage grown no-till, recommended early and mid season varieties

planted, planting in the months of March, April, May, and June, desired plant population per acre, and average application in pounds per acre of phosphate and potash fertilizers.

3. Corn silage harvested in the dough stage was significantly related to the number of contacts producers had with Extension agents. Producers with a high number of contacts (i.e., 4 or more) were more likely than those with fewer contacts to harvest in the dough stage. Corn silage harvested in the milk or dent stages was not significantly related to Extension contacts.

4. Corn silage stored in an upright silo and corn silage stored in a horizontal silo were not significantly related to the number of contacts producers had with Extension agents.

IV. IMPLICATIONS AND RECOMMENDATIONS

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

1. Over 58 percent of the corn silage producers attended 1 or more corn production meetings, 59 percent made one or more visits to the Extension office, 72.4 percent made 1 or more telephone calls to the Extension office, and 73.3 percent received one or more visits from Extension agents over a 12 month period. Positive relationships were found between the use of recommended practices and the

number contacts producers had with Extension. It can be implied that Extension contacts are important for corn silage producers to realize the benefits from using recommended practices. It is recommended that Extension agents continue to work to do a better job of contacting all producers and promote the benefits of using recommended production, harvesting, and storage practices.

2. This study showed a significant relationship between producers' age and the number of contacts they had with Extension agents. Younger producers (age 40 or less) appeared to have more contacts with Extension than older producers and were more likely to be using 4 of the 20 selected production practices. It may be implied from this finding that Extension should make every effort to contact older producers to encourage use of recommended practices. It is also recommended that we always keep in mind that younger producers hold the key to our agricultural future and Extension should continue to maintain close contact with them.

3. Study findings showed that full-time producers were more likely than part-time producers to be using five of the selected production practices. It may be implied from this finding that educational efforts should be conducted to encourage part-time farmers to use more recommended production practices.

4. The study findings showed that producers who

indicated dairy 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 6 of the 20 selected production practices. Producers indicating row crops were more likely than others to be using 4 of the 20 production practices. These findings suggest the need for continual efforts to encourage all farmers to adopt recommended practices.

5. Over one-fourth (26.8 percent) of the producers surveyed did not soil test their corn silage acreage in 1985. Research has shown the importance of liming and fertilizing according to soil test analysis as a means of maintaining proper soil pH, maintaining fertility levels, and increasing yields. The data in this study shows that many producers are not following the recommendation of soil testing. It is recommended that Extension should continue to increase the number of contacts with corn silage producers and encourage the adoption of this practice in an effort to increase production efficiency and net farm income.

V. RECOMMENDATIONS FOR FURTHER STUDY

1. As long as corn silage production continues to be an important forage crop for dairy and beef producers in Tennessee, similar studies should be made periodically to determine the characteristics of the corn silage producer,

their use of recommended production, storage, and harvesting practices, and the relationships between these and the number of Extension contacts.

2. A similar study should be conducted to compare characteristics, use of recommended production, harvesting, and storage practices, and Extension contacts between East Tennessee and West Tennessee corn silage producers.

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BIBLIOGRAPHY

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APPENDIX

AEE INFO-19 Tennessee Agricultural Extension Service

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?

(15-17) ___ ___ ___ b. FOR SILAGE?

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)

(23-25) ___ ___ ___ 3. HOW MANY ACRES OF CORN (GRAIN AND/OR SILAGE) WERE DOUBLE CROPPED IN 1985?

(26-28) ___ ___ ___ 4. HOW MANY ACRES OF CORN (GRAIN AND/OR SILAGE) WERE GROWN NO-TILL IN 1985?

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 (7) (8) (9) (10)) with a numeral and right justify.
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))

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2. What percent of your 1985 corn crop was treated for:

(51-53) ___ ___ ___ 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 (2) 0 (3) 0 (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_2O_5 APPLIED/ACRE? (000 = none applied)

(51-53) ___ ___ ___ 5. AVERAGE POUNDS OF K_2O 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 = side-dressed only; 4 = broadcast over top only; 5 = broadcast and banded at planting; 6 = broadcast at planting and side-dressed; 9 = none applied)

(59) ___ 9. IF CORN WAS SIDEDRESSED, WHAT NITROGEN SOURCE WAS USED? (1 = anhydrus 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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Cooperative Extension Work in Agriculture and Home Economics, The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture, and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914. Agricultural Extension Service, M. Lloyd Downen, Dean.

VITA

Kim David Frady was born on May 24, 1956 in Cleveland, Tennessee. He is the son of Olen and Inez Frady. His education began in public schools in Polk County where he was active in 4-H activities. Upon graduation in 1974, he attended Cleveland State Community College where he earned an Associate of Science degree in natural sciences. He received a Bachelor of Science degree from The University of Tennessee at Knoxville in 1978 with a major in Plant and Soil Science.

He was employed on January 1, 1979,as an Assistant Extension Agent in Rutherford County, Tennessee, responsible for youth agricultural programs. He transferred to Bradley County on April 1, 1983 responsible for adult agriculture programs. He was promoted to Associate Extension Agent in 1986.

He is a member of Tennessee Association of Agricultural Agents and Specialists, the National Association of County Agricultural Agents, Epsilon Sigma Phi, the University of Tennessee Century Club, the University of Tennessee National Alumni Association, the Tennessee 4-H Alumni Association, the Bradley County Livestock Association, and the Cleveland Rotary Club.

He is married to the former Judith Hammons of Benton, Tennessee. They have two children, Jonathan, 6, and Kelley, 5. They reside in McDonald, Tennessee.