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**Comparisons between Tennessee dairy producers that continued or discontinued DHI in 1983 and analysis of reasons for doing so and relationships between reasons and selected producer and herd characteristics**

Stephen J. Hale

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To the Graduate Council:

I am submitting herewith a thesis written by Stephen J. Hale entitled "Comparisons between Tennessee dairy producers that continued or discontinued DHI in 1983 and analysis of reasons for doing so and relationships between reasons and selected producer and herd characteristics." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

Cecil E. Carter Jr., Major Professor

We have read this thesis and recommend its acceptance:

Accepted for the Council:

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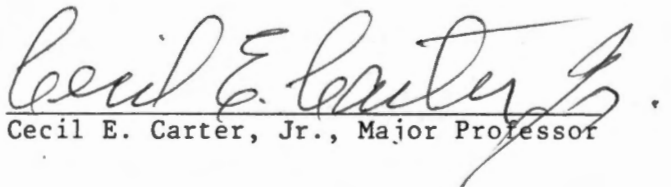
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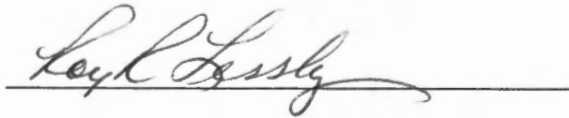
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To the Graduate Council:

I am submitting herewith a thesis written by Stephen J. Hale entitled "Comparisons Between Tennessee Dairy Producers That Continued or Discontinued DHI in 1983 and Analysis of Reasons For Doing so and Relationships Between Reasons and Selected Producer and Herd Characteristics." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

  
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COMPARISONS BETWEEN TENNESSEE DAIRY PRODUCERS THAT CONTINUED OR  
DISCONTINUED DHI IN 1983 AND ANALYSIS OF REASONS FOR DOING  
SO AND RELATIONSHIPS BETWEEN REASONS AND SELECTED  
PRODUCER AND HERD CHARACTERISTICS

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Stephen J. Hale

March 1987

AG-VET-MED.

Thesis

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## DEDICATION

This thesis is dedicated to my wife Deborah White Hale and my children Nathaniel Kyle and Stephanie Ann, who really sacrificed their time to make this possible and for their prayers and encouragement along the way. It is also dedicated to my parents, Vernon K. and Annis Hale, who first instilled the desire to learn and to always keep reaching.

## ACKNOWLEDGMENTS

The author wishes to express his appreciation to Dr. Cecil E. Carter, Jr. for his patience, guidance and gentle prodding in the writing of this thesis and throughout the graduate program.

A special thank you is extended to the Greene County Agricultural Extension Service staff for allowing the author the time to complete this and for being patient. Also a thank you goes to Dr. and Mrs. Doug Woolsey for some timely assistance.

The author is appreciative to Dr. and Mrs. F. DeWolfe Miller for opening their home to him during his graduate work. Also a special thank you to all the Tennessee dairy producers involved in this study and the Extension agents for being cooperative in this study.

Above all the author acknowledges and gives thanks to the Lord for making all this possible and for bringing it all together during a difficult and busy time.



## ABSTRACT

Concern over a leveling off of DHI participation led to a comparison of Tennessee dairy producers who either continued or discontinued the use of DHI in 1983. Comparisons between the groups included producer and herd characteristics, number of Extension contacts and use of recommended management practices. Reasons for using or discontinuing DHI were sought and comparisons made between reasons and producer and herd characteristics.

Data was collected through mail surveys of producers who discontinued DHI and randomly selected producers who remained on DHI.

Comparison of the two groups revealed that producers who continued DHI had been in dairying more years, on DHI more years, had higher education levels and had higher present herd averages than did producers who discontinued DHI. Those who continued also used more of the recommended management practices than did those who discontinued. No difference was found in the number of Extension contacts for each group.

Producers who discontinued indicated that they left because the program had become too expensive. Producers who continued DHI indicated that they used DHI to provide a guide for culling cows and as a means to increase production levels.

Implications of the study were that producer characteristics and possibly use of recommended practices could be used to flag producers likely to continue or discontinue DHI. Costs need to be

reduced to encourage producers to continue DHI. Also efforts should be made to emphasize the benefits of using DHI to encourage continued use of DHI.

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## CHAPTER I

### INTRODUCTION

#### I. STUDY BACKGROUND

The 1982 U.S. Census of Agriculture reports that there are 90,565 farms in the state of Tennessee, of these 3,238 are listed as dairy farms. The total number of dairy cows on these farms was 217,234, these cows produced 2.3 billion pounds of milk which resulted in \$273,405,000 income to Tennessee dairy producers (2).\* Income from milk production was second to beef at \$299 million for animal enterprises and third behind soybeans and beef in all agricultural commodities sold in Tennessee. This places dairy production as one of the most important enterprises in the state and one of the major commodity concerns for the Tennessee Agricultural Extension Service.

The Smith-Lever Act of 1914 established the Cooperative Extension Service, whose initial charge was and still is "to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of same" (6:159). One tool available to the Extension Service to use in accomplishing this mission with dairy producers is the Dairy Herd Improvement program.

The first cow testing program was introduced in Michigan in 1905 by Helmer Rabild. In 1908 the program was expanded nationwide

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\*Numbers in parenthesis represent references, numbers after colon represent page numbers.

and by 1929 all 48 states had cow testing associations in operation. With the creation of the Cooperative Extension Service in 1914, Extension workers assumed the leadership in directing the cow testing program. The official name of Dairy Herd Improvement Association was designated in 1927 (9:1269-1270).

This pattern of cooperation worked well for over 40 years. In order to form a more formal structure and better define roles of the various organizations, a Memorandum of Understanding between U.S.D.A.'s Agricultural Research Service, U.S.D.A.'s Extension Service, each state's Cooperative Extension Service and the National Dairy Herd Improvement Association was developed in 1952 and later revised in 1972 (4:iv). The memorandum set forth the following purposes for the program:

1. To improve the producing ability of dairy cattle by providing guides for breeding, feeding and management practices.
2. To provide information by which the breeding value and transmitting ability of individual cows and sires can be measured reliably and the superior ones selected and used for breeding purposes.
3. To improve the efficiency and financial position of all dairy-men through improved herd management.
4. To provide data and results for dairy extension workers and others in developing and conducting effective educational and demonstrational programs.
5. To provide data to State experiment stations and to the Division for research.

The memorandum set forth the following objectives for the program:

1. To maintain a uniform system of recordkeeping to be used in guiding cooperating dairymen in their herd improvement program and to supply reliable records and herd improvement information to the Division, Agency, Service and other cooperating groups.

2. To establish sources of superior dairy inheritance as a means of improving the producing ability of all dairy cattle.
3. To maintain uniformity and a high standard of integrity in the Program that will insure reliability to scientific studies and educational demonstrations.
4. To summarize and analyze information from DHI herds and make these summaries available to dairymen, research, education and Extension workers, and to others as appropriate. No copyright shall exist in the material published pursuant hereto.
5. To demonstrate the fundamental benefits of dairy herd improvement program to dairy farmers.

It is the individual dairy producer who ultimately benefits from the DHI program. The continued improvement of dairy cattle, higher levels of milk production and efficient herd management are the goals of every dairy producer. DHI records help achieve these goals.

In Tennessee DHI has played a role in improving cattle and efficiency of dairy herds. Although much of the early history of DHI in Tennessee has been lost, it is known that official cow testing and DHI was available in 1929 (10). Only from 1949 on do we have records of participation. From 13 associations, 158 herds and 3,888 cows on test the program has grown to 43 associations, 659 herds and 58,613 cows on test in 1984 (7:11). Table 1 charts the growth from 1979 through 1984 in total herds in Tennessee and the number on DHI. With the number of dairy farms decreasing, the percentage of farms using DHI has grown very little. As milk prices decrease, the very survival of any dairy farm becomes all consuming of the manager. It seems apparent that only the more efficient herds could survive



TABLE 1. Number of Dairy Producers and DHI Membership in Tennessee and Percent Change for 1979 to 1984

Year	Milk Permits <sup>1</sup>		DHI Membership <sup>2</sup>		% Change
	Number	% Change	Number	% of Total	
1979	4,158	-	538	12.9	-
1980	4,012	-3.5	588	14.7	+9.3
1981	4,248	+5.9	640	15.1	+8.8
1982	3,830	-9.8	670	17.5	+4.7
1983	3,695	-3.5	689	18.6	+2.8
1984	3,506	-5.0	659	18.8	-4.4

<sup>1</sup>Tennessee Dairy Statistics, Annual Dairy Summary, 1984, Tennessee Department of Agriculture.

<sup>2</sup>Tennessee Dairy Newsletter, Fall-Winter 1984-85, University of Tennessee Agricultural Extension Service.

heavy price reduction. Since DHI is founded on the principle of improving efficiency, it would follow that more herds would make use of DHI. However, the percentage of dairymen using DHI has leveled off as the total number of producers has decreased. The question arises as to why more producers do not participate in DHI and why do producers who have participated in DHI discontinue its use at a time when it is most needed? Do indicators exist that would flag a producer as likely to continue or discontinue DHI? If so, then these indicators could aid Extension agents in working with producers to achieve a higher level of participation.

## II. PURPOSE OF THE STUDY

The major purpose of this study was to compare dairy producers who used DHI and those who discontinued the use of DHI with the intent to pinpoint factors that would identify future discontinuers of DHI for closer work by Extension agents.

This was to be accomplished through the following specific objectives.

1. To determine differences in practices used by producers who continue DHI and those who had discontinued the use of DHI.
2. To determine major reasons producers use DHI.
3. To determine major reasons producers discontinued the use of DHI.
4. To determine if the number of Extension contacts is related to whether producers continued or discontinued the use of DHI.

5. To determine if production level is related to the decision to continue or discontinue the use of DHI.

6. To determine if there is a relationship between reasons for using or discontinuing DHI and selected producer and herd characteristics.

### III. DEFINITION OF TERMS

Certain terms are used frequently throughout the study and will be defined below:

1. DHI. Dairy Herd Improvement is used to represent the local association made up of local dairy farmers, and also representative of the National Dairy Herd Improvement program.

2. Producer. Means all dairy farmers considered in the study regardless of their participation status.

3. Participant. Tennessee dairy farmers who were still using DHI after January, 1984.

4. Non-participant. Tennessee dairy farmers who had discontinued the use of DHI during the calendar year 1983.

5. Extension. The University of Tennessee Agricultural Extension Service and its employees.

6. Extension contacts. The ongoing work relationship between Extension agents and dairy producers, specifically personal visits, phone calls and group meetings.

7. Rolling herd average. The average pounds of milk produced per cow for a sliding 12 months, hereafter referred to as herd average.

## CHAPTER II

### REVIEW OF RELATED STUDIES

The purpose of this chapter is to summarize findings from other studies concerning the relationship of DHI participation and selected farm characteristics and relationship between Extension contacts and DHI participation. Several studies have been made concerning the characteristics of dairy farmers and their relationship to each other. However, few of these focused solely on DHI. Some researchers (e.g., Reburn in 1983 and Carmichael in 1985) included DHI participation as one of the several characteristics or practices used. Croyle in a 1976 Pennsylvania State study specifically looked at dairy producer attitudes toward DHI and their reasons for participating in DHI.

This chapter is divided into three sections: (1) studies that looked at Extension contacts and DHI participation, (2) studies of relationships between DHI participation and herd characteristics, and (3) the Croyle study of producer attitudes toward DHI.

#### I. RELATIONSHIPS BETWEEN DHI PARTICIPATION AND TOTAL NUMBER OF EXTENSION CONTACTS

Bret James Reburn in a 1983 study found that producers who used D.H.I.A., D.H.I.R. or Basic Management milk production records had significantly more contacts with Extension (19 contacts) than producers who did not use any of the record keeping practices (9 contacts) (5:152).

A similar study using data from the 1984 Tennessee Grade A Dairy survey was made by Mallena C. Carmichael in 1985. Carmichael found that the data indicated that keeping milk production records was significantly related to the number of Extension contacts made of each type (farm visits, office visits, calls, dairy meetings). Producers who kept milk production records made more Extension contacts of each type than those who did not keep milk production records (1:161).

## II. RELATIONSHIPS BETWEEN SELECTED HERD CHARACTERISTICS AND DHI PARTICIPATION

Reburn compared herd size and average milk production per cow to DHI participation. Concerning herd size he found that Grade A dairy producers who kept D.H.I.A., D.H.I.R. or "Basic" milk production records owned significantly more cows (100) than producers who did not use this practice (83) (5:183).

Concerning herd average, he found that Grade A dairy producers who kept milk production records had significantly higher herd average pounds of milk (13,862 lbs.) than producers who did not keep production records (12,357 lbs.) (5:212).

## III. PRODUCER ATTITUDES ABOUT DHI AND REASONS FOR USING DHI

Guy E. Croyle, Jr. surveyed Pennsylvania dairy producers who participated in DHI. The survey dealt with reasons why producers

used DHI and what were the most useful aspects and the least useful aspects of DHI. The results of this study were published in thesis form in 1976.

