

AN EVALUATION OF THE UTILIZATION OF
DAIRY MANAGEMENT INFORMATION,
IN OKLAHOMA

By

NORRIS ELMER NICHOLS

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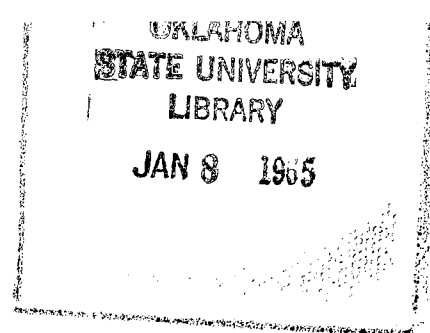
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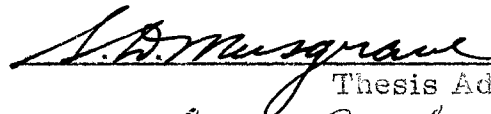
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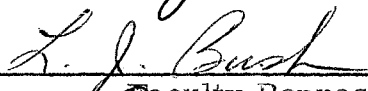


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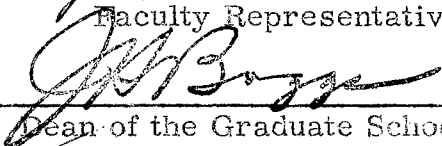
Thesis Approved:



Thesis Adviser



Faculty Representative



Dean of the Graduate School

570275

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INTRODUCTION

The acceptance of recommended farm practices by dairy farmers in Oklahoma has long been a problem to extension dairymen of Oklahoma.

At the moment there is little if any valid scientific basis upon which extension personnel can make wise choices among the variety of methods available for encouraging recommended practice adoption. In order that a method or a combination of methods may be obtained and used by the extension department, a continuous study of relationships between characteristics of farmers and their adoption of practices is needed.

Meetings are conducted each year in many counties of Oklahoma in addition to the use of mass communication to present and discuss new practices available in all phases of dairying. Because of great expense and time involved in this work, an evaluation of the utilization of information by dairy farmers is essential in increasing insight into how to obtain the objectives of the extension program.

An understanding of information sources through which farmers are influenced is advantageous in addition to evaluating the utilization of information by farmers. This information, plus a deeper understanding of the characteristics of adopters and information sources,

provides opportunities for extension personnel to make use of this information in obtaining recommended practice adoption at the highest rate.

The need to increase and refresh the knowledge of County Agents in the future as in the past is desirable in order to accomplish the overall objectives of extension. This has been done with bulletins, circular letters, and short-courses. A measurement of the value of such instruments would be an asset when facing the problem in the future.

Consequently this study was designed with the following objectives in mind:

1. To evaluate the use of recommended practices by dairy farmers in Oklahoma.
2. To gain insight into characteristics of farmers who adopt recommended practices in relation to the characteristics of non-adopters.
3. To evaluate the sources of information by which farmers gain information about recommended practices.
4. To evaluate the effect of prepared short-courses in increasing the knowledge of County Agents.

REVIEW OF LITERATURE

Short-course Evaluation:

There is little empirical evidence to support any method as best in presenting information to increase the knowledge of an individual. Wilson and Gallup (46) in their study of extension teaching methods, stated that "a teaching method found to be effective in teaching one subject may not be effective in teaching another subject or a different group of people." Therefore, many different methods have been tried and most have been effective at different times under different situations. Two factors must be considered in evaluating the effectiveness of the various methods employed in extension teaching.

1. The success of the method in influencing people to make the desired changes.
2. The amount of teaching effort expended in preparation and presentation.

Several workers, Kreitlow et al. (19), Welch et al. (42) and Wilson et al. (46), have reported short-courses or lectures as the most efficient method of presenting information for increasing knowledge. Welch et al. (42) used the group method in his study of the diffusion of knowledge. The group method selected was identified as a short-course and consisted of four, one-half day sessions. When comparing this

method to all communication methods, he found the short-course significantly higher in presenting information when measured by the difference in knowledge gained. His assumption as to the reason for this difference was that bulletins and other types of written communications placed the learning directly in the hands of the individual and his own motivation.

Kinney (17) stated that discussion was the best method of teaching for adults. His study indicated that discussions allowed for more interest among the members of the class and, therefore, more motivation to learn. A second reason for his conclusion about discussion was that the adults had considerable experience and often believed this to be knowledge when it might not be sound. Discussions allowed for presentation of their ideas and for the participants to find falsities in them. Kinney concluded that adults were more independent and that discussion was without a peer in holding a mirror for self-examination.

Kreitlow and Edwards (19) used lectures, bulletins, films, and television in their study of the effectiveness of different methods for developing in adults a knowledge of research findings. They used a nineteen item check list to measure the results of knowledge gained by giving it before and after the presentation of the research.

Over-all observation of the means of correct scores for all of the groups indicated that the lecture-instructed participants gained more knowledge than did those who received the research results in other ways.

They did conclude from their study that bulletins were an effective means of communication if the individuals receiving the bulletins would read them. But, as so often happens, many bulletins were discarded before being read, thereby restricting learning.

Management Practice Evaluation:

Evidence was found in the literature on recommended management procedures to support the practices evaluated as being recommended for profitable dairying.

Research conducted by Hoglund (14) and Huffman (15) has shown that dairy cows that received high amounts of grain in relation to hay exhibited definite advantages in physical output and economic return as long as the potential production level of the cow was not low enough to initiate the point of economic diminishing returns. Since grain provided a lower cost per unit of energy fed than hay, the dairymen would be able to optimize his feeding efficiency for maximum profits if high amounts of grain were fed. This would be true as long as the prices used for hay and grain remained as they were at that time.

Huffman (15) suggested the following plan for profitable feeding of dairy cows: Before calving: about 1 pound of grain should be fed for each 100 pounds of body weight of the cow for at least two weeks prior to calving and continued for four days after calving. A longer prefeeding period might be needed, depending on the condition of the cow. After calving: after four days grain should be increased at the rate of

1 pound for each 3 pounds of milk above 30 pounds per day and this rate of increase should be continued as long as the cow increased in milk production. When the cow failed to respond in milk production with increased grain feeding, feeding at that level should be continued as long as milk production is maintained. As the cow drops 3 pounds in daily milk production, the amount of grain fed should be decreased at the rate of 1 pound per day.

Greenhalgh et al. (11) and Hathaway et al. (13) have reported no increase in mastitis or udder edema from high levels of grain feeding.

In addition to meeting the requirements for energy and protein, feeds must meet the essential requirements for minerals and vitamins. Empirical evidence indicates that dairy cows require sodium, chlorine, calcium, phosphorus, magnesium, potassium, sulfur, iodine, cobalt, copper, manganese, iron, and zinc. Most of the minerals are supplied in sufficient amounts in forages and concentrates fed to high producing cows.

Smith et al. (31) reported that although cows ate more loose than block salt, a sufficient amount of block salt was consumed to meet the needs for milk production if it was available free choice.

Calcium is an essential element in dairy cow rations because of the high requirement for bone and milk. Investigations (4), (41) have shown that the calcium requirement for maintenance varied from 5.2 to 10.6 grams per 1,000 pounds of body weight. One investigation (16) indicated that when 3.0 grams of calcium was allowed per 1,000 pounds

of body weight for maintenance, 1 gram per pound of milk above maintenance was adequate for high producing cows.

