STUDY OF IMPORTANCE OF DUTIES AND TASKS FOR DAIRY FARM OPERATOR AND DAIRY FARM WORKER

By

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CHAPTER I

INTRODUCTION

Statement of Problem

The farming and agribusiness community in the United States continues to be the largest single business employer. This industry has been responsible for the feeding of over two hundred million Americans plus countless others in numerous countries around the world. Total sales of agricultural products abroad has brought in an estimated 22 billion dollars, far and away the largest single source of U.S. sales abroad.

Production per worker in U.S. agriculture continues to be the envy of the world, having nearly tripled in the last twenty years. Figures show that output per man-hour in agriculture has increased three times as fast as per man-hour in the nonfarm sector.

Farmers continue to be the nations biggest private spenders, laying out billions of dollars for tractors, combines, trucks, fertilizer, seed, chemicals, and countless other supplies. Investment per worker on U.S. farms was nearly $100,000 vs. $55,000 in manufacturing. The farm worker continued to be a very important asset to the economy.

Even though productivity was high among the farm workers, their responsibility was great and they must achieve even higher productivity to keep ahead of the worlds demand.

In 1979, the State Director for Oklahoma Vocational and Technical Education challenged the vocational agriculture teachers, state supervisory staff and agricultural education staff to develop training programs for farm workers. As the State Director traveled the state, many times he was approached about the need for well-trained farm workers. Then again in the summer of 1979, the State Director made the same challenge as he spoke to the vocational agriculture teachers at their annual summer conference. This began to generate several research questions concerning this need. Are training programs available for the farm worker? Traditionally, agricultural education has served the needs of secondary students through a four-year program in vocational agriculture. Agriculture educators have served the needs of the farm owner/operator through adult education programs such as young farmer chapters. Have changes occurred which need to be considered in developing new training programs? What are those changes which have affected agriculture?

Through the years there has been many changes in agriculture with the most recent years bringing about the greatest and most radical modifications. The alterations have had a great impact upon agriculture production of farm products through technological improvements of the mechanical, biological, and chemical nature. In addition,

important innovations have occurred in the organizational structure in the industry.

Many of the changes brought about in agriculture have changed the manpower requirement for the industry. Technology has created a new relationship between man, his education and his work, in which education becomes the bridge between man and his work. Who is to educate these people? There are many different types of institutions providing training programs for persons both in and out of high school. Programs develop whenever an institution is in a position to meet the vocational education needs of youth and adults. It is the expressed opinion of experienced educators that vocational agriculture instructors with their broad experience can do a better job than any other group in educating farm workers.

Modern development in agriculture technology and rural to urban population movements are two major factors that have resulted in increased numbers of persons needed to be trained for farm work. Research is badly needed to provide educators with the necessary curriculum information to educate farm workers to serve the agriculture industry.

Problem

The technological advances in agricultural production have rendered some competencies obsolete while, at the same time, introducing new competencies essential, or at least desirable for beginning farm operators and workers. There

has been a need to identify competencies of importance to farm operators and workers and to ascertain minimum performance levels required. Once identified, these competencies and recommended performance levels may be utilized for setting curriculum priorities, to validate instructional materials and to give direction toward discovering the needs and performance levels of specific job related tasks.

Expanded utilization of competency based instruction and the desire for greater accountability in education have emphasized the need to define those skills and competencies most needed by farm operators and workers. While many competencies have been defined in most areas of agriculture, there has been a need in Oklahoma to identify competencies peculiar to the agriculture industry of this state, to determine the significance of these competencies, and to arrive at a minimum performance level necessary to complete the task. Due to the great numbers of jobs and tasks which could be utilized for this study, it was necessary to identify one segment of the agriculture labor force to research. In determining which area to consider it was decided to select a production area which was labor intensive. The dairy farm has long been considered labor intensive regardless of location.

Purpose

The major purpose of this study was to establish the

importance of the skills and competencies most needed by the dairy farm operator and dairy farm worker.

Objectives of the Study

The following objectives were formulated in order to deal with the purpose:

1. Determine employment skills needed for the dairy farm operator and dairy farm worker in Oklahoma as perceived by dairy farm owners.

2. Determine the level of skill necessary for employment for operators and workers in dairy production.

Basic Assumptions of the Study

For the purpose of this study the following assumptions were made:

1. The instruments used were adequate in determining competencies and training needs of dairy farm operators and dairy farm workers.