Croyle found that the three most important reasons for being on a testing program were (1) culling of unprofitable animals, selected by 95 percent of the respondents, (2) useful as a guide for feeding cows, selected by 66 percent of the respondents, (3) helpful for good breeding of cattle, selected by 65 percent of the respondents (3:32).

The three most useful aspects of the testing program reported by Croyle were (1) individual milk weights and butterfat tests, 81 percent of responses, (2) individual cow records, 61 percent of responses, (3) estimated 305 day records, 58 percent of responses (3:33).

Croyle reported that producers rated the following as the three least useful aspects of the testing program, (1) six month lactation report, 71 percent of responses, (2) reproduction management reports, 73 percent of responses, (3) animal identification data, 44 percent of responses (3:34).

## CHAPTER III

### METHODS AND PROCEDURES

Since the data needed for this study had to be obtained from dairy producers, it was necessary to develop survey instruments. This chapter explains the step by step process of establishing survey groups, developing the survey instruments and the processes of collecting and analyzing the data.

#### I. POPULATION STUDY

The primary source of data for this study was dairy producers in Tennessee who were participants in DHI in 1983. The Tennessee Department of Agriculture reports that there were 3,695 dairy producers in the state in 1983 (8). This includes both Grade A and manufacturing level producers. Eighty-seven counties were listed as having dairy producers. Of these producers, 689 participated in DHI, representing 39 counties (6). A check of records indicated that 175 (25.4 percent) of these had discontinued DHI in 1983.

#### II. SAMPLING PROCEDURE

Two groups were to be surveyed for the data needed for this study, those who discontinued the use of DHI in 1983 and those producers who chose to continue using DHI. The Dairy Records Processing Center at Raleigh, North Carolina provided the list of producers who discontinued using DHI. After deleting Basic Management

Herds (owner samplers), goat herds and duplicates, 112 producers were left for surveying. Incorrect addresses or unknown addresses further reduced this number to 99 which became the discontinued or non-participant audience to be surveyed.

To identify the participant audience, the roll of members still using DHI at the end of 1983 was used. Since only data from privately owned herds was desired, institutional herds were deleted. The Nth number of random selection was used to identify 225 producers. In cross referencing addresses, this number was reduced later to 202 producers.

### III. DEVELOPMENT OF INSTRUMENTS

Since the study dealt with users and non-users, it was necessary to design two different surveys. The Tennessee Extension Dairy survey was used as a model. The instrument was designed to obtain information regarding (1) producer and herd characteristics, (2) reasons for leaving or using DHI, (3) use of recommended practices and (4) number of Extension contacts. Areas 1, 3 and 4 were essentially the same on both surveys. After consulting with the Agricultural Extension Education Department, Dairy Extension Department and the president of the Tennessee Dairy Herd Improvement Association, a list of possible reasons for discontinuing DHI and a list of possible reasons for using DHI were compiled. Appendix A and B contains a copy of instruments used.



#### IV. ADMINISTRATION OF PROCEDURE OF OPERATION

July, 1984 was chosen as the time for the first mailing of surveys, this being a somewhat slack time on dairy farms. Prior to mailing surveys to producers, the Extension Leaders of each county that had producers to be surveyed were informed of the surveys, provided copies of the surveys and asked to assist if necessary.

Producers were informed by letter the purpose of the survey and that individual information would be kept confidential. An addressed, stamped envelope was provided to help encourage returns. Due to low response a second mailing to both groups was made in the Fall of 1984. A third mailing was made to non-users the Winter of 1985. Low response of non-users also required surveying producers by phone in the Spring of 1985.

Returned surveys were prepared for computer analysis. For non-users a total of 51 usable surveys were returned or a response rate of 52 percent. Four were returned by the Post Office. A total of 107 usable surveys were received from participants of DHI or a response rate of 55 percent. Eight were either returned by the Post Office, out of dairying or off DHI.

Table 2 shows the breakdown by Extension districts of the respondents who continued and those who discontinued the use of DHI. Districts II, III and V had larger participation. Twenty-six counties were represented in the non-participant survey and 41 counties were represented in the participant survey.

TABLE 2. Number of Respondents by Extension Districts and by DHI Participation Status

District	Participants		Non-participants		Total	
	Number	%	Number	%	Number	%
I	10	9	1	2	11	7
II	34	32	22	43	56	35
III	27	25	7	14	34	22
IV	5	5	6	12	11	7
V	31	29	15	29	46	29
TOTALS	107	100	51	100	158	100

## V. METHOD OF ANALYSIS

The data were coded and programmed for computer analysis. Frequency counts were made for all variables and means were computed for the quantitative variables. One way analysis of variance and the Chi Square test were used to determine relationships between variables.

## CHAPTER IV

### COMPARISON OF PARTICIPANTS AND NON-PARTICIPANTS OF DHI BY SELECTED PRODUCER AND HERD CHARACTERISTICS, EXTENSION CONTACTS AND MANAGEMENT PRACTICES

#### I. INTRODUCTION

The first step in answering the question as to why dairy producers discontinue or continue to use DHI was to compare the two groups directly. This was achieved by comparing those things that are common to most dairy farmers whether they participate in DHI or discontinue its use.

The approach taken in this chapter was to compare participants and non-participants as to (1) characteristics of the producer and the producer's herd, (2) the number of contacts with the Agricultural Extension Service, and (3) the use or adoption of Extension recommended dairy production practices. The purpose of this chapter was to determine which producers are likely to continue DHI and which will likely discontinue its use.

#### II. COMPARISON OF SELECTED PRODUCER AND HERD CHARACTERISTICS

Quantitative variables regarding producer and herd characteristics analyzed in this section were (1) age, (2) number of years of school completed, (3) years on DHI, (4) years in dairying, (5) herd size

at the start of DHI, (6) present herd size or herd size when they discontinued DHI, (7) herd average at the start of DHI, and (8) herd average at the time of the survey or when they left DHI. The means of these characteristics were computed for participants and non-participants and an analysis of variance run for each characteristic. Results are presented in Table 3. To simplify discussion the characteristics are grouped as to being producer oriented or herd oriented.

#### Producer Characteristics

Producer characteristics analyzed in this section were age, education level, years in dairying and years on DHI. Producers who continued DHI were on the average 41.6 years old, completed 13.6 years of school, been in dairying for 22.4 years and had been on DHI for 9.6 years. Producers who discontinued DHI were on the average 42.7 years old, completed 12.8 years of school, been in dairying 11.9 years and had been on DHI 4.7 years.

Age. This is one of only two characteristics for which non-participants were higher than participants. The non-participants averaged 1.1 years older than participants (42.7 and 41.6 respectively), but was not significant at the .05 probability level. Age was not related to whether or not a producer continued using DHI.

Education level. The participants completed a higher level of education than non-participants but only 0.8 of a year more

TABLE 3. Relationships of Selected Producer and Herd Characteristics by DHI Participation Status

Characteristic	Participants		Non-participants		P
	Number responding	Mean	Number responding	Mean	
<u>Producer</u>					
Age	107	41.6 yrs.	50	42.7 yrs.	.590
Education level	107	13.6 yrs.	49	12.8 yrs.	.042
Years in dairying	107	22.4 yrs.	50	11.9 yrs.	.001
Years in DHI	106	9.6 yrs.	49	4.7 yrs.	.001
<u>Herd</u>					
Herd size at start of DHI	104	56.8 hd.	49	60.8 hd.	.510
Present herd size or herd size when left DHI	107	86.2 hd.	49	69.8 hd.	*
Herd average at start of DHI	104	11,682 lbs.	40	11,538 lbs.	.789
Present or when left DHI herd average	106	14,796 lbs.	42	12,866 lbs.	.001

(13.6 and 12.8 respectively). This difference was significant at the .05 probability level. As the education level of producers increased, they were more likely to remain on DHI.

Years in dairying. Producers who continued the use of DHI had been in dairying nearly twice as long as those who discontinued DHI (22.4 years versus 11.9 years). As would be expected the difference was significant at the .05 level. As the number of years in dairying increase, the more likely producers were to continue the use of DHI.

Years on DHI. This characteristic follows a pattern similar to years in dairying. Participants had been on DHI over twice as long as those who discontinued DHI (9.6 years versus 4.7 years). This too was significant at the .05 probability level. The longer a producer used DHI the more likely he was to continue to use DHI.

#### Herd Characteristics

Herd characteristics studied included herd size at the start of DHI, herd size at the time of the survey or when producers left DHI, herd average at the start of DHI, and herd average at the time of the survey or when producers left DHI. Participants herd on the average numbered 56.8 head at the start of DHI and 86.2 head at the time of the survey. Their herd average was 11,682 lbs. at the start of DHI and 14,796 lbs. at the time of the survey. That was a 3,114 lbs. increase during the DHI years. Non-participants herds averaged 60.8 head at the start of DHI and 69.8 head when the producer left

DHI. This was an increase of only 9 head. Their herd average was 11,538 lbs. at the start of DHI and 12,866 lbs. when the producer left DHI. This was an increase of 1,328 lbs. during the DHI years.

Herd size at start of DHI. Beginning herd size was the second characteristic in which non-participants had a higher average than participants (60.8 and 56.8 respectively). This small difference did not prove to be significant at the .05 probability level. The starting herd size was not related to whether or not a producer would continue using DHI.

Present herd size or herd size when left DHI. Participants increased their herd size by 29.4 head while on DHI (from 56.8 to 86.2) whereas non-participants increased herd size by 9 head while on DHI (from 60.8 to 69.8). A coding error prevented doing an analysis of variance for this characteristic, but a strong tendency is indicated. It would appear as herd size increased producers were more likely to continue to use DHI.

Herd average at start of DHI. The participants had a slight advantage in starting herd average over non-participants (11,682 lbs. versus 11,538 lbs.). That is a difference of 144 lbs., but that difference was not significant at the .05 level. The herd average pounds of milk when entered DHI was not related to whether or not a producer continued DHI.

Current or when left DHI herd average. Participants far out gained non-participants in increasing their herd average pounds of



milk while on DHI. The participants herd average at the time of the survey was 1,930 lbs. higher than non-participants herd average when they left DHI (14,796 lbs. versus 12,866 lbs.). This difference was significant at the .05 level. Producers who were on DHI had higher herd average production levels at the time of survey than the non-participants had at the time they dropped out of DHI.

### III. COMPARISON BETWEEN PARTICIPANTS AND NON-PARTICIPANTS BY EXTENSION CONTACTS

The second area of study interest was to compare DHI participants and non-participants as to the level of contact with Extension agents through various methods of contact. Producers were asked to indicate the number of times they had been contacted by Extension agents during the 12 months prior to the survey. These contacts were classified as Extension agent visiting the producer's farm, the producer visiting the Extension office, the producer making phone calls to the Extension office, the producer attending an Extension sponsored dairy meeting and the producer attending any other Extension sponsored meeting.

The average number of contacts was computed for each contact method by participation status. A one-way analysis of variance statistical test was made. Findings are summarized in Table 4.

#### Extension Contact Methods

Farm visits by Extension agent. Participants received more visits to their farms by Extension agents than did the non-participants

TABLE 4. Comparison of the Number of Extension Contacts by Selected Methods by DHI Participation Status

Extension contact method	Participants		Non-participants		F	P
	Number responding	Mean	Number responding	Mean		
Farm visits by Extension agents	100	3.0	48	2.1	1.08	.301
Producer visits to Extension office	99	2.5	47	2.8	.25	.616
Producer phone calls to the Extension office	97	6.0	47	4.6	1.40	.236
Extension dairy meetings attended	97	1.3	47	.8	4.00	.048
Other Extension meetings attended	88	1.6	45	1.1	1.30	.263
Total Extension contacts	89	12.4	45	10.3	.87	.354

(3 visits per year versus 2.1 visits per year). This 0.9 visit difference was not significant at the .05 probability level. The number of farm visits by Extension agents was not related to producers' decision to continue or discontinue DHI.

Producer visits to Extension office. The advantage here swings to the non-participants in that they made more visits to the Extension office in a year than did the participants (2.8 visits versus 2.5 visits). However, the 0.3 visit difference was not significant at the 0.5 level. The number of visits to an Extension office by producers was not related to whether or not producers continued DHI.

Producer phone calls to the Extension office. Findings indicate that on the average participants made more phone calls to the Extension office in a year than did non-participants (6 calls versus 4.6 calls). The difference of 1.4 calls was not significant at the 0.5 level. The number of phone calls made by producers to the Extension office in a year was not related to the producers' decision to continue or discontinue DHI.

Extension dairy meetings attended. Again the participants on the average attended more dairy meetings than did non-participants (1.3 meetings versus .8 meetings). That is a difference of 0.5 meetings. This difference was significant at the .05 level. Producers who were on DHI attended a larger number of Extension dairy meetings than those who had dropped out of DHI.