Phosphorus is another important mineral that is sometimes deficient in dairy cattle rations. It is essential for proper bone formation and proper metabolism. According to Huffman et al. (16) the phosphorus requirement for milk production ranged from 0.5 to 0.7 grams of feed phosphorus per pound of milk in addition to about 1 gram per 100 pounds of body weight for maintenance.

Evidence indicated (16) that the remaining minerals can be supplied by feeding mineral salt free choice to all cattle.

Breeding efficiency in dairy cattle depends upon two basic requirements: (1) normal reproduction; and (2) the selection and use of superior individuals in the herd.

In order to maintain normal reproduction the evidence indicates the use of three practices: (1) pregnancy checking of all cows bred more than 30 days; (2) veterinary inspection of all animals who do not conceive after two services; and (3) allowing cows 60 days sexual rest after freshening before breeding to allow the reproductive tract to return to normal.

Van Demark et al. (37) reported fertility increased with the length of post-partum sexual rest interval to the first 100 to 120 days. The percentage of abortions and cases of metritis, dystocia, and retained placenta were higher in animals bred at less than 60 days post-partum. Edwards (9) found an increase in conception rate from 48.3 per cent

at 30 days to 62.5 per cent at 60 days and an increase to 73.1 per cent if the cows were bred after 90 days. This agreed with Lindley et al. (20) who reported fewer services per conception for cows bred after 60 days following freshening.

Shannon et al. (30) studied the fertility level of 7,071 cows inseminated at various intervals after calving. The results indicated that a minimum interval from calving to first insemination of 50 days was required for satisfactory fertility.

Casida (2) and Stott et al. (33) reported that the major causes of repeat-breeding were fertilization failure and embryonic loss. This agreed with Tanabe et al. (34) who found that embryonic death before the 34th day after breeding was responsible for much of the lowered fertility in a group of repeat-breeder dairy cows.

Casida and Chapman (3) found that cystic ovaries occurred in 18.8 per cent of the cows and 7.0 per cent of the service periods in a study of 341 cows and 1,280 cow-service periods over a ten year period. Trimberger (35) reported that the cause of irregular intervals in estrus was 18.6 per cent due to silent heat, 15.2 per cent due to a persistent corpus luteum, 3.6 per cent due to smooth, nonfunctional ovaries, and 0.8 per cent due to false estrus.

Evidence clearly indicates the need for dairymen to use either semen from sires in artificial insemination establishments or bulls from the top producing females of the breed. Lush (22) reported that genetic improvement could approach one per cent per year if selection

was concentrated entirely on production, the lowest producers were culled as fast as they could be spared, and in natural service if only the sons of the highest producing cows were used. Searle (29) stated that improvement could be made in a herd by selecting female replacements and using sires that were 30 pounds of milk fat above the average cow in the herd.

Tucker et al. (36), Van Vleck et al. (40), and Corley et al. (6) reported that females sired by artificial insemination from sires in bull studs were significantly superior to their non-artificially sired herd-mates. Corley (6) found that progeny resulting from artificial insemination were significantly superior to their herd-mates resulting from natural service by approximately 13 pounds of fat and 270 pounds of milk. Van Vleck et al. (40) used the first lactation milk and fat records of 24,995 cows that were artificially sired to make a comparison on a within herd-year-season with contemporary cows that were the result of natural service. This study was over a period of ten years. He found that artificially sired progeny were superior significantly (at the 5 per cent or less significance level) in all years but two for milk and one year for fat.

The primary objective of all dairymen is to produce as much milk per cow, that can be sold for human consumption, as is possible. Milk, to be of high quality, must be clean, have good flavor and contain a minimum of bacteria. The dairy farmer must use practices which allow for the production of clean, high quality milk in order to meet

these qualifications.

Moore (25) reported that washing udders with warm, running water was much better than wiping with a cloth or paper towel dipped in solution. This was true both in cleaning the udder of foreign material and in lowering the number of bacteria present. He also reported that washing the udder was a good stimulation for milk let-down by the cow. Knoop and Monroe (18) found that preparation of the udder by washing and use of the strip cup increased milk let-down, decreased milking time and produced cleaner milk.

Neave et al. (26) reported that the use of a strip cup was successful in detecting 90 per cent of the cases of clinical mastitis, in addition to removing the first two or three streams of milk which were usually higher in bacteria count.

Newbould et al. (27) found that dipping teat cups in disinfectant between cows reduced by 90 per cent the number of organisms on the teat cup liners.

Sufficient research has been conducted to provide the empirical evidence necessary to show that management practices are closely related to incidence of mastitis.

Causes of mastitis have been correlated with performance of the milking machine, sanitation procedures, completeness of milking, delayed milking, and selection practices.

Stanley et al. (32) reported that cows milked with a fluctuating vacuum showed significantly more mastitis than those milked with a

standard vacuum.

In 1943 Schalm and Mead (28) reported that five cows became infected as the result of leaving about two pounds of milk in the udder at each milking for 13 weeks. The animals showed normal milk on the strip cup during the three-week preliminary period when they were stripped by hand. Leaving milk in the udder resulted in visible symptoms of mastitis within one to five weeks in all five animals. Elliott (10) reported that leaving residual milk in the udder of 1 pound each milking reduced the average yield by 15 per cent over a 39 day treatment period.

Cooper and Gardner (5) found the loss of milking efficiency, because of the absorption of milk fat and body fat, was associated with the stiffness of the rubber compound and this stiffness increased with the number of milkings. Frequent removal of liners from the teat cups for cleaning was essential although most of the fat below the surface layers could not be removed with the cleaning methods used. Therefore, the replacement and rotation of teat cup liners at regular intervals was essential for proper efficient milking.

Dodd et al. (7), in a study in which 19 first-lactation animals were milked regularly by machine for four minutes and 19 others for eight minutes throughout the lactation, found significantly more infection and mastitis in the latter group.

Characteristics of Adopters:

Marsh and Coleman (24) in their study of 393 farmers in a single

Kentucky county related 21 factors to the adoption of sixteen practices. On the basis of a single cross-tabulation, six of the factors were significant to all practices, namely: education; talks with an agriculture agent in the past two years; socioeconomic status; participation in farm organizations; have read one or more bulletins in the past two years; and the relation of the practice to the price of the product. Three additional factors (having attended farm meetings, size of farm operation, and social participation) were also highly related to a majority of practices adopted. Age was negatively associated with adoption although adoption was higher in age groups under 35 or 35 to 44 years of age.

If a farmer had a high socioeconomic status, then education played a smaller role in final adoption according to Marsh and Coleman (23).

A study of 343 farm operators in 12 neighborhoods of a Kentucky county indicated that neighborhood norms might be important factors in the adoption of farm practices. Young and Coleman (47) found that some neighborhoods ascribed scientific farming attitudes to their neighbors to a much greater extent than in other neighborhoods. They also found that the use of all sources of information was much more characteristic of farmers in some neighborhoods than others.

Wilson and Gallup (46) reported that education, size of farm, contact with extension staff, and socioeconomic status were important determinants in the adoption of farm practices. They found that land tenure and age did not affect adoption.

In Holland, Van Den Ban (38) studied the characteristics of

progressive farmers. He found progressive farmers were those who had large farms, were young, had received vocational training in agriculture, were members of farmers' organizations and were modern in their style of living. In his study Van Den Ban stated that education was probably the most important factor.

In a different study Van Den Ban (39) reported that farmers in more isolated areas usually had more social status quo norms and were less likely to adopt recommended practices.

Marsh and Coleman (23) in their study in 1954 found the mean percentage score was 56 per cent for 21 recommended practices. Their work supported Lionberger (21) in his report that if a neighborhood placed a high value on innovation then others in the community would adopt practices without the influence of other characteristics to such an extent.