2. The participants in the study are representative of dairy farmers in Oklahoma.

3. That dairy farms are generally the same in their labor needs and associated tasks performed regardless of location.

Definition of Terms

The following definitions have been adapted for this study.

Competency - The level of ability (including knowledges, skills, and/or attitudes) to perform a specific task successfully to meet specified standards.

Curriculum - All the objectives, content, and learning activities arranged in a learning sequence for a particular instructional area and orderly arrangement of integrated subjects, activities, and experiences which students pursue for the attainment of a specific educational goal.

Duty - A distinct grouping of tasks which are related to each other by the nature of the work to be performed (i.e., job-task-step)

Job - The composite of duties and tasks performed regularly in one's trade, occupation or profession (i.e., job-duty-task-step)

Job analysis - The method used to gather information about a job, to develop a detailed description of the qualifications necessary for a specific job, conditions for performance, and the duties and tasks involved.

Core - Group of instructional elements or units common to all of the occupations in a cluster.

Job inventory - A survey instrument containing a listing of possible tasks to be performed in a particular occupational area, grouped under duty classifications (NOTE: also called task inventory or occupational inventory.)

Job-ready-skills - The set of competencies required of a beginning worker in an occupation for immediate productivity upon entering that occupation.

Job title - The common name by which a position is identified.

Occupational Cluster - A group or listing of occupations within a vocational area that share common experiences, knowledges, and skill requirements, such as manufacturing occupations, construction occupations, agribusiness occupations.

Task - A measurable element of work usually performed by a single worker in a short span of time; a discrete unit of work performed by an individual in the completion.

Skill - A manipulative action performed while producing a finished product or performing a task (NOTE: also called operation, task, or competency.)

Program - A planned sequence of courses, services, or other eductional activities designed to meet specific vocational objectives so that individuals are prepared to enter an occupation or closely related groups of occupations.

Task listing - (occupational inventory, competency profile, or list) - a listing of the identified tasks performed by workers in a given occupation; a task list is referred to as "validated" or "verified" if experts in the occupation have reviewed it and confirmed the importance of the identified tasks; some lists may include an estimate of the relative of amount time spent by a worker on each task.

Competency-based vocational education (CBVE) - Instructional system aimed at improving the teaching-learning

process which required knowledges, skills, and/or attitudes (competencies) are specified before instruction takes place.

Farm business management program - Three year training program for full-time and part-time farmers and ranchers. Areas of training include, record keeping, record analysis, and long range farm planning.

Dairy farm worker - A farm laborer that performs any combination of tasks on a dairy farm.

Dairy farm operator - A farm manager that performs any combination of tasks on a dairy farm including management decisions.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Traditionally, research to determine job competencies has started by defining job titles and occupational cluster, (Sabol, 1976; Gobbo, 1975). This method has demonstrated an overlapping of the skills required from one occupational cluster to the next (Gobbo, 1975). It was determined that Oklahoma was generally a family farm situation with a definite lack of job titles and specific assignments. The owner/operator takes care of the essential tasks to be performed with the help of family labor, hiring little outside the family unit as possible.

More than a decade ago, Taba (1972) assumed there was an order to curriculum development and that pursuing the order would result in a more thoughtfully planned curriculum one that was more dynamically conceived.

The order prescribed by Taba (1972, pg. 53) follows:

1. Diagnosis of needs
2. Formulation of objectives
3. Selection of content
4. Organization of content

5. Selection of learning experiences

6. Organization of learning experience

This study is an attempt to diagnosis the needs of the dairy farm operator and dairy farm worker on specific duties and tasks for possible curriculum considerations.

Needs Assessment

Since the beginning of Vocational Education with the Smith-Hughes Act of 1917, the major focus of vocational agriculture has been preparing students for gainful employment. The role of preparing students for gainful employment is clearly seen by specialists in industry (Bass, 1970). At first glance, the preparation of students for gainful employment does not seem so difficult; but when one takes a closer look at the ever-changing demands of the agricultural industry, one can start to appreciate the problems involved with vocational training in agriculture.

Before students can be trained for a particular area of work, there must be some knowledge of the skills needed for successful employment in this area. This gives rise to the question: How can one know which skills are necessary for a particular job title? Traditionally the vocational agriculture teacher has relied on his experience, educational preparation, and agricultural background to identify the important skill areas to be taught. With an ever increasing number of agriculture teachers entering the profession with little or no practical experience in agriculture, there needs

to be a means where this type of job skill information can be obtained(Newcomb, 1976). This need is evidenced by research that was done in the area of agriculture competency needs and employment opportunities (Zurdick, 1974).