Other Extension meetings attended. Other Extension meetings would be any meeting where dairy was not the main topic. Again participants on the average attended more (1.6) Extension meetings than did non-participants (1.1). The 0.5 meeting difference was not significant. The number of other Extension meetings attended in a year was not related to whether a producer continued or discontinued DHI.

Total Extension contacts. The number of contacts by the various methods were totaled together and a mean number of contacts per year by participation status was calculated. As would be expected the participants had a higher total number of contacts in a year than did the non-participants (12.4 versus 10.3). This difference of 2.1 contacts was not significant at the .05 level. The total number of Extension contacts dairymen had in a year was not related to whether producers continued or dropped out of DHI.

#### IV. RELATIONSHIPS BETWEEN ADOPTION OF RECOMMENDED MANAGEMENT PRACTICES AND DHI PARTICIPATION STATUS

A third means used to compare DHI participants and non-participants was whether or not they had adopted the use of selected management practices recommended by the Agricultural Extension Service. Practices used for this purpose were (1) dipping teats with an approved solution after milking, (2) washing the udder with a sanitizing solution prior to milking, (3) drying the udder with an individual towel prior to milking, (4) treat cows for mastitis during their dry

period, (5) use artificial insemination on the cows, (6) have forages laboratory tested for nutrient content, (7) keep health records on cows and heifers, (8) perform or have performed regular pregnancy checks on cows, and (9) check on a regular basis milking equipment and vaccum pump.

Producers were asked to indicate whether or not they used each of these practices 75 percent of the time. The percent of yes responses was calculated by DHI participation status and a cross tabulation run for each practice. The results are presented in Table 5.

While it is tempting to use these practices as a measure of managerial ability, they must be looked at only in terms of whether the use of each practice or all of them as a whole was related to producers decision regarding the use of DHI.

#### Recommended Management Practices

Dip teats with an approved solution after milking. The percent of producers using this practice was close to even with non-participants being 0.4 point higher than participants (92 percent versus 91.6 percent). This difference was not significant at the .05 probability level. Therefore the adoption or non-adoption of the practice of dipping teats after milking was not related to producers continuing or not continuing DHI.

Wash udder with a sanitizing solution. Again the percentage of producers using this practice was close to even with participants

TABLE 5. Relationships Between Use of Recommended Management Practices and DHI Participation Status

Recommended management practices	Participants		Non-participants		$\chi^2$ value	p level
	Number of yes responses (N=107)	% of respondents	Number of yes responses (N=51)	% of respondents		
Dip teats with an approved solution after milking	98	91.6	46	92.0	.00	1.000
Wash udder with a sanitizing solution	81	78.6	38	77.6	.00	1.000
Dry udder with an individual towel	65	61.3	25	51.0	5.26	.154
Use a dry cow treatment for mastitis	102	97.1	41	85.4	5.62	.018
Artificially inseminate cows	100	94.3	28	57.1	19.70	.001
Use forage testing	83	82.2	32	65.3	4.35	.037
Keep health records	67	65.7	29	59.2	.36	.551
Pregnancy check cows	88	85.4	37	75.5	1.61	.204
Check milkers and equipment regularly	90	88.2	46	93.9	.63	.427
Average number of practices used	7.2		6.3		9.91	.002

having 78.6 percent and non-participants having 77.6 percent with a difference of one point. This difference was not significant at the .05 level. The adoption of the practice of washing the udder with a sanitizing solution was not related to the decision to continue or discontinue DHI.

Dry udder with an individual towel. This practice gives the first large difference in percentage of use. Participants had a 10.3 points higher level of use than non-participants (61.3 percent versus 51 percent). Even though a larger percent of participants did use this practice the difference was not significant at the .05 level. Therefore, the use of the practice of drying udders with individual towels was not related to participation in DHI.

Use a dry cow treatment for mastitis. The trend for participants to have a higher percentage using a practice continues for this practice (97.1 percent versus 84.5 percent for non-participants). This difference of 11.7 points was significant at the .05 level. Producers who continued to participate in DHI were more likely to treat dry cows for mastitis than were producers who had quit DHI.

Artificially inseminate cows. This practice had greater variation in use among DHI participants and dropouts than any other. Participants (94.3 percent) were 37.2 points higher in usage than non-participants (57.1 percent). This difference was significant.

Producers who remained in DHI were more likely to use the practice of artificial insemination of cows than were those who discontinued DHI.

Use forage testing. Again participants had a higher level of use of this practice than did the non-participants (82.2 percent versus 65.3 percent). The spread between the two groups was 16.9 points. This too proved significant. Producers who continued to participate in DHI were more likely to have their forages tested than were those who discontinued DHI.

Keep health records. For this practice the gap in percentage using narrows to 6.5 points (65.7 percent for participants versus 59.2 percent for non-participants). Although participants continued the trend of a higher usage level, the difference was not significant in this case. The use of this practice of keeping health records was not related to the use of DHI.

Pregnancy check cows. The participants again widen the adoption level to 85.4 percent versus 75.5 percent for non-participants. However, the difference of 9.9 points was not significant at the .05 level. The practice of pregnancy checking cows was not related to the use of DHI by producers.

Check milkers and equipment regularly. The last of the management practices swings back to the non-participants in usage level (93.9 percent for non-participants versus 88.2 percent for participants). The difference of 5.7 points was not enough to be



significant. The use of the practice of checking milking equipment regularly was not related to the use of DHI.

Average number of practices used. The number of practices used by each producer was totaled and the mean number of practices used was calculated for each participation status. An analysis of variance test was made to determine the relationship between total number of practices used and use of DHI.

Participants used an average of 7.2 of the 9 practices listed, while non-participants used 6.3. Although the difference of 0.9 is less than one practice between the two groups, it was significant at the .05 level. Dairymen who remained in DHI used more of the recommended dairy production practices than did those who discontinued the use of DHI.

#### V. SUMMARY

Findings presented in this chapter indicated that criteria for picking out producers who would use DHI longer could be based on higher education levels and longer time spent in dairying. Also those who use a higher number of management practices or use in particular the practices of dry cow treatment for mastitis, artificial insemination of cows or forage testing would tend to stay on DHI longer than producers who adopt fewer practices or do not use these three in particular.

Once on DHI, the probability of a producer staying on DHI will increase greatly the longer he stays on. Also those who increase in

herd size or production level greatly while on DHI will tend to stay on longer than a producer who grows little in herd size or makes small increases in production level.

The one factor that will do little in identifying longevity on DHI is the number of Extension contacts. While this study has shown that participants tended to receive more Extension contacts than non-participants, it has also shown that the number of contacts did not differ significantly among DHI participants and those who discontinued DHI.

Time invested in the program and visible progress seem to have the greatest influence on keeping a producer involved in DHI.

## CHAPTER V

### ANALYSIS OF NON-PARTICIPANTS' REASONS FOR DISCONTINUING DHI AND THEIR RELATIONSHIP TO SELECTED PRODUCER AND HERD CHARACTERISTICS

#### I. INTRODUCTION

It was revealing to compare participants and non-participants by characteristics, Extension contacts, and use of management practices. The comparison however did not give insight as to why producers discontinue the use of DHI.

One approach used to identify reasons producers discontinued using DHI was to just ask them. Another approach was to see what factors may or may not have been related to a producer indicating a particular reason for discontinuing DHI. This was accomplished by cross tabbing producer and herd characteristics with the producer response as to whether particular reasons were why they discontinued DHI.

#### II. REASONS FOR DISCONTINUING DHI

Those producers who had been on DHI prior to 1983 but were no longer using DHI at the time of the survey were asked to answer yes or no for each of nine possible reasons as to why they discontinued the use of DHI. Those possible reasons as presented on the survey were (1) went out of the dairy business, (2) the DHI program had become too expensive, (3) not pleased with their supervisor, (4)

computer printout information not useful, (5) dissatisfied with milk weights, (6) dissatisfied with butterfat tests, (7) no visible progress made in the herd average, (8) lack of recognition for accomplishments, and (9) too much time involved in the program. Producers were also given the opportunity to state any other reason for discontinuing DHI. Some responses were given, but these usually were a restatement of one of the nine possible reasons and therefore were not considered in this analysis.

The number of yes responses for each possible reason were tallied and the percentage as to number responding calculated. Since the reason "went out of dairying" makes all the other reasons moot, the number of yes responses to this reason was deleted from the total number of respondents for the remaining eight, as well as the number of missing responses. The percentage yes responses were recalculated to reflect this reduced number of respondents. The results are listed in Table 6 with "went out of dairying" listed first then the others listed by rank order of percentages.

#### Went Out of Dairying

Looking at this reason first, it is noted that 17 of the 51 producers surveyed or 33.3 percent had gone out of the dairy business in the year previous to the survey. This coincides with a time of over production, increasing feed costs and interest rates and declining milk prices. It is not surprising that one third of the responding producers had gone out of business.

TABLE 6. Rank Order of Reasons Why Non-Participants Discontinued the Use of DHI

Reasons	Number of yes responses N = 51	Percent of all non-participants	Percent of actual responses to each reason Number	%
Went out of dairying	17	33.3	*	*
Too expensive	25	49.0	36	69.4
Not pleased with supervisor	16	31.4	35	45.7
No visible progress in herd average	12	23.5	35	34.3
Printout information not useful	9	17.6	32	28.1
Dissatisfaction with butterfat tests	6	11.8	34	17.6
Too much time involved	6	11.8	35	17.1
Dissatisfaction with milk weights	4	7.8	36	11.1
Lack of recognition for accomplishments	3	5.9	33	9.1

### Too Expensive

Twenty-five of the producers or 49 percent of the total number felt that the cost of using the DHI program had increased to a level that was perceived to be prohibitive for them to continue using it. Deleting the "out of dairying" and non-response producers moves the percentage of 69.4 percent of actual responses. This clearly makes "cost of the program" the primary reason for discontinuing DHI.

### Not Pleased With Supervisor

Sixteen producers (31.4 percent of all non-participants and 45.7 percent of actual respondents) left DHI because they felt they were not getting adequate service from their association's supervisor, also referred to as the testor. This could include dissatisfaction with the manner of sampling, recording data, dependability or even personality. Whatever the reason it was enough for a high percentage of non-participants to give it as one reason for leaving DHI.

### No Visible Progress in Herd Average

Everyone likes to make progress toward a selected goal. Failure to do so may mean the process being used was not the correct one. Twelve of the non-participants (23.5 percent of non-participants or 34.3 percent of actual respondents) felt they were not making any progress in increasing their herd average and chose to discontinue the DHI program. Starting with this reason and through the remainder of the reasons, percentages drop below a one-third level and could be considered low priority reasons for discontinuing DHI.

#### Printout Information Not Useful

Nine non-participants felt that the information received via computer printout from Dairy Records Processing Center were not useful to them. Since it is the return data that should be used in making decisions, to view them as useless would easily lead to discontinuing DHI. The nine non-participants represent 28.1 percent of actual responses.

#### Dissatisfaction With Butterfat Tests

This reason could easily be tied to not being pleased with the supervisor since blame is often laid on the testor or the laboratory doing the butterfat test. Six non-participants or 17.6 percent of actual responses felt that perceived poor butterfat tests was sufficient grounds to give this as a reason for discontinuing DHI.

#### Too Much Time Involved

An equal number of six non-participants perceived that the amount of time on their part spent on DHI had become too excessive or demanding to warrant continuing DHI. This represents 17.1 percent of actual responses.

#### Dissatisfaction With Milk Weights

Again this reason could be closely related to not being pleased with the supervisor since the supervisor does the weighing and recording of weights. However only four of the non-participants (17.1 percent of actual respondents) felt this reason justified leaving

DHI. It is interesting to note that producers were more likely to leave DHI for butterfat problems than milk weight problems.

#### Lack of Recognition for Accomplishments

At first glance there may not seem to be much difference between this reason and "no visible progress in herd average". The latter is an internal factor within the farm while the former is an external factor, praise from outside the farm. With three producers (9.1 percent of actual respondents) answering yes, this is the least important reason for discontinuing DHI. The majority do not use DHI solely for self recognition.

### III. RELATIONSHIPS BETWEEN REASONS FOR DISCONTINUING DHI AND SELECTED PRODUCER CHARACTERISTICS

It is useful to know that the cost of DHI was the predominant reason given by producers for discontinuing DHI. A cross tabulation was run to see if selected producer characteristics were related to the producer indicating each reason for leaving DHI. The producer characteristics are (1) years on DHI, (2) years in dairying, (3) age and (4) education level completed by the producer. Results of cross tabulation analysis are presented in Table 7.

#### Went Out of Dairying

Went out of dairying was considered first since the number of yes responses was deleted from comparisons of the remaining reasons.