The report of Duncan and Kreithlow (8) agreed with Marsh and Coleman (23) that socioeconomic status, education, and membership in agricultural organizations were characteristics of farmers which adopted recommended farm practices. They further found that most homogeneous neighborhoods adopted fewer recommended farm practices than those of heterogeneous neighborhoods.

Factors found to be significant by Gross and Taves (12) were reading college bulletins, age, education, and more trips to metropolitan centers. Their study involved the study of 25 characteristics in 1941 and is supported by much of the recent work.

According to Bailey (1) the adopters of demonstrated practices in

Mississippi were younger, had more education, higher level of living, and higher adoption scores for non-demonstrated practices.

Sources of Information:

Bailey (1) stated that rural sociologists investigating the diffusion of farm practices have repeatedly reported that neighbors and friends were among the most universally used sources of information and were probably sought most frequently as sources of additional information about new ideas learned elsewhere. Further, low income farmers and slow adopters often used other farmers as the first source of knowledge.

Research in mass communications has produced a number of convergent findings. The role of neighbors in the spread of farm practices suggested what has been called the "Two Steps" or multiple step flow of information. Mass communication sources have their greatest influence on adoption leaders and during the initial stages of the adoption process. The second and succeeding steps in the flow of information is from the leaders to their neighbors. This is the important source of knowledge for late adopters and for those in the final stages of adoption.

Demonstrators, as a group, rated higher than the audiences measured in adoption and socioeconomic status. Each demonstrator was rated on the basis of his impact on the farmers living near him. The most effective demonstrators were those that were alike or only slightly better than their neighbors.

He also found that the adopters of demonstrated practices were more

likely to go beyond friends and neighbors to other sources of farm information.

Wilkening (44) and Lionberger (21) agreed that the farmers to whom other farmers go for information were ahead of the average farmer of the community but disagreed as to how far ahead. Wilkening found them only slightly ahead of the average while Lionberger reported that farmers to whom others go for information were far ahead in the use of recommended practices.

Wilkening (43) in his study of 107 farmers in North Carolina reported that farmers of upper-socioeconomic levels gave agricultural agencies as sources of information while those of lower levels gave other farmers and equipment and feed dealers. Dealers and farmers were used more for information about practices associated with the establishment of a farm enterprise. If information was needed for more recent innovations then the sources most used were agricultural agencies and mass communications.

Wilkening, Tully, and Presser (45) studied the problem on information sources in this manner: "Is information sought from persons who are perceived as the most knowledgeable for the type of information or from those with whom the farmer has other ties as neighbors, friends, and relatives?" They also sought to determine to what extent proficiency in farm matters, distance, and other factors influenced information seeking. They randomly selected one farmer in ten to interview as their source of data.

Because of the large number of persons given as persons with whom respondents would discuss farm problems, the results indicated support for the hypothesis that information seeking about farm matters was influenced more by existing social relationships than by the proficiency of those sought for information. At the same time the results supported the hypothesis that information seeking was influenced more by the nature of the information than by the nature of the persons providing the information. Of the total of 186 persons mentioned, 151 were mentioned in only one practice, while 35 were mentioned in two or three practices. Hence, most of the mentions were of one person for a single practice, indicating in general that information seeking was selective by type of information sought.

Wilkening et al. (45) concluded from this analysis that information seeking was selective in that farmers usually went to different persons for information on different types of problems.

There was a greater tendency for the farmers, to whom others would send an inexperienced person, to be a "best farmer" than for the persons they would go to themselves. According to Wilkening this suggested that whereas dairy farmers of the area studied tended to seek information from those who were more non-proficient than themselves in specific topics, there were reasons for their not seeking information from the most proficient or the best farmers. The reasons listed were: (1) lack of opportunity for contact because they belonged to different informal and formal groups; (2) physical distance and differences in

social and economic status; and (3) differences in personality.

The findings of Wilkening et al. (45) in regard to proficiency of those sought for information were that 60 per cent of the choices were of other farmers rated as better farmers than the seekers, 33 per cent were rated as equivalent, and only 7 per cent rated as less proficient. This analysis supported the hypothesis that farmers sought information from other farmers who were better than themselves, although they might be deterred by lack of knowledge about the proficiency of others or by barriers of physical and social distance.

There was a consistent tendency for the better rated farmers to go farther for their information than those rated lower. They found the ratio of farmers sought within a community to those sought outside the community was about twice as great for the "poor" farmers as for the "very good" farmers.

PROCEDURE

Statement of Problem:

The purpose of this study was (1) to determine the effectiveness of an extension short-course in presenting information to county agents; (2) to evaluate the utilization of management information by dairymen in Oklahoma; (3) to study characteristics of dairymen who utilize management information; and (4) to study sources of information from which dairymen obtain management information.

Hypothesis:

The writer formulated the following hypothesis for consideration in this study:

1. County agents who participated in the dairy extension short-course will not possess more dairy knowledge prior to attending the short-course than non-participating county agents.
2. That participation in a short-course by county agents will not improve their knowledge.
3. That characteristics of dairymen have no effect upon their utilization of management information.
4. That dairymen do not seek information from others about problems they encounter.

Identification of the Sample:

The study was divided into three sections to meet the objectives set forth. In section I (short-course evaluation) the sample consisted of county agents in the Northeastern part of Oklahoma who attended the extension short-course voluntarily. There were 16 county agents attending the first session and 14 attended all sessions offered. In addition to the county agents attending the short-course, a control or comparison group of 15 county agents in South Central Oklahoma was chosen. All county agents in this sample had worked as county agents for at least six months and all were college graduates.

In sections II and III, (management practice evaluation and sources of information, respectively) the sample consisted of dairy farmers of two different areas. Mayes County, Northeastern Oklahoma, was chosen as area I and a random sample of 40 dairymen was selected as the sample. Area II consisted of a random selection of 40 dairy farmers in the Oklahoma City milk shed, South Central Oklahoma. There were no stipulations placed upon the qualifications of farmers in the sample except that they be actively engaged in dairy farming.

Development of the Testing Instruments:

The writer, in the planning of this study, realized the importance of adequate instruments to evaluate the information that was to be secured for the study. The short-course was prepared and presented by the Extension Staff, Oklahoma State University, in the fall of 1963. No

previous test was available to measure the effectiveness of the course.

A General Dairy Subject Knowledge Test (Appendix I) was developed with the assistance of the Dairy Science Department Staff and the Dairy Extension Staff. The criteria established for the development of the test required: (1) that each item appearing on the test must be in the material presented in the short-course; and (2) that the individuals mentioned above approve each item. There were 22 items included and covered the four areas of breeding, feeding, records, and management. The respondents were given the choice of marking: (1) yes, the statement is true; (2) no, the statement is false; or (3) not sure.

The General Dairy Subject Knowledge Test was pre-tested on the Dairy Staff and Graduate Students of the Dairy Science Department to test the adequacy of the wording of the questions.

The writer recognizes that the validity of any test made in this manner may be questioned. The items were accepted only after careful consideration and discussion. Most of the items were supported by empirical data in the review of literature.

An opinionnaire (Appendix II) was developed for county agents to rank the effectiveness of the course in each area covered and a ranking of the short-course over all. The opinionnaire included four parts. The respondents were given the following instructions for completion of the opinionnaire:

- I. How would you rate the studies presented as to value?
Circle number that fits your opinion.