Even when the agriculture teacher has had an in-depth practical experience in agriculture as a youngster, how does he/she keep abreast of the ever changing demands of agriculture? Cotrell et al. (1972) suggested that occupational analysis should be periodically applied in order to keep education programs up-to-date.

Another problem is teacher turnover (Reese, 1976). When a new teacher comes into a geographical area, he/she may be unfamiliar with its agriculture. Traditionally, development of agriculture curriculum has been based on local needs (Long, 1968). According to Long, the traditional vocational agriculture production curriculum has always contained the basic elements of: Animal Industry, Plant Industry, Agricultural Mechanization and Farm Management. Only in recent years has increased emphasis been placed on more specialized areas such as farm management, horticulture and agricultural mechanics. Long's study was a tool used to clarify some issues surrounding these developments of more specialized program offerings. As teachers felt the need for more specialization in their program offerings they developed programs based upon a general intuition about the subject. Groves (1976) also found that teachers do often times prepare their course offerings without the needs of the students

receiving top priority. Therefore, as teacher turnover occurs, curriculum variations often take place among the courses offered.

In spite of this fact, vocational agriculture has a good record. Hoyt (1965) found that differences between competencies needed and possessed by livestock producers decreased with increased years of vocational agriculture. Bennett (1965) noted that of two hundred outstanding (undefined by author) farmers surveyed, fifty-three percent had been enrolled in one or more years of vocational agriculture and a high percent of farmers who had taken vocational agriculture were found in the higher corn acreages and income ranges.

If vocational agriculture instructors are to maintain their successful placement of students, their instruction must remain current with industry needs. According to Baker (1966), we will see an increase in competition for jobs. Even with the present high rate of unemployment, jobs are available for the skills required by industry, an instructor who successfully teaches those skills to his students, will find a large number of the students gainfully employed. Maintaining a work force of young men and women who are trained in farm jobs has a high priority. Local agriculture educators in Oklahoma are primarily responsibile for training farm employees.

Vocational agriculture educators have developed and utilized approved farm practices and essential farm skills

for over thirty years (Birckbauer and Mortinson, 1976). Competencies needed in todays agriculture are built on those practices and the adoption of new technologies.

The National committee on Agri-Business Competencies was organized in 1973 to identify, validate, and report competencies required for employment in seven agricultural occupational subclusters. As part of this committee, James T. Horner at the University of Nebraska-Lincoln wrote competency reports on the production of corn, crops (general), forages, small grains, and soybeans (Horner, 1976).

Byrd and others edited a number of studies which identified tasks and basic skills essential to livestock and crop producers. These studies provide a broad group of skills validated on diversified farms in Ohio (Byrd et al., 1975). In addition, a study of educational needs of dairyman was completed in Ohio in 1971 (Knight, 1971). As a result of the study, Knight recommended more extension education programs for dairy farmers. Due to the fact that professionals and dairyman differed significantly in their concerns, he suggested that professionals increase their efforts to identify specific concerns of the commercial dairyman, and then plan programs to satisfy those specific concerns.

Seven clusters of Agricultural production tasks were studied by Long (1968) in the state of Washington. This study was examined for similarities and to identify unique

tasks omitted from other literature. This study also suggests some need for further expansion and upgrading of traditional programs within each of the traditional areas of their curriculum, so as to keep pace with modern-day farming practices.

The State Department of Vocational and Technical Education Curriculum and Instructional Materials Center, Stillwater, Oklahoma, has developed instructional materials for the vocational agriculture programs in Oklahoma. The Vocational Agriculture I, Vocational Agriculture II, Vocational Agriculture III, Vocational Agriculture IV, Livestock Skills and Agricultural Mechanics I have competencies applicable to Oklahoma agriculture.

Spillman and Bruce (1976) reported their progress and methods of V-TECS in competency-based curriculum development. The planners and developers of V-TECS believe that the task listing developed and the data gathered in the development process have many implications for curriculum planning and program development in vocational education. First there is the assurance that objectives have been developed that are congruent with tasks performed by workers in the occupations for which students are preparing to enter. Bruce and Carpenter (1977) also reported on the Kentucky model of competency-based curriculum. Once a priority area has been determined workers currently employed in the relevant occupations are observed and interviewed. A preliminary list of all tasks performed by the workers is then compiled. This

occupational inventory is submitted to a sample of the total population of workers in the priority area to identify the tasks actually performed and the relative time spent on each. Based on an analysis of the data gathered, high priority tasks are identified. Performance objectives, criterion-referenced measures, and performance guides are then developed.