Eighteen percent of the producers who had been on DHI one year, 41 percent of those on two to three years and 47 percent of those



TABLE 7. Relationships Between Reasons for Discontinuing DHI and Selected Producer Characteristics

Reasons for discontinuing	Years on DHI				Years in dairying				Producer's age				Producer's education									
	1	2-3	over 4		1-6	7-14	over 15		27-36	37-46	over 47		under 12	over 13								
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%						
<b>Went out of dairying</b>																						
No	14	82	10	59	8	53	7	41	14	88	11	73	9	60	13	72	10	63	19	76	12	55
Yes	3	18	7	41	7	47	10	59	2	12	4	27	6	40	5	28	6	37	6	24	10	45
Chi square	x <sup>2</sup> = 3.44 p = .179																					
<b>Too expensive</b>																						
No	4	25	4	36	3	33	2	20	5	36	4	33	4	36	4	29	3	27	4	18	7	54
Yes	12	75	7	64	6	67	8	80	9	64	8	67	7	64	10	71	8	73	18	82	6	46
Chi square	x <sup>2</sup> = .44 p = .802																					
<b>Not pleased with supervisor</b>																						
No	11	69	5	50	3	33	6	67	9	60	4	36	6	60	9	60	4	40	11	52	8	62
Yes	5	31	5	50	6	67	3	33	6	40	7	64	4	40	6	40	6	60	10	48	5	38
Chi square	x <sup>2</sup> = 3.02 p = .222																					
<b>No visible progress in herd average</b>																						
No	11	69	7	70	5	56	7	78	9	64	7	58	6	60	11	79	6	55	14	67	9	69
Yes	5	31	3	30	4	44	2	22	5	36	5	42	4	40	3	21	5	45	7	33	4	31
Chi square	x <sup>2</sup> = .56 p = .756																					
<b>Printout not useful</b>																						
No	9	56	10	100	4	67	7	78	11	79	5	56	7	70	10	71	6	75	13	68	9	75
Yes	7	44	0	0	2	33	2	22	3	21	4	44	3	30	4	29	2	25	6	32	3	25
Chi square	x <sup>2</sup> = 5.93 p = .052																					

TABLE 7 (Continued)

Reasons for discontinuing	Years on DHI			Years in dairying			Producer's age			Producer's education						
	1	2-3	over 4	1-6	7-14	15	27-36	37-46	over 47	under 12	12	over 13				
	No.	%	No.	No.	%	No.	%	No.	%	No.	%	No.	%			
Disatisfied with butterfat tests																
No	13	81	9	89	12	86	7	70	11	79	10	100	18	90	9	69
Yes	3	19	1	11	2	14	3	30	3	21	0	0	2	10	4	31
Chi square	$\chi^2 = .71$ p = .700			$\chi^2 = 1.07$ p = .584			$\chi^2 = 3.33$ p = .189			$\chi^2 = 1.10$ p = .294						
Too much time involved																
No	13	81	9	100	13	93	7	58	10	100	13	93	6	55	16	76
Yes	3	19	1	0	1	7	5	42	0	0	1	7	5	45	5	24
Chi square	$\chi^2 = .55$ p = .759			$\chi^2 = 7.93$ p = .019			$\chi^2 = 9.26$ p = .010			$\chi^2 = .54$ p = .462						
Disatisfied with milk weights																
No	15	88	10	100	7	78	9	75	9	90	15	100	8	73	18	82
Yes	2	12	0	0	1	7	3	25	1	10	0	0	3	27	4	18
Chi square	$\chi^2 = 2.38$ p = .304			$\chi^2 = 3.77$ p = .152			$\chi^2 = 4.80$ p = .091			$\chi^2 = 1.17$ p = .278						
Lack of recognition for accomplishments																
No	13	87	10	100	7	88	8	80	10	100	13	93	7	78	18	95
Yes	2	13	0	0	1	12	1	20	0	0	1	7	2	22	1	5
Chi square	$\chi^2 = 1.44$ p = .487			$\chi^2 = 2.88$ p = .236			$\chi^2 = 2.94$ p = .230			$\chi^2 = .00$ p = 1.000						

on DHI four or more years indicated "went out of dairying" as the reason for leaving DHI. Even though the percentage answering yes increased as years on DHI increased it was not significant and therefore "went out of dairying" was not related to years on DHI.

Fifty-nine percent of producers who had been in dairying six years or less, 12 percent of those in dairying 7-14 years and 27 percent of those in dairying over 15 years indicated "went out of dairying" as the reason they left DHI. This difference was significant at the .05 probability level. Producers who indicated "went out of dairying" as a reason for leaving DHI were more likely to have been in dairying six or less years.

The cross tabulation did not show any strong tendency or relationship between "went out of dairying" and producer's age or education level.

#### Too Expensive

Eighty-two percent of the producers with 12 or less years of education indicated "too expensive" as a reason for leaving DHI while 46 percent of the producers with over 13 years of education indicated this reason. While there was a strong tendency to indicate that producers indicating "too expensive" as a reason for leaving DHI were more likely to have completed fewer years of school, this was not significant at the .05 probability level. Producer's education level was not related to indicating "too expensive" as a reason for leaving DHI.

The comparison did not reveal any relationship between years on DHI, years in dairying nor producer's age and producer's indicating "too expensive" as a reason for their leaving DHI.

#### Not Pleased With Supervisor

Producers indicating "not pleased with supervisor" were 31 percent of producers on DHI one year, 50 percent of those on DHI 2-3 years and 67 percent of those on DHI more than four years. The tendency was that the percent of producers using this reason increased as years on DHI increased, however this was not significant at the .05 level. Years on DHI was not related to producers indicating "not pleased with supervisor" as a reason for leaving DHI.

Thirty-three percent of the producers in dairying one to six years indicated "not pleased with supervisor" while 40 percent of the producers in dairying 7-14 years did so and 64 percent of the producers in dairying over 15 years indicated this reason. A tendency appears to exist that the percent of producers indicating "not pleased with supervisor" was likely to increase as the years in dairying increased. However this was not found to be significant. Leaving DHI for "not being pleased with the supervisor" was not related to years in dairying.

No relationships were found between producer's age or producer's education and producers indicating "not pleased with supervisor" as a reason for leaving DHI.

### No Visible Progress in Herd Average

The study did not find any strong tendencies nor relationships between any of the producer characteristics and producers indicating "no visible progress in herd average" as a reason for leaving DHI.

### Printout Not Useful

Forty-four percent of the producers on DHI one year indicated "printout not useful" as a reason for leaving DHI. None of the producers on DHI 2-3 years indicated this reason while 33 percent of those on DHI four or more years indicated this as a reason for leaving. The tendency was that producers indicating "printout not useful" were more likely to be in their first year on DHI. However this was just over the .05 level and was not significant. Producers indicating "printout not useful" as a reason for leaving DHI was not related to years on DHI.

No relationships or tendencies were found for years in dairying, producer's age nor producer's education and the use of this reason for leaving DHI.

### Dissatisfied With Butterfat Tests

Of producers between 27 and 36 years old 30 percent indicated "dissatisfied with butterfat tests" as a reason for leaving DHI while 21 percent of those 37-46 years old and none of the producers 47 years or older indicated this reason. It appears the percent of producers indicating this reason was likely to decrease as age increased but this was not found to be significant. Producers

indicating "dissatisfied with butterfat tests" as a reason for leaving DHI was not related to the producer's age.

The other producer characteristics were not found to be related to the use of this reason for leaving DHI.

#### Too Much Time Involved

None of the producers who had been in dairying 1-6 years and 7 percent of those in dairying 7-14 years indicated "too much time involved" as a reason for leaving DHI, while 42 percent of those in dairying 15 or more years indicated this reason. This was significant at the .05 probability level. The percent of producers indicating "too much time involved" as a reason why they left DHI was likely to increase as the number of years in dairying increased.

Also none of the 27-36 aged producers, 7 percent of those 37-46 years old and 45 percent of those 47 or more years old indicated "too much time involved" as a reason for leaving DHI. This too proved to be significant. The percent of producers indicating "too much time involved" was likely to increase as the age of the producer increased.

Neither years on DHI nor producers education proved to be related to using "too much time involved" as a reason for leaving DHI.

#### Dissatisfied With Milk Weights

None of the producers in dairying 1-6 years, 7 percent of those in dairying 7-14 years and 25 percent of those in dairying over 15 years indicated "dissatisfied with milk weights" as a possible reason

for leaving DHI. While it appears that the percent of producers indicating this reason tended to increase as years in dairying increased, it was not found to be significant. The use of this reason was not related to years in dairying.

Similarly, 10 percent of the producers age 27-36 years, none of those aged 37-46 and 27 percent of those over 47 years indicated "dissatisfied with milk weights." Again it seems that as age increased more producers were likely to indicate this as reason for leaving DHI, but it was not significant. Producers indicating "dissatisfied with milk weights" was not related to the producer's age.

Neither years on DHI nor producer's education were shown to be related to producers indicating "dissatisfied with milk weights" as a reason for leaving DHI.

#### Lack of Recognition For Accomplishments

The study did not reveal any strong tendencies nor any significant relationships between years on DHI, years in dairying, producer's age and producer's education level and producers indicating "lack of recognition for accomplishments" as a reason for leaving DHI.

#### IV. RELATIONSHIPS BETWEEN REASONS FOR DISCONTINUING DHI AND SELECTED HERD CHARACTERISTICS

In this section selected herd characteristics are studied in relation to reasons producers gave for discontinuing DHI. Four

characteristics were studied: (1) herd size at the start of DHI, (2) herd size when discontinued DHI, (3) herd average pounds of milk at the start of DHI and (4) herd average pounds of milk when discontinued DHI. These characteristics were cross-tabulated with each reason for leaving DHI to determine the relationship between giving a particular reason for discontinuing DHI and each of these characteristics. The results are summarized in Table 8.

#### Went Out of Dairying

Sixty-seven percent of producers with starting herd size less than 38 head indicated they left DHI because they went out of dairying while 26 percent of producers with 39-70 head starting herd size and 13 percent of those with over 71 head starting herd size said they went off DHI because they went out of dairying. This was significant at the .05 level. Producers who indicated they "went out of dairying" as the reason for leaving DHI were more likely to have smaller starting herd sizes than those who did not indicate this reason.

Fifty percent of producers with starting herd average of less than 10,000 pounds of milk, 38 percent of those with 10,001 to 12,361 pounds and 23 percent of those with over 12,362 pounds starting herd average indicated "went out of dairying" as the reason for leaving DHI. While it appears that fewer producers indicated this reason as starting herd average increased, this was not significant. The use of "went out of dairying" as a reason for leaving DHI was not related to the starting herd average.



TABLE 8. Relationships Between Reasons for Discontinuing DHI and Selected Herd Characteristics

	Herd size at start of DHI				Herd size when left DHI				Herd average at start of DHI (lbs. milk)				Herd average when left DHI (lbs. milk)											
	Less 38		39-70		Less 44		45-72		7,500		10,000		7,625		11,501									
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%								
Reasons for discontinuing	Less 38		over 71		Less 44		over 73		7,500		10,001		7,625		over 11,501									
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%								
Went out of dairying																								
No	5	33	14	74	13	87	9	60	10	63	13	72	7	50	8	62	17	77	10	77	11	69	11	55
Yes	10	67	5	26	2	13	6	40	6	37	5	28	7	50	5	38	5	23	3	23	5	31	9	45
Chi square	$x^2 = 10.38$		$p = .006$		$x^2 = .62$		$p = .733$		$x^2 = 2.92$		$p = .232$		$x^2 = 1.80$		$p = .408$									
Too expensive																								
No	3	50	4	25	4	29	5	50	3	25	3	21	3	33	4	44	4	22	3	27	5	42	3	23
Yes	3	50	12	75	10	71	5	50	9	7	11	79	6	67	5	56	14	78	8	73	7	58	10	77
Chi square	$x^2 = 1.33$		$p = .515$		$x^2 = 2.51$		$p = .286$		$x^2 = 1.44$		$p = .487$		$x^2 = 1.10$		$p = .578$									
Not pleased with supervisor																								
No	3	50	11	73	5	36	7	64	8	67	4	33	4	50	6	67	9	50	7	64	6	55	6	46
Yes	3	50	4	27	9	64	4	36	4	33	8	67	4	50	3	33	9	50	4	36	5	45	7	54
Chi square	$x^2 = 4.18$		$p = .124$		$x^2 = 3.25$		$p = .197$		$x^2 = .75$		$p = .688$		$x^2 = .73$		$p = .693$									
No visible progress in herd average																								
No	3	50	13	87	7	50	7	70	8	67	8	62	6	75	6	67	11	61	9	82	7	64	7	54
Yes	3	50	2	13	7	50	3	30	4	33	5	38	2	25	3	33	7	39	2	18	4	36	6	46
Chi square	$x^2 = 5.11$		$p = .078$		$x^2 = .19$		$p = .911$		$x^2 = .48$		$p = .787$		$x^2 = 2.10$		$p = .350$									
Printout not useful																								
No	5	100	12	80	6	50	9	90	7	70	7	58	6	86	6	75	11	65	9	82	7	78	7	58
Yes	0	0	3	20	6	50	1	10	3	30	5	42	1	14	2	25	6	35	2	18	2	22	5	42
Chi square	$x^2 = 5.29$		$p = .071$		$x^2 = 2.73$		$p = .255$		$x^2 = 1.13$		$p = .567$		$x^2 = 1.78$		$p = .410$									