	<u>0-1-2</u>	<u>3-4-5</u>	<u>6-7</u>	<u>8-9</u>
Breeding	Little or no help	Some help	Helpful	Very helpful
	<u>0-1-2</u>	<u>3-4-5</u>	<u>6-7</u>	<u>8-9</u>
Feeding	Little or no help	Some help	Helpful	Very helpful
	<u>0-1-2</u>	<u>3-4-5</u>	<u>6-7</u>	<u>8-9</u>
Management	Little or no help	Some help	Helpful	Very helpful
	<u>0-1-2</u>	<u>3-4-5</u>	<u>6-7</u>	<u>8-9</u>
Records	Little or no help	Some help	Helpful	Very helpful
	<u>0-1-2</u>	<u>3-4-5</u>	<u>6-7</u>	<u>8-9</u>
Complete Short Course	Little or no help	Some help	Helpful	Very helpful

II. Would you attend another short-course if it were offered?

_____ Yes _____ No _____ Maybe

III. Would you recommend attending the short-course for those who have not attended?

_____ Yes _____ No _____ Maybe

IV. Please list any criticisms you may have of the material presented or way in which presentation was made.

A third instrument was used to determine the effectiveness of the short-course in preparing county agents for counseling with dairymen.

A Confidence Rating Questionnaire (Appendix III) was prepared with the

assistance of the Oklahoma State University Dairy Staff. It consisted of 25 items with the respondent given the choice of marking: (1) Very Confident; (2) Confident; (3) Doubtful; or (4) Not Qualified.

In evaluating farm practices and determining sources of information it was necessary to develop a questionnaire which would give the desired information. An Information Questionnaire (Appendix IV) was developed with the assistance of the Oklahoma State University Dairy Staff. Criteria established for the development of the test required: (1) that each practice appearing on the questionnaire must be one that was being recommended by dairy extension personnel; and (2) that each item be supported by literature as being a recommended practice. There were 26 practices included on the questionnaire and the respondents could mark: (1) yes, we use this practice; or (2) no, we do not use this practice.

To study certain characteristics of adopters the questionnaire included: (1) size of farm; (2) number of dairy cows and heifers; (3) education level; (4) number of years in dairying; and (5) milk market. The purpose of this information was to study the relationship between adoption and these characteristics.

The third part of the questionnaire consisted of six questions, three which asked the dairyman where he would go for information and three which asked where he would advise someone to go for information.

The farmers, which were selected as the sample, were rated by the county agent of Mayes County and by a fieldman of the Oklahoma City Milk Shed area, each rating the farmers in their respective area.

The farmers were placed in three groups according to their merit as dairymen as follows: Group I - best; Group II - intermediate; and Group III - poor. The purpose of rating the farmers was to study the relationship of their rating with adoption of recommended practices and the relationship of their rating with their source of information.

Administering the Instruments:

The pre-test of the General Dairy Subject Knowledge Test was given by the Extension Staff before the start of the short-course. There were 16 county agents who took the test. Approximately two months after the completion of the short-course the post-test of the General Dairy Subject Knowledge Test, the opinionnaire and the Confidence Rating Questionnaire were sent to the 14 county agents who had attended all sessions of the short-course. All 14 county agents completed and returned the forms.

In April, 1964, the questionnaires concerned with management practice evaluation and sources of information were mailed to all dairymen in the selected sample, along with a letter of instructions for completing the instruments. Self-addressed, stamped envelopes were enclosed with each mailing. After three weeks a follow-up letter was sent to farmers who had not returned the questionnaire. A sufficient number of questionnaires were supplied to the County Agent, Mayes County, and to the Dairy Fieldman, Oklahoma City Milk Shed Area in order that they could have the dairyman fill out and return the questionnaire if their copy had been misplaced. A total of 45 dairymen

completed and returned the questionnaires.

Keith Parchment

Onion Skin

100% COTTON CONTENT U.S.A.

RESULTS AND DISCUSSION

The results of this study will be examined in three sections: (1) short-course evaluation; (2) management practice evaluation; and (3) sources of information. The data are organized to show:

1. The differences that were found among the pre-test scores and post-test scores of county agents attending the Dairy Extension Short-Course.
2. The differences that were found among the scores of county agents attending the short-course and the control group which did not attend.
3. The evaluation of the short-course by county agents attending the Dairy Extension Short-Course.
4. The utilization of management information by dairymen in Oklahoma.
5. The differences that were found in the characteristics of dairymen adopting recommended farm practices and those who did not adopt them.
6. An evaluation of sources from which dairymen seek management information.

Short-Course Evaluation:

Table I presents the results of pre- and post-scores of all of the county agents who completed the Dairy Extension Short-Course. County agents participating in the short-course showed an average improvement in dairy knowledge of 4.3 questions per individual. Although the decrease

in incorrect answers was only 2 questions per individual, a decrease in indecision was noted by the smaller number (4.0 to 1.5) marked not sure. As noted in Table I, a comparison between the pre-test scores of county agents attending the short-course and the control group showed minor advantage to the control group. This minor difference would indicate that the treatment was the major cause of the marked differences between pre- and post-test scores.

The data in Tables II, III, and IV, respectively, present the association of age; years of experience; and educational level with the knowledge scores of county agents. The results indicated no influence of these characteristics upon the learning ability of these people. However, there were indications of influence for both age and years of experience on average knowledge as indicated by changes in pre- and post-test scores. Since all county agents involved were college graduates, no influence was expected because of the difference in whether the agent held the Bachelor of Science or the Master of Science degree. The data in Table IV indicate that this was largely true. It is interesting to note that the only marked difference was with respect to the fact that the Masters degree men in the control group were not sure on more of the questions than were the Bachelors degree men. Whether this is an indirect effect of age or years of experience, or both, or is due to something else is not evident from these data.

The evaluation of the dairy extension short-course by the county agents attending the course is presented in Table V.

TABLE I

EFFECT OF A SHORT-COURSE ON THE DAIRY KNOWLEDGE OF COUNTY AGENTS

	Attending ^a						Not Attending ^b		
	Pre-Test			Post-Test			Control		
	Incorrect	Not Sure	Correct	Incorrect	Not Sure	Correct	Incorrect	Not Sure	Correct
11	2		9	6	1	15	8	2	12
6	1		15	6	0	16	7	8	7
8	2		12	4	5	13	8	9	5
10	8		4	11	0	11	8	1	13
10	6		6	10	1	11	6	5	11
3	9		10	6	3	13	7	8	7
9	5		8	9	1	12	9	4	9
11	2		9	5	7	10	10	1	11
10	4		8	7	0	15	11	3	8
10	0		12	7	0	15	8	1	13
12	1		9	8	0	14	10	0	12
6	7		9	9	0	13	9	4	9
10	0		12	7	1	14	10	5	7
13	4		5	6	2	14	7	3	12
3	14		5				9	3	10
14	0		8						
Average Correct		9.0	Average Correct	13.3		Average Correct	9.6		
Average Not Sure		4.0	Average Not Sure	1.5		Average Not Sure	3.8		
Average Incorrect		9.0	Average Incorrect	7.2		Average Incorrect	8.5		

^aCounty Agents that attended the Short-Course.

^bCounty Agents not attending the Short-Course.

Note: There were 22 questions included on the test and each line of each section of the table represents the performance of one individual.