Bonner and Brown (1977) reported on a Mississippi study of competencies needed by FFA advisors. There were several competencies which were adapted to this survey.

CHAPTER III

METHODOLOGY

INTRODUCTION

The major purpose of this study was to establish the importance of the skills and competencies most needed by the dairy farm operator and dairy farm worker. To accomplish this purpose, the following objectives were determined:

1. Determine the employment skills needed by dairy farm operator and dairy farm worker in Oklahoma as perceived by dairy farm owners.

2. Determine the skill level necessary for employment for operators and workers in dairy production.

The purpose of this chapter is to describe the methodology used by dividing it into the following sections: Selection of the population, development of the instrument, method employed in collecting data.

Selection of Population

The population used for this study was the dairy farm operators contacted by their local vocational agriculture instructor. A mailing list of the approximately 465

Oklahoma Vocational Agriculture Instructors was obtained from the State Supervisor for Vocational Agriculture. Each of these instructors was assigned a number from 1 to 465. A sample was randomly selected by computer from the vocational agriculture instructor list giving a total group size of 200. Each instructor was sent two questionnaires which they were ask to have completed by local dairy farm operators. The local dairy operators were ask to complete the questionnaires and return them to the local vocational agriculture instructor. The randomly selected vocational agriculture instructors then mailed the completed questionnaire to the researcher.

The dairy farm operators contacted represent farm operations of many sizes and scopes. Many of these participants in the program are full-time operators that hire several full time, part-time and seasonal employees. Others who were contacted to complete the job inventory may employ little or no outside help other than seasonal employees.

Development of the Instrument

In order to accomplish the objectives it was determined that some type of needs assessment survey would be needed to accurately analyze dairy farm operators and dairy farm workers skill needs. Before work was started on this instrument, research recently completed or currently underway was examined. To accomplish this an ERIC search was done and

contact was made with state departments in Kansas, Missouri, Arkansas, Texas, New Mexico and Colorado. In addition to asking for information about past and present research, the researcher asked for information concerning short term training programs for farm workers in their state. The responses contained task lists for production agriculture programs, since there were no specific training programs for the dairy farm operator or the dairy farm worker. However, tasks pertaining to the two dairy farm occupations were contained in the production agriculture tasks lists.

The list of duties and tasks identified in the questionnaire was derived from competency task listings found at the Oklahoma Curriculum and Instructional Materials Center and the V-TECS Consortium of States.

The instrument was constructed in two parts (i.e., Part I and Part II). Part I consisted of demographic information about the dairy farms surveyed. This part of the survey attempted to determine the scope of the dairy farm and the number and types of employees hired. Part II consisted of the duties and tasks for both the dairy farm operator and the dairy farm worker. This part of the survey contained the importance rating scale for the occupations.

Before the questionnaire was submitted to the dairy farmers, the questionaire was field tested with dairy farm operators in the Stillwater, Oklahoma area. Based on the comments about length and complexity of the instrument the questionnaire was revised. The final draft of the survey

instrument was reviewed for clarity, meaning, feasibility, and readability by faculty members of Oklahoma State University, and vocational agriculture supervisory staff members of the State Department of Vocational and Technical Education. The responses and personal comments were used in the finalization of the questionnaire. The questionnaire is appended to this study (Appendix A).

Method Employed in Collecting Data

Upon finalization of the valid survey, two questionnaires and a cover letter (Appendix A) were mailed to the vocational agriculture instructors. Vocational agriculture instructors were used in the collection of this data, because of difficulties in obtaining a comphrensive list of dairy operators. The instructors were to take the responsibility for issuing the survey to two of their area dairy farmers and instruct them on completing the survey. The instructors asked the dairy operators to rank the importance of the tasks listed from low importance (1.00) to extreme importance (5.00). The survey was to be completed and returned to the instructor. The instructor mailed the completed survey to the researcher.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this study was to etablish the importance of the skills and competencies most needed by the dairy farm operator and dairy farm worker.

The following objectives were formulated in order to deal with the purpose:

1. Determine employment skills needed for the dairy farm operator and dairy farm worker in Oklahoma as perceived by dairy farm owners.

2. Determine the level of skill necessary for employment for operators and workers in dairy production.

The data presented in this chapter were gathered from sixty-one dairy farms throughout the state. The survey instrument was mailed to two-hundred vocational agriculture instructors. Each instructor received surveys to be completed by two of their area dairy farmers. One hundred and three surveys were returned. Seven of the surveys were not usable for computer analysis. Thirty-five surveys were returned with notes attached stating that there were no dairy farms in the vocational agriculture instructors area.