TABLE 8 (Continued)

	Herd size at start of				Herd size when left				Herd average at start of				Herd average when					
	DHI				DHI				DHI (lbs. milk)				left DHI (lbs. milk)					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Reasons for discontinuing	Less 38	39-70	over 71	over 73	Less 44	45-72	over 73	7,500	10,000	10,001	over	7,625	11,500	11,501	over	11,500	14,500	14,001
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	6	100	12	80	10	77	9	90	10	91	9	69	7	88	7	78	14	82
	0	0	3	20	3	23	1	10	1	9	4	31	1	12	2	22	3	18
Chi square	$x^2 = 1.61$ p = .448				$x^2 = 2.50$ p = .287				$x^2 = .28$ p = .871				$x^2 = 1.42$ p = .492					
Dissatisfied with butterfat test																		
No	6	100	14	93	9	64	9	90	10	83	10	77	8	100	8	89	13	72
Yes	0	0	1	7	5	36	1	10	2	17	3	23	0	0	1	11	5	28
Chi square	$x^2 = 5.80$ p = .055				$x^2 = .68$ p = .711				$x^2 = 3.32$ p = .190				$x^2 = 2.70$ p = .259					
Too much time involved																		
No	6	100	14	93	9	64	9	90	10	83	10	77	8	100	8	89	13	72
Yes	0	0	1	7	5	36	1	10	2	17	3	23	0	0	1	11	5	28
Chi square	$x^2 = 5.80$ p = .055				$x^2 = .68$ p = .711				$x^2 = 3.32$ p = .190				$x^2 = 2.70$ p = .259					
Dissatisfied with milk weights																		
No	5	83	14	93	13	87	11	100	9	75	12	92	7	88	9	100	16	84
Yes	1	17	1	7	2	13	0	0	3	25	1	8	1	12	0	0	3	16
Chi square	$x^2 = .56$ p = .755				$x^2 = 3.87$ p = .144				$x^2 = 1.56$ p = .458				$x^2 = 2.93$ p = .231					
Lack of recognition for accomplishments																		
No	5	83	14	93	11	92	8	80	9	90	13	100	8	100	7	78	15	94
Yes	1	17	1	7	1	8	2	20	1	10	0	0	0	0	2	22	1	6
Chi square	$x^2 = .53$ p = .767				$x^2 = 2.75$ p = .253				$x^2 = 2.83$ p = .242				$x^2 = .00$ p = 1.000					

Neither herd size when left DHI nor herd average when left DHI proved to be related to the use of this reason for leaving DHI.

#### Too Expensive

Fifty percent of producers with less than 44 head herd size when they left DHI, 75 percent of those with 45-72 head and 79 percent of those with over 73 head indicated "too expensive" as a reason for leaving DHI. It appears more producers were likely to indicate "too expensive" as a reason for leaving DHI as the herd size when left DHI increased. However this was not significant. Herd size when left DHI was not related to producers indicating "too expensive" as a reason for leaving DHI.

The study did not reveal any relationships between "too expensive" and starting herd size, herd average at the start of DHI and herd average when left DHI.

#### Not Pleased With Supervisor

Herd size at the start of DHI shows that 50 percent of producers with less than 38 head, 27 percent of producers with 39-70 head and 64 percent of producers with over 71 head indicated "not pleased with supervisor" as a reason for leaving DHI. While it appears that producers indicating this reason were more likely to have starting herd sizes over 71 head but this was not significant. The use of "not pleased with supervisor" was not related to herd size at the start of DHI.

Herd size when left DHI follows a similar pattern. Thirty-six percent of producers with less than 44 head, 33 percent with 45-72

head and 67 percent with over 73 head when they left DHI indicates "not pleased with supervisor" as a reason for leaving DHI. Though it appears producers indicating this reason tended to have herd sizes over 73 head when they left DHI, this was not significant. The use of this reason was not related to herd size when left DHI.

Both starting herd average and herd average when left DHI did not show any relationship to the use of "not pleased with supervisor" as a reason for leaving DHI.

#### No Visible Progress in Herd Average

Fifty percent of producers with less than 38 head at the start of DHI, 13 percent of those with 39-70 head and 50 percent of those with over 71 head at the start of DHI indicated "no visible progress in herd average" as a reason for leaving DHI. It appears that producers indicating this reason tended not to have herd sizes of 39-70 head at the start of DHI however this was not significant. The use of "no visible progress in herd average" was not related to herd size at the start of DHI.

The study did not show any relationships between herd size when left DHI, herd average at start of DHI and herd average when left DHI and the use of "no visible progress in herd average" as a reason for leaving DHI.

#### Printout Not Useful

None of the producers with less than 38 head at the start of DHI indicated "printout not useful" as a reason for leaving DHI while

20 percent of those with 39-70 head and 50 percent of those with over 71 head indicated this as a reason for leaving. While it appears that producers indicating "printout not useful" as a reason for leaving DHI tended to increase as the herd size at the start of DHI increased, it did prove to be significant. The use of this reason was not related to the herd size at the start of DHI.

Neither herd size when left DHI, herd average at the start of DHI nor herd average when left DHI showed any relationship to indicating "printout not useful" as a reason for leaving DHI.

#### Dissatisfied With Butterfat Tests

No strong tendencies nor relationships between herd characteristics and producers indicating "dissatisfied with butterfat tests" as a reason for leaving DHI were revealed by the study.

#### Too Much Time Involved

Looking at herd size at the start of DHI shows that none of the producers with less than 38 head, 7 percent of those with 39-70 head and 36 percent of those with over 71 head at the start of DHI indicated "too much time involved" as a reason for leaving DHI. The tendency was to say that the percent of producers likely to indicate this reason increased as the herd size at the start of DHI increased, but this was not significant at the .05 level. Producers indicating "too much time involved" was not related to the herd size at the start of DHI.

Herd average at the start of DHI follows a similar pattern. None of the producers with less than a 10,000 pound average, 11 percent

of those between 10,001 and 12,361 pounds and 28 percent of those with over 12,362 pound herd average indicated "too much time involved" as a reason for leaving DHI. Again this was not significant. Producers indicating "too much time involved" as a reason for leaving DHI was not related to herd average at the start of DHI.

Neither herd size when left DHI nor herd average when left DHI proved to be related to producers indicating "too much time involved" as a reason for leaving DHI.

#### Dissatisfied With Milk Weights

A tendency was shown for herd size when left DHI. None of the producers with less than 44 head, 25 percent of those with 45-72 head and 8 percent of those with over 73 head indicated "dissatisfied with milk weights" as a reason for leaving DHI. It appears that producers indicating this reason tended to have a herd size of 45-72 head when they left DHI, but this was not significant. Producers indicating "dissatisfied with milk weights" as a reason for leaving DHI was not related to herd size when left DHI.

The study did not reveal any strong tendencies or relationships between producers indicating "dissatisfied with milk weights" as a reason for leaving DHI and herd size at the start of DHI, herd average at the start of DHI and herd average when left DHI.

#### Lack of Recognition For Accomplishments

The study did not show any relationships between producers indicating "lack of recognition for accomplishments" as a reason for

their leaving DHI and herd size at the start of DHI, herd size when left DHI, herd average at the start of DHI or herd average when left DHI.

#### V. SUMMARY

While one-third of the non-participants stated that they went out of dairying as the reason they left DHI, nearly half of the non-participants indicated one reason they left was that the DHI program had become too expensive for them to continue. This was far and away the predominant reason stated for leaving DHI. Not pleased with the supervisor ran a distant second.

In looking at the possible relationships between reasons for leaving and characteristics, it is probably significant that so few characteristics were related to the reasons. Those few that did were producers indicating "went out of dairying" tended to be in dairying six years or less, producers indicating "too much time involved" were more likely to have been in dairying over 15 years and over 47 years old. Producers indicating "went out of dairying" were likely to have a herd size at the start of DHI of less than 38 head. Except for these there does not appear to be any characteristics that can be used to pinpoint producers that might leave DHI for any of the possible reasons given.

## CHAPTER VI

### ANALYSIS OF PARTICIPANTS' REASONS FOR USING DHI AND THEIR RELATIONSHIP TO SELECTED PRODUCER AND HERD CHARACTERISTICS

#### I. INTRODUCTION

Having taken a closer look at why non-participants discontinued using DHI and what factors may have influenced their decision, the same can now be done for the participants and why they use DHI and which factors may influence their decision to do so.

Again the easiest approach was to ask the producers directly as to why they used DHI. The second step was to see what factors may or may not have influenced their indicating a particular reason for using DHI. This was accomplished by crosstabbing producer and herd characteristics with the producer response to each possible reason for using DHI.

#### II. REASONS FOR USING DHI

Those producers who were on DHI at the time of the survey were asked to answer yes or no as to whether each of 11 possible reasons were why they used DHI. The 11 reasons were (1) to project individual cow production level, (2) to provide a culling guide for cows, (3) to provide a guide for grouping cows, (4) to provide a guide for selecting replacement animals, (5) to provide a guide for balancing rations, (6) to calculate feeding costs, (7) to indicate



herd or individual reproductive status, (8) to improve market value of cattle, (9) to provide a check on hired milker performance, (10) to receive recognition for accomplishments and (11) a means to increase production level. These were asked in anticipation of finding an overwhelming reason or reasons why producers use DHI.

The number of yes responses was tallied and percentage of total responses was calculated for each of the possible reasons. The reasons were then ranked by their percentage and are presented in Table 9.

Two reasons were listed by nearly all participants and would have to be tabbed the predominant reasons for using DHI. Those reasons are "to provide a culling guide for cows" at 98.1 percent and "a means to increase production level" at 95.3 percent. Culling low producing cows is certainly a way to increase overall production average, so these two reasons are really companion reasons.

The next two reasons were chosen by over 80 percent of the participants. They were "to project individual production" at 84.1 percent and "to indicate herd or individual reproductive status" at 79.4 percent. These could be classified as highly important reasons for using DHI.

The reasons "to provide a guide for selecting replacement animals" at 65.4 percent, "to improve market value of cattle" at 58.9 percent and "to calculate feeding costs" at 51.4 percent all scored above 50 percent and could be considered as important reasons for using DHI.

The remaining four reasons "to provide a guide for balancing rations" (39.3 percent), "to receive recognition for accomplishments"

TABLE 9. Rank Order of Reasons Why Participants Use DHI

Reasons	Number of yes responses N = 107	Percent of participants responding
To provide a culling guide for cows	105	98.1
Means to increase production level	102	95.3
To project individual production level	90	84.1
To indicate herd or individual reproductive status	85	79.4
To provide a guide for selecting replacement animals	70	65.4
To improve market value of cattle	63	58.9
To calculate feeding costs	55	51.4
To provide a guide for balancing rations	42	39.3
To receive recognition for accomplishments	32	29.9
To provide a guide for grouping cows	24	22.4
To provide a check on hired milker performance	11	10.3

(29.9 percent), "to provide a guide for grouping cows" (22.4 percent) and "to provide a check on hired milker performance" (10.3 percent) were all under 50 percent and could be classified as benefits of using DHI but not overly important reasons for using DHI.

It should be noted that the top four reasons all deal with means of selecting cows to remove and cows to push for higher production. So most producers use DHI to increase their herd's production level. It is also interesting to note that both participants and non-participants in the previous chapter put a low priority on self recognition, they are not on DHI for the glory of it.

### III. COMPARISON BETWEEN REASONS FOR USING DHI AND SELECTED PRODUCER CHARACTERISTICS

As with non-participants just knowing the predominant reasons for using DHI was not very revealing. A closer look at possible factors that might have influenced a producer to give a reason was needed.

A cross tabulation was run for each possible reason for using DHI and selected producer characteristics to see if they were related and therefore a possible factor in using that reason. The selected producer characteristics are (1) years on DHI, (2) years in dairying, (3) producers age and (4) level of education completed by the producer. The results are presented in Table 10 and will be discussed by the ranking of the possible reasons for using DHI.