TABLE II
ASSOCIATION OF AGE WITH KNOWLEDGE SCORES
OF COUNTY AGENTS

Source	Age Group	Incorrect		Not Sure		Correct	
		Average	Range	Average	Range	Average	Range
Pre-test (11)		9.8	3-14	3.1	0-9	9.1	4-15
Post-test (9)	20-45	7.2	5-10	1.3	0-6	13.5	11-16
Control (10)	years	8.4	6-11	4.9	1-9	8.7	5-13
Pre-test (5)		7.6	3-11	6.2	2-14	8.2	5-12
Post-test (5)	45 years	7.2	4-11	1.6	0-5	13.2	11-14
Control (6)	and over	8.3	7-10	2.1	0-4	11.6	9-13

Note: Numbers in parentheses indicate number in group.

TABLE III
ASSOCIATION OF YEARS EXPERIENCE WITH KNOWLEDGE
SCORES OF COUNTY AGENTS

Source	Experience Groups	Incorrect		Not Sure		Correct	
		Average	Range	Average	Range	Average	Range
Pre-test (5)		8.0	3-11	3.8	1-9	10.2	8-15
Post-test (4)	0-10	6.8	5-10	2.8	0-7	12.4	10-16
Control (5)	years	8.0	7-9	4.6	1-9	9.4	5-13
Pre-test (6)		9.3	6-12	4.3	0-8	8.4	4-12
Post-test (5)	11-15	7.6	6-9	0.6	0-1	13.8	12-15
Control (4)	years	8.5	6-11	5.3	3-8	8.2	7-11
Pre-test (5)		9.6	3-14	4.0	0-14	8.4	5-12
Post-test (5)	over 15	7.2	4-11	1.4	0-5	13.4	11-15
Control (6)	years	8.8	7-10	2.1	1-4	11.1	9-12

Note: Numbers in parentheses indicate number in group.

TABLE IV
ASSOCIATION OF LEVEL OF EDUCATION WITH KNOWLEDGE
SCORES OF COUNTY AGENTS

Source	School Group	Incorrect		Not Sure		Correct	
		Average	Range	Average	Range	Average	Range
Pre-test (5)		9.0	6-11	3.8	1-8	9.2	4-5
Post-test (5)	B. S.	7.2	6-11	1.4	1-5	13.4	11-16
Control (5)	Degree	9.0	8-11	2.6	1-4	10.4	8-12
Pre-test (11)		9.2	3-14	4.2	0-14	3.6	5-12
Post-test (9)	M. S.	7.2	6-10	1.5	1-7	13.3	10-15
Control (10)	Degree	8.2	6-10	4.4	1-9	9.4	5-13

Note: Numbers in parentheses indicate number in group.

TABLE V
EVALUATION OF DAIRY EXTENSION SHORT-COURSE
MADE BY COUNTY AGENTS

Portion of Short-Course	Number of County Agents Rating ^a				Average Rating
	0-1-2 Little or No Help	3-4-5 Some Help	6-7 Helpful	8-9 Very Helpful	
Breeding	0	4	9	1	6.1
Feeding	0	0	7	7	7.4
Management	0	4	9	1	6.3
Records	1	5	8	0	5.5
Total Short-Course	0	2	8	4	6.9

^aThere were 14 county agents rating the short-course.

The sections of the course were rated by those taking the course and the section on feeding was rated as the most helpful. All sections were found to be of some help with a helpful rating for the over-all course.

Nine county agents indicated they would attend another short-course if it was offered and five county agents indicated that they might attend. All 14 county agents said that they would recommend attending such a short-course to those who have not attended one.

The criticisms of the short-course were few. Four county agents criticized the course for being too general in material. Three county agents criticized the presentation of material because the instructor did not use actual problems with solutions as examples.

The results of the Confidence Rating Questionnaire on which county agents evaluated their own ability in counseling with dairymen on dairy subjects indicated no benefit from participation in a short-course over non-participation. Both the county agents participating and the control group had an average rating of "confident" on 28 different questions concerning dairying. If the pre- and post-test scores measured real knowledge of these people at the time given, then they apparently did not realize that their knowledge status had improved as indicated in Tables I, II, III, and IV.

Management Practice Evaluation:

The results shown in Table VI express the utilization of 26

TABLE VI
EVALUATION OF THE UTILIZATION OF MANAGEMENT PRACTICES
BY DAIRYMEN IN OKLAHOMA

Practice ^a	Number Adopting	Number not Adopting	Practice ^a	Number Adopting	Number not Adopting
1	44	1	14	24	21
2	44	1	15	35	10
3	13	32	16	44	1
4	42	3	17	17	28
5	26	19	18	5	40
6	39	6	19	33	12
7	23	22	20	28	17
8	41	4	21	16	29
9	18	27	22	43	2
10	22	23	23	40	5
11	25	20	24	18	27
12	39 ^b	6	25	31	14
13	27	18	26	42	3

^aThe practice number indicated is the same as referred to in Appendix IV.

^bIncludes the 25 dairymen using practice number 11.

Note: Number of dairymen participating was 45.

management practices by dairymen in Oklahoma. It was found that the number and type of practice adopted varied from individual to individual. The range of all practices adopted per dairyman was from 9 to 25 with an average adoption score of 17.3. It was further found that the adoption of any one practice ranged from 5 to 44 of the 45 dairymen. No individual had adopted all 26 practices evaluated. The two practices found to be most widely used were the use of Grade A dairy barns which is required for the production of Grade A milk, and the use of bulk tanks which is required in many milk shed areas.

The adoption of practices involving milking procedure varied greatly depending upon the practice. For example, strip cups were used by 13, washing udders before milking by 42, dipping teat cups in disinfectant between cows by 26, hand stripping by 6, and milking cows with mastitis last was used by 33 dairymen. In the care of the milking machines, 41 replaced teat cup liners by complete sets but only 18 dairymen had their machine checked regularly by a milking machine dealer.

It was noted that 22 of 45 dairymen used a Production Testing program. This indicates that one-half of the dairymen do not know the production level of their cows or have a sound basis for the selection of replacement stock.

The breeding practices used by the dairymen of Oklahoma showed promise in the use of sires as 25 dairymen are using proven bulls or artificial insemination and 39 are using purebred sires from high

producing cow families. The care of the cow was evident in that 35 dairymen were giving cows a 50 day rest after calving before breeding and 44 were allowing cows a 50 to 60 day dry period. To maintain proper breeding efficiency the evidence indicates a need for better management. This study showed that only 5 dairymen have their cows checked for pregnancy 60 days after being bred, 17 have hard breeders checked by a veterinarian after two unsuccessful services, and only 24 dairymen keep complete breeding records.

Most dairymen in Oklahoma seem to realize the importance of calfhood vaccination as 44 of 45 dairy farmers vaccinate heifer calves. At the same time only 16 use individual calf pens for young calves to control scours and attempting to nurse other calves.

According to the results of this study, most dairymen are providing adequate feed of good quality to their cattle. It was found that 40 were feeding at least 1 pound of grain for each 3-4 pounds of milk, 31 were using legumes as the primary source of hay, and that 42 were providing adequate mineral supplement. The one exception to recommended feeding was that only 18 dairymen were feeding dry cows at least 1 pound of grain for each 100 pounds of body weight to allow the cow to condition herself for the lactation period that will follow.

Table VII presents the relationship of certain characteristics of dairymen with the number of practices adopted.