The dairy farm operators responded to the importance of tasks listed in the survey instrument and to the importance of those tasks for both dairy farm operator and the dairy farm worker. The survey instrument was in two parts (1) demographic information for the dairy farm responding to the survey and (2) the task list.

The demographic information from the dairy farmers responding to the survey was analyzed and summarized. The average (mean) farm responding to the survey employed 1.23 full-time employees and 1.53 part-time employees. The farm consisted of 741.4 total acres of which 371.8 acres were cropland and 369.6 acres were pasture. There were 144.9 total head of dairy cattle on the farm (25.5 dry cows, 72.1 milk cows, 47.3 heifers).

AMPI reports that their average member producer has 75 milking cows per farm. This compares with the 72.1 milking cows on the average (mean) farm responding to the survey. The Associated Milk Producers Incorporated statistic did realistically represent the producing dairies in the state.

The second part of the survey consisted of the task list. The dairy operator responded by indicating the degree of importance of each task on a five point scale. The scale was used to get an average response for each task with numerical values being assigned to each category as follows:

no importance = 1

low importance = 2

medium importance = 3

high importance = 4

extreme importance = 5

Real limits were established for interpretation of the statistical data as follows:

1.00 - 1.49 no importance

1.50 - 2.49 low importance

2.50 - 3.49 medium importance

3.50 - 4.49 high importance

4.50 - 5.00 exteme importance

Also, due to a need to determine the average response to the task statements and because computation of these mean responses resulted in decimal fractions, a range of numerical values was established for each degree of importance response category. These values are known as real limits.

Thus, if the mean response was determined to be 4.6, then according to the established real limits formula the task was considered of extreme importance.

One duty containing four separate tasks is found in Table I in which the importance of observing legal requirements in dairy operations is analyzed. As with many of the duty areas the importance of the task to the dairy farm operator was consistantly of more importance than the task was for the dairy farm worker. However, the rank order of importance were vertually the same. This indicated that while all task for observing legal requirements in dairy operations ranged from high importance (4.26) to extreme importance (4.72) for

the dairy operator. The same task for observing legal requirements in dairy operations for the dairy worker were all of high importance (3.61-4.43) . This indicated that while these tasks were, at least, of high importance to both occupations that the competency level of training for the dairy operator must be at a consistantly higher level of skill.

TABLE I

RATING OF TASKS FOR THE DUTY: OBSERVING LEGAL REQUIREMENTS IN DAIRY OPERATIONS

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Follow laws relating to chemical use	61	4.72	44	4.43	1.0	1.0
2. Interpret feed additive mixing regulations	61	4.26	44	3.61	4.0	3.5
3. Determine when additive should be with drawn	61	4.31	44	3.61	3.0	3.5
4. Interpret milk production standards, identify EPA AMPI & Ok. Dept. of Ag. regulations which apply to dairy operations	61	4.46	43	3.81	2.0	2.0

Table II contains a summary of responses to the duty "Selecting Breeding Cows and Replacement Stock". Overall, it was found that there was much deviation when comparing the mean responses of the survey for "Selecting Breeding

Cows and Replacement Stock". There is much deviation of importance between the dairy farm operator and dairy farm worker. "Evaluate advantages of various breeds" was of high importance (3.68) to the dairy farm operator and of low importance (2.25) to the dairy farm worker. "Identify reputable sources for obtaining stock" was of high importance (4.26) to the dairy farm operator and of low importance (2.27) to the dairy farm worker. There was also considerable deviation in the rank order of importance between the two occupations. While "selecting foundation stock for production and type" was ranked first and of extreme importance (4.69) for the dairy operator, the task was ranked eighth and of medium importance (2.98) for the dairy farm worker. The highest rank of importance for the dairy farm worker was the task to "evaluate general condition of animals" which was of high importance (4.17). The dairy farm operator had a higher mean for the task to "evaluate general condition of animals" than the dairy farm worker but the task was ranked sixth in importance for the dairy farm worker even though the task was still of high importance (4.39). It was also noted that the tasks for the dairy farm operator were all at least of medium importance (identify parts of animals, 3.48). This indicated that "selecting breeding cows and replacement stock" is a duty area of high importance to the dairy farm operator.