TABLE 10. Relationships Between Reasons for Using DHI and Selected Producer Characteristics

Reasons for using DHI	Years on DHI				Years in dairying				Producer's age				Producer's education		
	1-4	5-11	12-40	1-12	13-28	29-75	19-34	35-47	48-68	under 12	12 over 13	No.	%	No.	%
<b>To provide a culling guide for cows</b>															
No	3	1	3	0	0	1	3	1	3	0	0	2	4	0	0
Yes	39	97	31	97	34	100	36	97	35	97	100	53	96	52	100
Chi square	$x^2 = 1.03$ p = .598														
	$x^2 = .95$ p = .622														
<b>Means to increase production level</b>															
No	2	5	1	3	2	6	1	3	1	3	8	1	3	2	6
Yes	38	95	31	97	33	94	35	97	33	97	34	92	35	97	34
Chi square	$x^2 = .27$ p = .875														
	$x^2 = 1.50$ p = .473														
<b>To project individual production level</b>															
No	6	15	3	10	3	9	5	14	3	9	4	12	3	7	19
Yes	33	85	27	90	30	91	31	86	30	91	29	88	34	97	29
Chi square	$x^2 = .81$ p = .667														
	$x^2 = .39$ p = .824														
<b>To indicate herd or individual reproductive status</b>															
No	9	5	17	4	12	7	10	7	10	6	18	8	22	5	14
Yes	31	77	25	83	29	88	29	81	29	85	27	82	28	78	30
Chi square	$x^2 = 1.37$ p = .504														
	$x^2 = .29$ p = .864														
	$x^2 = 4.76$ p = .093														
	$x^2 = .06$ p = .814														
	$x^2 = .45$ p = .500														
	$x^2 = .00$ p = 1.000														
	$x^2 = .89$ p = .642														
	$x^2 = .15$ p = .761														

TABLE 10 (Continued)

Reasons for using DHI	Years on DHI			Years in dairying			Producer's age			Producer's education														
	1-4	5-11	12-40	1-12	13-28	29-75	19-34	35-47	48-68	under 12	12 over 13													
	No.	%	No.	No.	%	No.	%	No.	%	No.	%	No.	%											
<b>To provide a guide for selecting replacement animals</b>																								
No	33	11	37	9	27	11	31	11	34	11	31	12	33	16	47	5	15	14	27	19	37			
Yes	27	67	19	63	24	73	25	69	21	66	24	69	24	67	18	53	28	85	38	73	32	63		
Chi square	$\chi^2 = .64$			$p = .725$			$\chi^2 = .12$			$p = .777$			$\chi^2 = 7.87$			$p = .020$			$\chi^2 = .83$			$p = .362$		
<b>To improve market value of cattle</b>																								
No	17	43	10	33	15	43	14	39	15	46	13	36	16	44	16	44	10	30	25	46	17	33		
Yes	23	57	20	67	20	57	22	61	18	54	23	64	20	56	20	56	23	70	29	54	34	67		
Chi square	$\chi^2 = .78$			$p = .678$			$\chi^2 = .65$			$p = .721$			$\chi^2 = 1.89$			$p = .390$			$\chi^2 = 1.34$			$p = .248$		
<b>To calculate feeding costs</b>																								
No	22	55	12	39	16	47	18	50	16	47	16	46	16	44	22	61	12	36	28	52	22	43		
Yes	18	45	19	61	18	53	18	57	18	53	19	54	20	56	14	39	21	64	26	48	29	57		
Chi square	$\chi^2 = 1.86$			$p = .394$			$\chi^2 = .14$			$p = .934$			$\chi^2 = 4.45$			$p = .108$			$\chi^2 = .49$			$p = .685$		
<b>To provide a guide for balancing rations</b>																								
No	28	72	14	48	16	50	24	71	17	52	17	52	19	54	23	68	16	52	30	61	28	55		
Yes	11	28	15	52	16	50	10	29	16	48	16	48	16	46	11	32	15	48	19	39	23	45		
Chi square	$\chi^2 = 5.01$			$p = .082$			$\chi^2 = 3.35$			$p = .187$			$\chi^2 = 2.02$			$p = .365$			$\chi^2 = .19$			$p = .662$		

TABLE 10 (Continued)

Reasons for using DHI	1-4		5-11		12-40		1-12		13-28		29-75		19-34		35-47		48-68		Producer's education under 12		over 13		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
<b>To receive recognition for accomplishments</b>																							
No	27	69	16	59	24	73	21	60	24	75	22	69	23	68	24	67	20	69	34	68	33	67	
Yes	12	31	11	41	9	27	14	40	8	25	10	31	11	32	12	33	9	31	16	32	16	33	
Chi square	x <sup>2</sup> = 1.30 p = .521																						
	x <sup>2</sup> = 1.74 p = .418																						
<b>To provide a guide for grouping cows</b>																							
No	29	74	23	82	24	73	25	74	26	79	25	76	26	74	25	71	25	83	43	88	33	65	
Yes	10	26	5	18	9	27	9	26	7	21	8	24	9	26	10	29	5	17	6	12	18	35	
Chi square	x <sup>2</sup> = .83 p = .660																						
	x <sup>2</sup> = .26 p = .880																						
<b>To provide a check on hired milker performance</b>																							
No	37	97	25	86	26	81	33	94	28	90	27	82	34	97	30	88	24	80	44	88	44	90	
Yes	1	3	4	14	6	19	2	6	3	10	6	18	1	3	4	12	6	20	6	12	5	10	
Chi square	x <sup>2</sup> = 4.87 p = .088																						
	x <sup>2</sup> = 2.77 p = .251																						
	x <sup>2</sup> = 4.83 p = .089																						
	x <sup>2</sup> = .00 p = 1.000																						
	x <sup>2</sup> = .00 p = 1.000																						
	x <sup>2</sup> = 6.07 p = .014																						

### To Provide A Culling Guide For Cows

Since 98.1 percent of the participants indicated this as a reason for using DHI it was difficult to detect any tendencies or relationships.

The study did not reveal tendencies nor relationships between any of the four producer characteristics and producers indicating "to provide a culling guide for cows" as a reason for using DHI.

### Means To Increase Production Level

Again the high number of participants indicating "means to increase production level" as a reason for using DHI made it difficult to detect any relationships as the study did not reveal any relationships between this reason and the four producer characteristics.

### To Project Individual Production Level

Ninety-seven percent of the producers who were 19-34 years of age, 81 percent of those aged 35-47 years and 87 percent of those 48-68 years of age indicated "to project individual production level" as a reason for using DHI. The tendency is that of producers indicating this reason more were likely to be 19-34 years of age. However this was not significant. Producers indicating "to project individual production level" as a reason for using DHI was not related to the producers age.

Neither years on DHI, years in dairying nor producers education was related to producers indicating "to project individual production level" as a reason for using DHI.

#### To Indicate Herd or Individual Reproductive Status

The study did not reveal any strong tendencies nor relationships between years on DHI, years in dairying, producer's age and producer's education level and producers indicating "to indicate herd or individual reproductive status" as a reason for using DHI.

#### To Provide a Guide for Selecting Replacement Animals

Looking at producer's age, 67 percent of producers aged 19-34 years, 53 percent of those 35-47 years old and 85 percent of those 48-68 years old indicated "to provide a guide for selecting replacement animals" as a reason for using DHI. This was significant at the .05 level. Producers indicating "to provide a guide for selecting replacement animals" as a reason for using DHI tended to be in the youngest or the oldest age group (19-34 or 48-68) rather than the middle (35-47) age category.

Neither years on DHI, years in dairying nor producer's education was related to producers indicating "to provide a guide for selecting replacement animals" as a reason for using DHI.

#### To Improve Market Value of Cattle

The study did not reveal any strong tendencies nor relationships between the producer characteristics and producers indicating "to improve market value of cattle" as a reason for using DHI.

#### To Calculate Feeding Costs

Again producer's age shows a strong tendency as 56 percent of the producers aged 19-34 years, 39 percent of those aged 35-47



years and 64 percent of those aged 48-68 years indicated "to calculate feeding costs" as a reason for using DHI. It appears that producers indicating this reason tended to be either under 34 years or over 48 years of age, however, this was not significant. Producers indicating "to calculate feeding costs" as a reason for using DHI was not related to the producer's age.

The study did not reveal any relationships between years on DHI, years in dairying nor producer's education and producers indicating "to calculate feeding costs" as a reason for using DHI.

#### To Provide a Guide for Balancing Rations

Twenty-one percent of the producers that had been on DHI 1-4 years, 52 percent of those on 5-11 years and 50 percent of those that had been on 12-40 years indicated "to provide a guide for balancing rations" as a reason for using DHI. The tendency is to say that producers on DHI 1-4 years are less likely to indicate this reason than those who had been on DHI longer. However, this was not significant, therefore producers indicating "to provide a guide for balancing rations" as a reason for using DHI was not related to years on DHI.

A similar pattern occurs for years in dairying since 29 percent of producers in dairying 1-12 years, 48 percent of those in dairying 13-28 years and 48 percent of those in dairying 29-75 years indicated "to provide a guide for balancing rations" as a reason for using DHI. Again it appeared that producers in dairying 1-12 years were less likely to indicate this reason than those in dairying longer. However,

this was not significant, therefore years in dairying was not related to producers indicating "to provide a guide for balancing rations" as a reason for using DHI.

Neither producer's age nor producer's education level was related to producers indicating "to provide a guide for balancing rations" as a reason for using DHI.

#### To Receive Recognition for Accomplishments

The study did not reveal any strong tendencies nor relationships between the producers' characteristics and producers indicating "to receive recognition for accomplishments" as a reason for using DHI.

#### To Provide a Guide for Grouping Cows

Only producer's education showed a tendency. Twelve percent of producers with under 12 years of education and 35 percent of those with over 13 years of education indicated this reason for using DHI. this was significant at the .05 level. The percent of producers indicating they used DHI "to provide a guide for grouping cows" increased as the education level increased.

Neither years on DHI, years in dairying nor producer's age was related to producers indicating "to provide a guide for grouping cows" as a reason for using DHI.

#### To Provide a Check on Hired Milker Performance

Three percent of producers on DHI 1-4 years, 14 percent of those on 5-11 years and 19 percent of those on DHI 12-40 years indicated this reason for using DHI. While it appeared that as years on DHI

increased more producers were likely to indicate this reason, this was not significant. Years on DHI was not related to producers indicating "to provide a check on hired milker performance."

Three percent of producers aged 19-34 years, 12 percent of those aged 35-47 years and 20 percent of those aged 48-68 years indicated this reason for using DHI. It appeared that as age increased more producers were likely to indicate this reason for using DHI, however, this was not significant. Producer's age was not related to producers indicating "to provide a check on hired milker performance" as a reason for using DHI.

Neither years in dairying nor producer's education level were related to producers indicating "to provide a check on hired milker performance" as a reason for using DHI.

#### IV. RELATIONSHIPS BETWEEN REASONS FOR USING DHI AND SELECTED HERD CHARACTERISTICS

As with the selected producer characteristics it is desirable to take a closer look at selected herd characteristics for relationships to producers indicating any of the possible reasons for using DHI.

The selected herd characteristics were (1) herd size at the start of DHI, (2) herd size at the time of the survey, (3) herd average at the start of DHI and (4) herd average at the time of the survey. A cross tabulation was run to see if herd characteristics were related to producer response to each of the possible reasons for using DHI. The results and analysis are presented in Table 11.

TABLE 11. Relationships Between Reasons for Using DHI and Selected Herd Characteristics

	Herd size at start of						Herd average at start of						Present herd average											
	DHI			Present herd size			DHI (lbs. milk)			DHI (lbs. milk)			(lbs. milk)			(lbs. milk)								
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%						
Reasons for using DHI	6-40		41-60		18-55		56-90		over 91		5,500		10,762		13,303		8,500		13,974		16,001			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
	38	100	32	97	36	97	36	100	33	97	34	100	34	97	33	97	35	100	35	95	34	100		
Chi square	$x^2 = 1.17$		$p = .556$		$x^2 = 1.04$		$p = .595$		$x^2 = 1.01$		$p = .605$		$x^2 = 3.80$		$p = .150$									
To provide a culling guide for cows																								
No	0	0	1	3	1	3	0	0	1	3	0	0	1	3	1	3	0	0	2	5	0	0		
Yes	38	100	32	97	36	97	36	100	33	97	34	100	34	97	33	97	35	100	35	95	34	100		
Chi square	$x^2 = 1.17$		$p = .556$		$x^2 = 1.04$		$p = .595$		$x^2 = 1.01$		$p = .605$		$x^2 = 3.80$		$p = .150$									
Means to increase production level																								
No	3	8	1	3	2	5	2	6	1	3	2	6	2	6	1	3	3	9	2	5	0	0		
Yes	35	92	32	97	35	95	34	94	33	97	32	94	33	94	33	97	32	91	35	95	34	100		
Chi square	$x^2 = 1.25$		$p = .536$		$x^2 = .34$		$p = .845$		$x^2 = .40$		$p = .817$		$x^2 = 2.88$		$p = .237$									
To project individual production level																								
No	4	11	4	13	5	14	4	12	3	9	2	6	5	16	5	15	5	15	3	9	4	12		
Yes	33	89	27	87	30	86	30	88	30	91	31	94	27	84	29	85	28	85	32	91	29	88		
Chi square	$x^2 = .10$		$p = .954$		$x^2 = .44$		$p = .802$		$x^2 = 1.72$		$p = .423$		$x^2 = .71$		$p = .703$									
To indicate herd or individual reproductive status																								
No	6	16	6	19	7	19	4	12	7	22	6	19	7	21	5	15	11	32	4	11	3	9		
Yes	32	84	25	81	30	81	30	88	25	78	26	81	27	79	28	85	23	68	31	89	30	91		
Chi square	$x^2 = .20$		$p = .904$		$x^2 = .25$		$p = .535$		$x^2 = .34$		$p = .842$		$x^2 = 7.65$		$p = .022$									