It is noted that the relationship of size of farm did not influence the number of recommended practices adopted. Although there was a

TABLE VII
RELATIONSHIP OF CERTAIN CHARACTERISTICS OF DAIRYMEN
WITH NUMBER OF PRACTICES ADOPTED

Characteristic	Number of Individuals in Group	Range	Average Adopted
Size of Farm in Acres			
<200	11	9-21	16.4
200-300	12	13-25	18.6
300-400	11	11-24	16.3
>400	11	14-23	17.9
Number of Animals			
<40	14	9-19	15.6
41-80	17	11-25	17.3
>80	14	14-23	19.0
Years in Dairying			
<10	12	13-24	17.1
11-15	12	9-25	16.0
16-20	11	12-21	17.0
>21	10	16-23	19.4
Educational level			
<Highschool Graduate	22	9-23	15.8
Highschool Graduate	23	13-25	18.8
Rating of Dairymen			
Group I	13	9-24	13.4
Group II	15	14-21	17.7
Group III	17	11-25	13.7

Note: There were 26 practices evaluated.

difference of two practices adopted between farms of 200 to 300 acres with those of less than 200 acres of those of 300 to 400 acres, the probability that the difference was due to chance alone is great. This is also true of the relationship between years in dairying and practices adopted.

The data indicate a positive relationship between number of animals and number of practices adopted, educational level and number of practices adopted, and rating of dairymen with practices adopted. Although the differences could be due to chance, the increase in number of practices adopted, as the number of animals increased and level of education increased, provides some proof of a positive association.

Sources of Information:

The farmers questioned said they would seek advice on general dairy feeding problems, pastures and forages for dairy cattle, and bull and heifer selection from many different sources, as shown in Table VIII. Of 39 sample farmers giving the name of an individual to whom they would go for advice for a general problem in feeding, 17 different names were mentioned. Only three names were mentioned by three or more people, and three by two, leaving 11 who were mentioned by only one person.

A similar pattern was found with respect to other individuals sought for advice about pasture and forage problems and for advice about bull and heifer selection problems. Thirty-six respondents gave names of 14 different individuals to whom they would go for advice on

TABLE VIII

NUMBER OF TIMES AN INDIVIDUAL WAS MENTIONED AS A
SOURCE OF INFORMATION ABOUT FEEDING, PASTURE
AND FORAGES OR BULL AND HEIFER SELECTION

Number of Times Individual Mentioned	Type of Information Sought		
	Feeding	Pasture and Forages	Bull and Heifer Selection
1	11	9	14
2	3	2	2
3	1	1	1
4	1	1	1
5 or more	1	1	1
Number reporting	(39)	(36)	(41)

TABLE IX

BREAKDOWN OF MAJOR SOURCES OF INFORMATION
SOUGHT BY DAIRYMEN IN OKLAHOMA

Source Sought	Type of Information Sought		
	Feeding	Pasture and Forages	Bull and Heifer Selection
County Agents	16	17	14
College Staff	7	6	5
Other Farmers	6	5	9
Feed Dealers	3	1	0
A. I. Representatives	0	0	6
Themselves	4	4	4
DHIA Testers	0	0	2
Veterinarian	1	0	1
Magazines and Books	2	3	0
Number Reporting	(39)	(36)	(41)

on pasture and forage matters. Five were mentioned by two or more and nine by only one of the farmers interviewed. Forty-one farmers gave names of 19 different individuals to whom they would go for advice on bull and heifer selection matters. Five were mentioned by two or more and 14 by only one of the farmers interviewed. The respondents did not answer all of the questions on each questionnaire. There was some indication that information was sought only as there appeared to be a need for it or that it was selective in nature.

Table IX presents a breakdown of major sources of information sought by dairymen in Oklahoma. The general trend of dairy farmers to seek information from professional sources, especially from county agents and college staff members, is evident as they account for 56 per cent of the persons named. Other farmers still remain an important source of information for some dairymen, as approximately 17 per cent of the individuals named were other farmers.

A comparison between sources of information sought by dairymen and the sources of information recommended by dairymen for others shows that these are not the same. The results, as shown in Table X, indicate a concentration of information in fewer recommended individual sources for others than was found in the sources of information sought by the dairyman for himself. For example, 12 individuals were mentioned three or more times as recommended sources as compared to eight individuals mentioned three or more times (Table VIII) as

TABLE X

NUMBER OF TIMES AN INDIVIDUAL WAS MENTIONED AS A
RECOMMENDED SOURCE OF INFORMATION ABOUT
FEEDING, PASTURE AND FORAGES
OR BULL AND HEIFER SELECTION

Number of Times Individual Mentioned	Type of Information Sought		
	Feeding	Pasture and Forages	Bull and Heifer Selection
1	4	4	9
2	1	1	2
3	4	1	1
4	0	1	2
5 or more	1	2	1
Number Reporting	(38)	(36)	(40)

TABLE XI

BREAKDOWN OF MAJOR SOURCES OF INFORMATION
RECOMMENDED BY DAIRYMEN IN OKLAHOMA

Source Sought	Type of Information Sought		
	Feeding	Pasture and Forages	Bull and Heifer Selection
County Agents	21	23	21
College Staff	10	9	9
Other Farmers	2	3	5
Feed Dealers	4	0	0
A. I. Representatives	0	0	4
Magazines and Books	1	1	1
Number Reporting	(38)	(36)	(40)

sought sources of information. Further evidence of concentration of information is shown in Table XI where 81 per cent of the individuals mentioned were county agents and college staff members as compared to 56 per cent (Table VIII). Other farmers were mentioned to a smaller degree as recommended sources of information. A comparison shows only 3 per cent of the individuals mentioned as recommended sources were farmers to 17 per cent (Table VIII) of the individuals mentioned as sources of information.

To send someone to a different source of information might mean that the dairy farmer believes that individual to be a better informant than the person to whom he goes. It could be that the dairymen does not go to the recommended individual because of social barriers, or that he prefers to seek information from someone with whom he has closer ties.

That better dairymen tend to seek information from professional sources to a greater extent than do poor dairymen is demonstrated in Table XII. There is evidence that poor dairymen use other farmers and rely on themselves for solutions more than the better dairymen.

Table XIII presents results which indicate that all dairymen regardless of rating tend to recommend professional sources of information more than they use such sources.

In this study the average distance a dairyman was from his source of information was: general feeding problems - 21 miles; pastures and forages - 12.5 miles; and bull and heifer selection - 20.5 miles. The

TABLE XII

COMPARISON OF DAIRYMEN'S RATINGS WITH THEIR
SOURCES OF MANAGEMENT INFORMATION

Source of Information Groups	Type of Information Sought								
	Feeding			Pasture and Forages			Bull and Heifer Selection		
	1	2	3	1	2	3	1	2	3
County Agents	5	5	6	7	5	5	3	5	6
College Staff	3	3	1	2	3	1	2	2	1
Feed Dealers	2	0	1	0	1	0	0	0	0
A. I. Representatives	0	0	0	0	0	0	4	2	0
Other Farmers	1	1	4	1	0	4	3	0	6
Themselves	1	0	3	2	0	2	1	0	3
DHIA Testers	0	0	0	0	0	0	0	1	1
Veterinarian	0	1	0	0	0	0	0	1	0
Magazines and Books	1	1	1	1	2	0	0	0	0
Number Reporting	(13)	(11)	(15)	(13)	(11)	(12)	(13)	(11)	(17)

TABLE XIII

COMPARISON OF DAIRYMEN'S RATINGS WITH THEIR
RECOMMENDED SOURCES OF
MANAGEMENT INFORMATION

Source of Information Groups	Type of Information Sought								
	Feeding			Pasture and Forages			Bull and Heifer Selection		
	1	2	3	1	2	3	1	2	3
County Agent	7	6	8	9	5	9	5	7	9
College Staff	4	4	2	3	4	2	3	4	2
Feed Dealers	1	1	2	0	0	0	0	0	0
A. I. Representatives	0	0	0	0	0	0	3	1	0
Other Farmers	0	0	2	0	1	2	2	0	3
Magazines and Books	0	0	1	0	1	0	0	0	1
Number Reporting	(12)	(11)	(15)	(12)	(11)	(13)	(13)	(12)	(15)

average distance in comparison for recommended sources of information for other people was 26.5 miles for feeding; 25.5 miles for pasture and forage; and 25 miles for bull and heifer selection.

SUMMARY AND CONCLUSIONS

This study was conducted to determine the value of an extension short-course upon knowledge gained, the utilization of management information by dairymen, and the sources of information from which dairymen seek management information.

Evaluation of the short-course involved 14 county agents. Each of the 14 participating agents were given a pre-test of 22 questions on general dairy subjects at the beginning of the Dairy Extension short-course. After completing the short-course the same 14 county agents were given a post-test to determine the value of the short-course upon knowledge gained. The results of the short-course evaluation showed an average improvement in dairy knowledge of 4.3 questions per individual. There were indications that both age and years of experience influenced the average knowledge as indicated by the changes in pre- and post-test scores. However, no influence was found upon the learning ability of these people due to age or years experience.

An evaluation of the utilization of management practices and an evaluation of the sources of management information was also conducted involving dairymen in two areas of the state. Forty-five of the dairymen sent a questionnaire covering 26 recommended management

practices and questions on their source of management information completed and returned the questionnaire for evaluation. The number and type of practices adopted varied among individuals. The range of adoption per dairyman was 9 to 25 with an average adoption score of 17.3. The adoption of any one practice ranged from 5 to 44 of the 45 dairymen. A positive relationship existed between the number of animals per dairy farmer and the number of practices adopted, educational level and the number of practices adopted, and the rating of dairymen with the number of practices adopted.

Dairymen appeared to seek information from many sources. There were indications that information was sought only when needed and that this information was selective in nature. Dairymen in this study showed a tendency to seek information from professional sources, especially county agents and college staff members, more frequently than from non-professional sources. It was noted that dairymen recommended sources of information to others which they do not use themselves. This may be due to either social barriers between the individuals or that the dairymen believed those individuals to be better informants. In this study the average distance the dairyman's recommended source of information was found to be farther than the source of information the dairyman used himself.

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APPENDIX I

Keith Parchment
Ontario State

APPENDIX I

GENERAL DAIRY SUBJECT KNOWLEDGE TEST

A Survey of Information to Determine the
Value of Extension Short-Courses as a
Means of Informing Professional
Dairy Personnel

Please do not sign your name. Please check one of the following:

Are you:

County Agent _____ Fieldman for Dairy Concern _____ Other _____

Please check your age bracket:

Twenty to thirty years of age _____ Thirty to forty-five years of age _____
Over forty-five years of age _____

Please check last year completed in school:

Do you:

First through eighth grade _____

Have a B. S. Degree _____

Ninth through twelfth grade _____

Have a M. S. Degree _____

College _____

Did you:

Major in Dairy in College _____

Major in Agricultural College _____

Major in unrelated field _____

How long have you been employed at the job you now hold? _____

- | | | | | | | | | |
|-----|--|----------|--|--|---|----|----------|--|
| 1. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">Not Sure</td> </tr> </table> | | | | Yes | No | Not Sure | DHIR, DHIACP, and OSCP provide the dairyman with the same information on monthly herd reports. |
| | | | | | | | | |
| Yes | No | Not Sure | | | | | | |
| 2. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | To maintain herd size of 43 cows of milking age under average conditions, it will require the breeder to keep 12 replacement heifer calves each year. | | | |
| | | | | | | | | |
| 3. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | From the feed tag analysis is it possible to calculate either the TDN or estimated net energy of the feed? | | | |
| | | | | | | | | |
| 4. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | A recommended management practice in preventing spread of mastitis is to milk heifers first, non-mastitis cows second, and mastitis cows last. | | | |
| | | | | | | | | |
| 5. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | An average herd rating of "good plus" or good for type is high enough for the average dairyman to maintain, both grade and registered breeders. | | | |
| | | | | | | | | |
| 6. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | Dairy cows utilize energy only for production and maintenance. | | | |
| | | | | | | | | |
| 7. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | All record systems requiring a supervisor are official breed information for breed publication. | | | |
| | | | | | | | | |
| 8. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | Teat cups should be dipped in hot chlorine water between cows to help prevent the spread of mastitis. | | | |
| | | | | | | | | |
| 9. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | Keeping cows with mastitis in separate lots is a good practice. | | | |
| | | | | | | | | |
| 10. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | The order of frequency of cows being culled from herd is: (1) Low production (2) Mastitis and udder problem (3) Sterility. | | | |
| | | | | | | | | |
| 11. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | The amount of profit above feed cost per cow is shown on DHIR testing information. | | | |
| | | | | | | | | |
| 12. | <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> <td style="border-bottom: 1px solid black; width: 50px;"></td> </tr> </table> | | | | To prevent improper milking interval, the maximum number of cows per lot should be 75. | | | |
| | | | | | | | | |

- | 13. | Yes | No | Not Sure | |
|-----|-----|----|----------|---|
| | | | | In loose housing a bedding area of approximately 60 square feet per cow is recommended. |
| 14. | | | | Is it possible to determine from central processed records the percent of energy requirements your animals received as compared to the standard needed? |
| 15. | | | | The strip cup will detect mastitis in its earliest stages. |
| 16. | | | | To prevent off flavors in milk it is recommended that the cows be removed from feed at least 6 hours prior to milking. |
| 17. | | | | Microorganisms found in the rumen can use non-protein sources of nitrogen to produce many of the essential amino acids needed by dairy cows. |
| 18. | | | | Is it possible to determine the total production of an individual for 180-day period from information received from DHIA and DHIR herd reports? |
| 19. | | | | Can records of cows of the same breed within a herd be compared by the use of M. E. records? |
| 20. | | | | Is it possible to compare cows of different breeds by the use of FCM (Fat corrected milk) records. |
| 21. | | | | The difference between herds is about 90% environmental and only 10% hereditary. |
| 22. | | | | The surface of the rumen consists of many projections known as papillae which are important in increasing the area of absorption of nutrients. |

APPENDIX II

Keith Parchment

Onion Skin

100% COTTON CONTENT USA

APPENDIX II

SHORT-COURSE EVALUATION OPINIONNAIRE

In 1963 you attended a short-course presented by the Dairy Extension Department consisting of four major areas of study.

These areas were:

- (1) Dairy Cattle Breeding
- (2) Dairy Cattle Feeding
- (3) Dairy Cattle Management
- (4) Dairy Production Records

Please complete these questions:

I. How would you rate the studies presented as to value? Circle number that fits your opinion.

Breeding	<u>0-1-2</u> Little or no help	<u>3-4-5</u> Some help	<u>6-7</u> Helpful	<u>8-9</u> Very helpful
Feeding	<u>0-1-2</u> Little or no help	<u>3-4-5</u> Some help	<u>6-7</u> Helpful	<u>8-9</u> Very helpful
Management	<u>0-1-2</u> Little or no help	<u>3-4-5</u> Some help	<u>6-7</u> Helpful	<u>8-9</u> Very helpful
Records	<u>0-1-2</u> Little or no help	<u>3-4-5</u> Some help	<u>6-7</u> Helpful	<u>8-9</u> Very helpful
Complete Short Course	<u>0-1-2</u> Little or no help	<u>3-4-5</u> Some help	<u>6-7</u> Helpful	<u>8-9</u> Very helpful

II. Would you attend another short-course if it were offered?

Yes

No

Maybe

III. Would you recommend attending the short-course for those who have not attended?

Yes

No

Maybe

IV. Please list any criticisms you may have of the material presented or way in which presentation was made.

APPENDIX III

Keith Parchment

Onion Skin

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APPENDIX III

Please check the answer you feel best fits your knowledge about a subject in regards to counseling with dairymen. VC-Very Confident; C-Confident; D-Doubtful; NQ-Not Qualified.