TABLE 11 (Continued)

	Herd size at start of						Herd average at start of						Present herd average																																			
	DHI			over			DHI (lbs. milk)			(lbs. milk)			DHI			(lbs. milk)																																
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%																														
Reasons for using DHI	6-40		41-60		over 61		18-55		56-90		over 91		5,500		10,762		13,303		8,500		13,974		16,001																									
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%																								
	9	26	15	48	25	83	23	70	24	71	20	63	21	66	21	66	24	75	26	79	23	70	17	53																								
	26	74	15	48	25	83	23	70	24	71	20	63	21	66	21	66	24	75	26	79	23	70	17	53																								
	9	26	16	52	5	17	10	30	10	29	12	37	11	34	11	34	8	25	7	21	10	30	15	47																								
Chi square	$x^2 = 9.45$						$p = .009$						$x^2 = .87$						$p = .646$						$x^2 = 4.99$						$p = .083$																	
To receive recognition for accomplishments																																																
To provide a guide for grouping cows																																																
	33	94	22	73	19	59	33	97	25	76	18	55	25	76	23	70	26	84	26	77	26	74	23	77																								
	2	6	8	27	13	41	1	3	8	24	15	45	8	24	10	30	5	16	8	23	9	26	7	23																								
Chi square	$x^2 = 11.47$						$p = .003$						$x^2 = 16.60$						$p = .000$						$x^2 = 1.78$						$p = .410$						$x^2 = .06$						$p = .968$					
To provide a check on hired milker performance																																																
	32	89	25	86	28	90	32	94	31	91	25	81	27	84	29	88	29	94	33	97	29	85	25	83																								
	4	11	4	14	3	10	2	6	3	9	6	19	5	16	4	12	2	6	1	3	5	15	5	17																								
Chi square	$x^2 = .26$						$p = .879$						$x^2 = 3.25$						$p = .197$						$x^2 = 1.33$						$p = .515$						$x^2 = 3.65$						$p = .162$					

### To Provide a Culling Guide for Cows

The high number of yes response to this reason by producers made detection of any trend almost impossible for this reason for using DHI. None of the herd characteristics were proven to be related to producers indicating "to provide a culling guide for cows" as a reason for using DHI.

### Means to Increase Production Level

Again the high number of yes response to this reason for using DHI made it difficult to detect any relationships. The study did not reveal any strong tendencies or relationships between herd characteristics and producers indicating "means to increase production level" as a reason for using DHI.

### To Project Individual Production Level

Again the study did not reveal any strong tendencies nor relationships between the selected herd characteristics and producers indicating "to project individual production level" as a reason for using DHI.

### To Indicate Herd or Individual Reproductive Status

Looking at present herd average, 68 percent of the producers with herd averages of 8,500-13,973 pounds of milk, 89 percent of those with herd averages of 13,974 to 16,000 pounds of milk and 91 percent of those with herd averages over 16,001 pounds of milk indicated "to indicate herd or individual reproductive status" as a reason for using DHI. This was significant at the .05 level. As

present herd average increased above 13,974 pounds of milk the percent of producers indicating "to indicate herd or individual reproductive status" as a reason for using DHI increased.

Unlike present herd average the other three herd characteristics did not show any strong tendencies or relationships to producers indicating "to indicate herd or individual reproductive status" as a reason for using DHI.

#### To Provide a Guide for Selecting Replacement Animals

Again the study did not reveal any strong tendencies or relationships between the selected herd characteristics and producers indicating "to provide a guide for selecting replacement animals" as a reason for using DHI.

#### To Improve Market Value of Cattle

Seventy-two percent of the producers with a present herd size of 18-55 head, 44 percent of those with present herd size of 56-90 head and 64 percent of those with present herd size of over 91 head indicated "to improve market value of cattle" as a reason for using DHI. This was significant at the .05 level. Producers indicating "to improve market value of cattle" as a reason for using DHI tended to have present herd sizes of either less 55 head or greater than 91 head.

Neither herd size at the start of DHI, herd average at the start of DHI nor present herd average was related to producers indicating "to improve market value of cattle" as a reason for using DHI.



### To Calculate Feeding Costs

Forty-two percent of producers with present herd size of 18-55 head, 64 percent of producers with present herd size of 56-90 head and 51 percent of those with herd size of over 91 head indicated "to calculate feeding costs" as a reason for using DHI. It appears that producers with present herd size of 56-90 head were more likely to indicate this reason for using DHI. However, this was not significant, therefore present herd size was not related to producers indicating "to calculate feeding costs" as a reason for using DHI.

None of the other herd characteristics showed as strong a tendency and none was related to producers indicating "to calculate feeding costs" as a reason for using DHI.

### To Provide a Guide for Balancing Rations

The study did not reveal any strong tendencies nor any relationships between herd characteristics and producers indicating "to provide a guide for balancing rations" as a reason for their using DHI.

### To Receive Recognition for Accomplishments

Twenty-six percent of producers with herd sizes of 6-40 head at the start of DHI, 52 percent of those with herd sizes of 41-60 head and 17 percent of those with herd size over 61 head indicated "to receive recognition for accomplishments" as a reason for using DHI. This was significant at the .05 level. Producers indicating "to receive recognition for accomplishments" as a reason for using DHI tended to have medium sized herds (41-60 head) at the start of DHI.

Present herd average showed a strong tendency in that 21 percent of producers with a present herd average of 8,500-13,973 pounds of milk, 30 percent of those with 13,974-16,000 pounds present herd average and 47 percent of those with over 16,001 pounds present herd average indicated this reason for using DHI. It appears that as present herd average increased the percent of producers indicating "to receive recognition for accomplishments" was likely to increase. However this was not significant, therefore present herd average was not related to producers indicating "to receive recognition for accomplishments" as a reason for using DHI.

Neither present herd size nor herd average at the start of DHI was related to producers indicating "to receive recognition for accomplishments" as a reason for using DHI.

#### To Provide a Guide for Grouping Cows

Six percent of producers with 6-40 head herd size at the start of DHI, 27 percent of those with 41-60 head herd size and 41 percent of those with over 61 head herd size indicated "to provide a guide for grouping cows" as a reason for using DHI. This was significant at the .05 level. As herd size at the start of DHI increased producers were more likely to state "to provide a guide for grouping cows" as a reason for using DHI.

Three percent of producers with a present herd size of 18-55 head, 24 percent of those with 56-90 head herd size and 45 percent of those with over 91 head present herd size indicated this reason for using DHI. This was significant at the .05 level. As present

herd size increased producers were more likely to indicate "to provide a guide for grouping cows" as a reason for using DHI.

Neither herd average at the start of DHI nor present herd average was related to producers indicating "to provide a guide for grouping cows" as a reason for using DHI.

#### To Provide a Check on Hired Milker Performance

A tendency was shown for present herd size as 6 percent of producers with 18-55 head, 9 percent of those with 56-90 head and 19 percent of those with over 91 head indicated this reason for using DHI. It appears that as present herd size increased producers were more likely to indicate this reason. However, this was not significant and present herd size was not related to producers indicating "to provide a check on hired milker performance" as a reason for using DHI.

A similar tendency was shown for present herd average as 3 percent of producers with 8,500-13,973 pound herd average, 15 percent of producers with 13,974-16,000 pound average and 17 percent of those with over 16,000 pounds indicated this reason for using DHI. It appears that as present herd average increased more producers were likely to indicate "to provide a check on hired milker performance" as a reason for using DHI. However, this was not significant and present herd average was not related to producers indicating "to provide a check on milker performance" as a reason for using DHI.

Neither herd size at the start of DHI nor herd average at the start of DHI was related to producers indicating this reason for using DHI.

Five times herd characteristics proved to be related to the use of a particular reason for using DHI. Those relationships were (1) present herd average and "to indicate herd or individual reproductive status", (2) present herd size and "to improve market value of cattle", (3) starting herd size and "to receive recognition for accomplishments", (4) starting herd size and (5) present herd size and "to provide a guide for grouping cows."

#### V. SUMMARY

One objective of this chapter was to find the predominant reason or reasons why producers used DHI. Participants overwhelmingly chose "to provide a culling guide for cows" and "a means to increase production level" as the predominant reasons why they participate on DHI. While increasing production seems to be an obvious objective for the DHI program, it is interesting that producers chose first to use DHI to identify cows that needed to be culled from the herd. While increasing production is something to be hoped for, pinpointing cows to cull is something that is real or tangible.

A second objective of this chapter was to determine if producer or herd characteristics had any bearing on producers selecting particular reasons for using DHI. Comparison after comparison was found not to be related to the use of a particular reason. Only a very few relationships were found.

Producer characteristics were the least related of the two areas looked at. Only two relationships were found (1) producers

indicating "to provide a guide for selecting replacement animals" as a reason for using DHI tended to be either in the youngest (19-34) or the oldest (48-68) age group, and (2) the percent of producers indicating "to provide a guide for grouping cows" increased as the educational level increased.

With the five significant relationships observed, herd characteristics seemed to give the most hope in being able to predict which reasons a producer would indicate for using DHI. Those relationships found were (1) the percent of producers indicating "to indicate herd or individual reproductive status" tended to increase as the present herd average increased, (2) producers indicated "to improve market value of cattle" tended to have either less than 55 head or over 91 head present herd size, (3) producers indicating "to receive recognition for accomplishments" tended to have a 41-60 head herd size at the start of DHI, (4) the percent of producers indicating "to provide a guide for grouping cows" increased as the herd size at the start of DHI increased, and (5) the percent of producers indicating "to provide a guide for grouping cows" increased as the present herd size increased.

## CHAPTER VII

### SUMMARY, DISCUSSION AND RECOMMENDATIONS

#### I. PURPOSE

From the question of why more producers do not participate in DHI came the basis for this study. The concern over keeping producers involved in DHI led to an interest in finding why producers do or do not continue DHI. The major purpose of this study was to compare producers who continued DHI with those that had discontinued the use of DHI. The intention also was to pinpoint factors that would identify further discontinuers of DHI for closer work by Extension agents. This was to be accomplished through the following objectives.

1. To determine differences in practices used by producers who continued DHI and those who had discontinued the use of DHI.
2. To determine major reasons producers use DHI.
3. To determine major reasons producers discontinued the use of DHI.
4. To determine if the number of Extension contacts was related to whether producers continued or discontinued the use of DHI.
5. To determine if production level was related to the decision to continue or discontinue the use of DHI.
6. To determine if there were relationships between reasons for using or discontinuing DHI and selected producer and herd characteristics.

## II. METHODS AND PROCEDURES

The study population was Tennessee dairy producers who had been on DHI in 1983, from which two groups were drawn; those that discontinued DHI during the year and those still on DHI at the end of the year. The latter were selected by random sampling of DHI membership rolls. Survey instruments were developed that sought data from both groups concerning (1) producer and herd characteristics, (2) reasons for using or leaving DHI, (3) use of recommended practices, and (4) number of Extension contacts received. The two groups were surveyed by mail, with some phone surveys for the discontinued group. The returned surveys were prepared for computer analysis using frequency counts for all variables and means computed for the quantitative variables. Then one way analysis of variance and the Chi square test were used to determine relationships between variables.

## III. MAJOR FINDINGS

The major findings from this study are grouped by chapter or comparisons. The three areas were: direct comparison between participants and non-participants, reasons for discontinuing DHI, and reasons for using DHI.

### Direct Comparisons

The study found that producers who continued DHI had a significantly higher level of education, had been in dairying significantly more years, and had been on DHI significantly more

years than those producers who discontinued DHI. The study also revealed that producers who continued DHI had significantly higher present herd averages than producers who left DHI.

The study did show that participants attended a significantly larger number of Extension dairy meetings than did non-participants of DHI. However, it also showed that there was no difference in the total number of Extension contacts received by both groups.

The study also found that participants used a significantly larger number of the recommended management practices than did the non-participants. In particular, participants were more likely to use the following practices: (1) use a dry cow treatment for mastitis, (2) artificially inseminate cows, and (3) use forage testing than were non-participants.

#### Reasons for Discontinuing DHI

While one third of the non-participants indicated they had gone out of dairying as the reason they left DHI, over half of the respondents indicated that DHI had become too expensive as a reason for their leaving DHI. Second behind this was the reason "not pleased with the supervisor."

The study found the following relationships between selected producer and herd characteristics and reasons for leaving DHI: (1) producers indicating "went out of dairying" tended to have been in dairying less than six years, (2) producers indicating "too much time involved" were more likely to have been in dairying over 15 years and were over 47 years of age, and (3) producers indicating "went



out of dairying" were likely to have had a herd size at the start of DHI of less than 38 head.

#### Reasons for Using DHI

The study found that participants indicated "to provide a culling guide for cows" and "a means to increase production level" as the two predominant reasons for using DHI.