	VC	C	D	NQ
1. Can you advise a dairyman as to the adequacy of his dairy ration?	_____	_____	_____	_____
2. Can you explain the difference between silages in feed value for dairy cattle?	_____	_____	_____	_____
3. From your present knowledge, could you determine the most economical calf raising plan for a given dairyman?	_____	_____	_____	_____
4. Would you be able to advise a dairyman as to the value of additives in a dairy ration?	_____	_____	_____	_____
5. Are you familiar enough with minerals and their deficiencies in livestock feeds to help a dairyman provide the minerals needed by all groups of dairy cattle?	_____	_____	_____	_____
6. With your present knowledge and experience could you assist a dairyman in preventing or in remedying off flavors in milk?	_____	_____	_____	_____
7. Can you counsel with dairymen on the adequacy of their feeding program in relation to proper vitamin content?	_____	_____	_____	_____
8. Can you advise dairymen on interpretation of feed tags?	_____	_____	_____	_____
9. Are you confident of your ability to counsel dairymen as to the advantages and disadvantages of different methods of feed preparation?	_____	_____	_____	_____

	VC	C	D	NQ
10. Do you feel qualified to explain to dairymen the proper method of feeding during the dry period to gain milk production increase?				
11. Do you know the mechanics of balancing rations?				
12. From your present knowledge, do you feel qualified to counsel dairymen as to prevention of Ketosis and Milk Fever?				
13. Can you interpret and use testing information in counseling with dairymen?				
14. Would you be able to advise dairymen as to number of replacements needed to maintain and to expand herd size?				
15. Is it possible with your present knowledge to interpret and evaluate pedigrees?				
16. Do you know the importance of dairy type in breeding and management?				
17. Would you be able to advise dairymen as to age, season of year, and methods to use in such things as vaccination for different diseases, dehorning, and supernumerary test removal?				
18. Can you discuss the ways of evaluating bulls and the application of each?				
19. Are you familiar with the housing needs of lactating cows, non-lactating cows, heifers, and baby calves?				
20. Would you be able to counsel dairymen as to the advantages and disadvantages of different green forage feeding programs?				
21. Are you familiar with size of cow groups for most efficient handling and management?				

22. Do you know the kinds of milking machines available and understand how they function?

VC

C

D

NQ

23. Could you advise a dairyman about installation of new milking system?

24. Can you use herd records for management and mastitis control?

25. Can you counsel dairymen as to the advantages and disadvantages of artificial insemination vs. natural service?

ESTABLISHED 1850
CAMPBELL SKIN
FELT & FUR
MANUFACTURING

APPENDIX IV

APPENDIX IV

INFORMATION QUESTIONNAIRE for Department of Dairy Science,
Oklahoma State University

Please fill in information:

_____ Your Name		_____ Address	_____ County
_____ Size of Farm (Acres)	_____ Number of Dairy Cows and Heifers	_____ Number of Years in Dairying	
_____ Educational level	_____ Milk Market:	_____ Number of Persons employed on Farm	_____ Age

Please Check:

	Yes	No
1. Do you have a Grade A dairy barn?	_____	_____
2. Do you use a bulk tank?	_____	_____
3. Do you use strip cups?	_____	_____
4. Do you wash udders before milking?	_____	_____
5. Do you dip the teat cups in disinfectant between cows?	_____	_____
6. Do you hand strip?	_____	_____
7. Do you rotate teat cup liners each week by complete sets?	_____	_____
8. Do you replace teat cup liners by complete sets?	_____	_____
9. Do you have your Milking Machine Dealer check your milking machine regularly?	_____	_____
10. Do you use a Production Testing Program?	_____	_____
11. Do you use either Proven Bulls or Artificial Insemination?	_____	_____

	Yes	No
12. Do you use purebred sires from high producing families?	_____	_____
13. Do you allow your bull to run with the cows?	_____	_____
14. Do you keep complete breeding records?	_____	_____
15. Do you wait at least 50 days before breeding a cow back after calving?	_____	_____
16. Do you allow your cows a 50 to 60 day dry period?	_____	_____
17. Do you have hard breeders checked by a veterinarian after two unsuccessful services?	_____	_____
18. Do you have your cows checked for pregnancy by a veterinarian 60 days after being bred?	_____	_____
19. Do you milk cows with mastitis last?	_____	_____
20. Do you water your milking cows in a pond?	_____	_____
21. Do you use individual calf pens for calves being fed milk or milk replacer?	_____	_____
22. Do you calfhooed vaccinate heifer calves between 4 and 8 months of age?	_____	_____
23. Do you use high level grain feeding to milking cows (1 lb. grain per 3 to 4 lbs. milk)?	_____	_____
24. Do you feed dry cows at least 1 lb. of grain for each 100 lbs. of body weight?	_____	_____
25. Is your primary source of hay a legume?	_____	_____
26. Do you provide adequate mineral supplement (DiCal, Mineral Salt, Bone Meal)?	_____	_____

Please fill in information.

Your Name	Type of Farm	Size of Farm	Address
-----------	--------------	--------------	---------

Please answer the following questions by writing the name and title, distance from you in miles, and the degree you know him personally in the appropriate blank.

Example: John Doe Dairy Farmer 8 miles Personal friend for 7 years

1. From whom would you seek advice about a problem in feeding dairy cattle?

Name	Title	Distance	Relationship
------	-------	----------	--------------

2. From whom would you seek advice about pasture and forage for dairy cattle?

_____	_____	_____	_____
-------	-------	-------	-------

3. From whom would you seek advice about bull selection or selection of replacement heifers?

_____	_____	_____	_____
-------	-------	-------	-------

4. To whom would you advise someone to go for advice about a problem in feeding dairy cattle?

_____	_____	_____	_____
-------	-------	-------	-------

5. To whom would you advise someone to go for advice about pasture and forage for dairy cattle?

_____	_____	_____	_____
-------	-------	-------	-------

6. To whom would you advise someone to go for advice about bull selection or selection of replacement heifers?

_____	_____	_____	_____
-------	-------	-------	-------

VITA

Norris Elmer Nichols

Candidate for the Degree of

Master of Science

Thesis: AN EVALUATION OF THE UTILIZATION OF DAIRY
MANAGEMENT INFORMATION IN OKLAHOMA

Major Field: Dairy Science

Biographical:

Personal Data: Born at Anacortes, Washington, July 15,
1936, the son of Elmer M. and Lillian M. Nichols.

Education: Graduate of Nowata High School, Nowata, Oklahoma,
in 1954. Attended Northeastern Agricultural and Mechan-
ical College, Miami, Oklahoma, 1959-61, receiving the
Associate of Arts Degree in 1961. Attended Oklahoma
State University 1961-63, receiving the Bachelor of Science
in 1963. Completed requirements for the Master of Sci-
ence Degree August, 1964, with a major in dairying.

Professional Experience: Dairy Farming, 1946-54. United
States Marine Corps, 1955-59. Oklahoma State University
Dairy Farm, 1962-63. Graduate Assistant, Oklahoma
State University, Department of Dairy Science, 1963-64.

Organizations: Alpha Zeta, Phi Kappa Phi, American Dairy
Science Association.