The study found two relationships between producer characteristics and reasons for using DHI. They were (1) producers indicating "to provide a guide for selection of replacement animals" tended to be either in the youngest or the oldest age groups and (2) the percent of producers indicating "to provide a guide for grouping cows" increased as the education level increased. The following relationships between herd characteristics and reasons for using DHI were found: (1) the percent of producers indicating "to indicate herd or individual reproductive status" increased as the present herd average increased, (2) producers indicating "to improve market value of cattle" tended to have present herd sizes either less than 55 head or larger than 91 head, (3) producers indicating "to receive recognition for accomplishments" tended to have herds in the 41-60 head range at the start of DHI, (4) the percent of producers indicating "to provide a guide for grouping cows" increased as the herd size at the start of DHI increased, and (5) the percent of producers indicating "to provide a guide for grouping cows" increased as the present herd size increased.

#### IV. DISCUSSION

The question arises, did the findings answer the objectives set forth for the study. To answer this each objective is reviewed in light of the findings.

##### First Objective

The first objective was to determine if there was/is any difference in managerial levels between producers who continue DHI and those who had discontinued the use of DHI. A recommended practice checklist was to be used to measure managerial levels.

The original goal and what was finally achieved was not quite the same. While the practice checklist was used in the survey, it became apparent that it could not be used as an all inclusive measure of managerial ability. There were other factors that could easily determine or measure a producer's managerial ability. While the checklist could not solely determine managerial ability, it did give a good insight into the differences between participants and non-participants.

The study did show that participants did, on the average, use more of the Extension recommended management practices (7.2) than did the non-participants (6.3). In particular more participants use "dry cow treatments for mastitis," artificial insemination on cows," and "forage testing" than did non-participants. It appears that there were some difference in managerial level between the two groups.

A second area that could be related to this is the characteristics of the producers themselves. While the study did

show that participants and non-participants were essentially the same age, it also showed that participants had a significantly higher level of education, a higher number of years in dairying and a higher number of years on DHI. There also appears to be a difference in the basic characteristics of the two groups.

### Second Objective

The second objective was to determine the reasons why producers continue the use of DHI.

This objective, as well as the next one, was probably the easiest to answer. By asking participants directly why they used DHI, it was easy to determine the predominant reasons why producers use DHI. The number one reason was that it provided a guide for culling cows. It is interesting to note that this was also the number one reason picked by producers in Croyle's 1976 Pennsylvania study of DHI members.

The second highest reason was that it provided a means to increase production level. Others that rated high were "projected individual production" and "indicator of herd or individual reproductive status."

### Third Objective

To determine the major reasons why producers discontinued the use of DHI.

Again by directly asking the non-participants why they left DHI, it was found that the predominant reason was that the program

had become too expensive. Unfortunately the study did not touch on whether this was considered a tangible high cost in that the producer could not afford the cost or was the expense perceived to be too high. By perceived expense, did the producer fail to weigh the expense against the benefit gained from the program? This may ask more questions than it answered.

#### Fourth Objective

To determine if the number of Extension contacts influenced whether producers continued or discontinued the use of DHI.

It may be somewhat erroneous to say whether Extension contacts influenced producers decisions. It would be more correct to state whether Extension contacts were related to producers' decision since other unknown factors could have been involved.

In short the study revealed that the number and kind of Extension contacts were not related to the producers' decision to continue or discontinue the use of DHI. Only one type of Extension contact proved related and that was Extension dairy meetings. The more Extension dairy meetings producers attended the more likely they would continue DHI. It appeared that contact by Extension agents had practically no influence on whether a producer decided to continue or discontinue the use of DHI.

#### Fifth Objective

To determine if the benefits derived from DHI (mainly production level) influenced (or was related to) the decision to continue or discontinue the use of DHI.

The study revealed that the rolling herd average or pounds of milk per cow per year was essentially the same at the start of DHI for both participants and non-participants. It also revealed that at the time of the survey those who continued DHI had a higher herd production level than did those who discontinued DHI. Then it might be said that larger gains from the program encourage continued use of the program.

#### Sixth Objective

To determine if there is a relationship between reasons for using or discontinuing DHI and selected producer and herd characteristics.

To answer this objective the two groups were considered separately. The study revealed that very few factors were related to the reasons for discontinuing DHI. Of the producer characteristics, the one most related was "too much time involved." The study found that as age or years in dairying increased producers were more likely to indicate "too much time involved" as why they discontinued DHI. "Went out of dairying" was also related to two characteristics but almost in opposite directions. Producers in the early years of dairying were more likely to use this reason and larger herds at the start of DHI were less likely to use this reason. However these relationships may deal more with keeping producers in business rather than in DHI.

Looking at participants, the study revealed that few producer characteristics were related to reasons for using DHI. Only twice

were producer characteristics proven to be related. They were, middle aged producers were less likely to state "to provide a guide for selecting replacement animals" and as education level increased, producers were more likely to state "to provide a guide for grouping cows" as reasons for using DHI. However, the herd characteristics showed more promise in that five relationships were found. "To provide a guide for grouping cows" was the most related as both starting and present herd size increased participants were more likely to use this reason. Yet because of the low status of this reason, not much importance should be given to these relationships. The other three were, as present herd average increased producers were more likely to state "indicator of herd or individual reproductive status," producers with mid-range present herd size were less likely to state "to improve market value of cattle," and producers with starting herd sizes between 41 and 60 head were more likely to state "recognition for accomplishments" as reasons for using DHI.

## V. RECOMMENDATIONS

1. Encourage Extension agents and DHI associations to maintain and stress those reasons (guide for culling cows and a means to increase production) as benefits of using DHI.
2. Extension agents and associations should seek ways to either reduce the costs of the program or better educate as to the benefits gained for the money invested in the program.

3. Extension agents should be familiar with factors or characteristics that might pinpoint producers as likely to continue or discontinue DHI.

4. Extension agents should help producers realize measurable increases in production through the aids available within DHI.

5. Although the study revealed that Extension contacts were not related to use or discontinued use of DHI, Extension agents should not abandon contact with producers.

6. This study was somewhat limited because of the small size of the audiences involved. Other studies could be done using a larger audience to ease detection of possible relationships.

7. This study dealt with only two groups, producers on DHI and producers that had discontinued DHI. A third group exists that was not even considered, those producers who have never been on DHI. Further study could be done involving comparison of all three groups.

8. There also exists the possibility of a study including supervisors with producers.

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APPENDIX A

SURVEY OF PREVIOUS DHIA PARTICIPANTS

COUNTY \_\_\_\_\_ NAME \_\_\_\_\_

1. Years in DHIA \_\_\_\_\_
2. Years in Dairying \_\_\_\_\_
3. Present herd size (lactating cows) \_\_\_\_\_
4. Herd size at the start of DHIA \_\_\_\_\_
5. Herd size when you left DHIA \_\_\_\_\_
6. In the next five years do you plan for your herd to increase, decrease or stay the same? \_\_\_\_\_
7. Average yearly production per cow (pounds milk) at start of DHIA \_\_\_\_\_
8. Average yearly production per cow (pounds milk) when you left DHIA \_\_\_\_\_
9. Mark Yes or No for each of these possible reasons for your discontinuing the use of DHIA on your farm.  

Yes	No	
( )	( )	Went out of the dairy business
( )	( )	Too expensive
( )	( )	Not pleased with supervisor (testor)
( )	( )	Printout information not useful
( )	( )	Dissatisfaction with milk weights
( )	( )	Dissatisfaction with butterfat tests
( )	( )	No visible progress made in herd average
( )	( )	Lack of recognition for accomplishments
( )	( )	Too much time involved
( )	( )	Other (indicate reason) _____
10. Mark Yes or No whether you use the following practices on your dairy farm (or did use if now out of dairy business)

Yes No

- ( ) ( ) Dipping teats with approved solution after milking  
 ( ) ( ) Washing udder with sanitizing solution  
 ( ) ( ) Drying udder with individual towels  
 ( ) ( ) Using Dry Cow Treatment for mastitis  
 ( ) ( ) Using artificial insemination on cows  
 ( ) ( ) Using forage testing  
 ( ) ( ) Keeping health records for cows and replacement stock  
 ( ) ( ) Checking cows for pregnancy  
 ( ) ( ) Checking milkers and equipment regularly

11. Do you own a personal computer? \_\_\_\_\_
12. Do you plan to go back on DHIA in near future? \_\_\_\_\_
13. Your age \_\_\_\_\_
14. Number of years of school completed \_\_\_\_\_
15. During the past 12 months how many (number) contacts with Extension agent have you had in the following manners.
- Farm visits received from agents? \_\_\_\_\_
- Visits you made to Extension Office? \_\_\_\_\_
- Telephone calls made to the Extension Office? \_\_\_\_\_
- Extension Dairy meeting you attended? \_\_\_\_\_
- Other Extension meetings you attended? \_\_\_\_\_
16. Do you have any suggestions that might help improve the DHIA program?

(Thank you for your help)

APPENDIX B

SURVEY OF PRESENT DHIA PARTICIPANTS

COUNTY \_\_\_\_\_ NAME \_\_\_\_\_

1. Years on DHIA \_\_\_\_\_
2. Years in dairying \_\_\_\_\_
3. Present herd size (lactating cows) \_\_\_\_\_
4. Herd size at the start of DHIA \_\_\_\_\_
5. In the next 5 years do you plan for your herd size to increase, decrease or stay the same? \_\_\_\_\_
6. Average yearly production per cow at start of DHIA \_\_\_\_\_
7. Current average yearly production per cow \_\_\_\_\_
8. Mark Yes or No for each of these possible reasons for using DHIA on your farm

Yes      No

- |                          |                          |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Projected individual production level                |
| <input type="checkbox"/> | <input type="checkbox"/> | To provide culling guide for cows                    |
| <input type="checkbox"/> | <input type="checkbox"/> | To provide a guide for grouping cows                 |
| <input type="checkbox"/> | <input type="checkbox"/> | To provide a guide for selecting replacement animals |
| <input type="checkbox"/> | <input type="checkbox"/> | To provide a guide for balancing rations             |
| <input type="checkbox"/> | <input type="checkbox"/> | To calculate feeding costs                           |
| <input type="checkbox"/> | <input type="checkbox"/> | Indicator of herd or individual reproductive status  |
| <input type="checkbox"/> | <input type="checkbox"/> | To improve market value of cattle                    |
| <input type="checkbox"/> | <input type="checkbox"/> | To provide a check on hired milker performance       |
| <input type="checkbox"/> | <input type="checkbox"/> | Recognition for accomplishments                      |
| <input type="checkbox"/> | <input type="checkbox"/> | Means to increase production level                   |

9. Mark Yes or No whether you use the following practices on the dairy farm

Yes      No

- |                          |                          |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Dipping teats with approved solution after milking |
|--------------------------|--------------------------|--|

- | Yes                      | No                       |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Washing udder with sanitizing solution                |
| <input type="checkbox"/> | <input type="checkbox"/> | Drying udder with individual towels                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Using dry cow treatment for mastitis                  |
| <input type="checkbox"/> | <input type="checkbox"/> | Using artificial insemination on cows                 |
| <input type="checkbox"/> | <input type="checkbox"/> | Using artificial insemination on heifers              |
| <input type="checkbox"/> | <input type="checkbox"/> | Using forage testing                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | Keeping health records for cows and replacement stock |
| <input type="checkbox"/> | <input type="checkbox"/> | Checking cows for pregnancy                           |
| <input type="checkbox"/> | <input type="checkbox"/> | Checking milkers and equipment regularly              |
10. Do you own a personal computer? \_\_\_\_\_
11. Your age \_\_\_\_\_
12. Years of school completed \_\_\_\_\_
13. During the last 12 months, how many (number) contacts with Extension agents have you had in the following manner?
- Farm visits received from Extension agents \_\_\_\_\_
- Visits you made to the Extension office \_\_\_\_\_
- Telephone calls you made to the Extension office \_\_\_\_\_
- Extension dairy meetings you attended \_\_\_\_\_
- Other Extension meetings you attended \_\_\_\_\_
14. Do you have any suggestions that might help improve the DHIA Program?

(Thank you for your help)

## VITA

Stephen J. Hale was born in Morristown, Tennessee on June 14, 1952. He attended Union Heights Elementary in Hamblen County and was graduated from Morristown-Hamblen High School East in June, 1970. The following September he entered The University of Tennessee, Knoxville and in June, 1974 received a Bachelor of Science in Agriculture, majoring in Animal Science.

In June, 1974 he accepted a field position with Pet Dairy, Inc. In April, 1975 he accepted a position with the Tennessee Agricultural Extension Service in Jefferson County and transferred to Greene County in August, 1979. He enrolled in the Graduate School of The University of Tennessee, Knoxville in February, 1983 through the Agricultural Extension Service's shortcourse program.

The author is a member of Epsilon Sigma Phi, the National Association of County Agricultural Agents and Specialist, the Tennessee Fellowship of Christian Extension Workers, the Tennessee Forage and Grassland Council and the National Exchange Club. Mr. Hale is still currently employed with the Tennessee Agricultural Extension Service in Greene County.