TABLE II

RATING OF TASKS FOR THE DUTY: SELECTING BREEDING COWS & REPLACEMENT STOCK

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Determine age of animals	61	4.16	44	3.07	10.0	5.5
2. Establish production goals for culling purposes	59	4.49	44	2.82	3.0	10.0
3. Evaluate advantages of various breeds	60	3.68	44	2.25	12.0	14.0
4. Evaluate general condition of animals	61	4.39	42	4.17	6.0	1.0
5. Evaluate overall performance & health	61	4.57	44	3.84	2.0	3.0
6. Evaluate the degree of various traits & characteristics	60	4.03	42	2.74	11.0	12.0
7. Identify parts of animals	61	3.48	44	3.07	14.0	5.5
8. Identify reputable sources for obtaining stock	61	4.26	43	2.27	8.0	13.0
9. Inspect animals for defects	61	4.46	45	3.96	5.0	2.0
10. Inspect animals for desirable traits & characteristics	61	4.31	45	3.02	7.0	7.0
11. Select breeding system to follow	61	4.48	45	2.89	4.0	9.0
12. Select foundation stock for production & type	61	4.69	45	2.98	1.0	8.0
13. Evaluate advantages of raising replacements vs. buying replacements	61	4.25	45	2.78	9.0	11.0
14. Identify breeds	61	3.67	45	3.20	13.0	4.0

According to the data summarized in Table III breeding cows and heifers, the task "determine when to breed" ranked first and of extreme importance (4.56) for the dairy farm

operator and the task ranked second and of high importance (3.91) for the dairy farm worker. It was also noted that the task "identify and explain function of reproductive organs" was the lowest ranking for both the operator (3.59) and worker (2.84). The task "identify and explain function of reproductive organs" was of high importance (3.59) for the dairy farm operator and medium importance (2.84) to the dairy farm worker. The eleven tasks summarized in Table III ranged from extreme importance (determine when to breed, 4.56) to high importance (identify and explain function of reproductive organs, 3.59) for the dairy farm operator. The eleven tasks ranged from high importance (determine the onset of heat period, 4.38) to medium importance (identify and explain function of reproductive organs, 2.84) for the dairy farm worker.

TABLE III

RATING OF TASKS FOR THE DUTY:
BREEDING COWS & HEIFERS

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Determine the onset of the heat period	61	4.38	45	4.38	4.0	1.0
2. Determine when to breed	61	4.56	45	3.91	1.0	2.0
3. Calculate due date for animals	60	4.30	44	3.70	6.0	3.0
4. Identify various causes of breeding difficulty	60	4.45	44	3.55	3.0	7.0
5. Select a breeding method	61	4.26	43	2.95	7.0	10.0

TABLE III (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
6. Pregancy test animals	61	3.79	44	3.07	10.0	8.0
7. Store and prepare semen	61	4.18	43	3.63	9.0	4.5
8. Artificially inseminate animals	60	4.23	43	3.63	8.0	4.5
9. Identify & explain function of reproductive organs	61	3.59	44	2.84	11.0	11.0
10. Evaluate sire trait information & select for desired improvements	61	4.31	44	3.05	5.0	9.0
11. Record & utilize reproduction records	61	4.48	44	3.59	2.0	6.0

While the rank order of importance for task of both occupations was the same there were found to be some difference. The greatest difference in mean scores between the occupations was for the task "select a breeding method". "Select a breeding method" had a mean score of 4.26 (high importance) for the dairy farm operator and a mean score of 2.95 (medium importance) for the dairy farm worker.

Results of the data collected for the duty "formulating feeds and feeding dairy cattle" is contained in Table IV. "Formulating feeds and feeding dairy cattle" was the largest duty area which contained fifty-seven task. There was very little agreement in the rank order of importance when comparing the two occupations. The dairy farm operator task ranged from high importance (evaluate the influence

the quality of feedstuffs has on production,4.47) to medium importance (precondition animals for feedlot, 3.40). The dairy farm worker task ranged from high importance (fill and clean waterers, 4.47) to low importance (evaluate affect of various feeding practices on carcass composition and feed efficiency, 2.23). In addition, to the task "evaluate affect of various feeding practices on carcass composition" being of low importance (2.23), the task "interpret feed analysis" reports was also of low importance (2.49) for the dairy farm worker. Forty of the fifty-seven tasks for the dairy farm worker were found to be of medium importance. Fifty-one of the dairy farm operator tasks for formulating feeds and feeding dairy cattle were found to be of high importance.

TABLE IV

RATING OF TASKS FOR THE DUTY: FORMULATING FEEDS & FEEDING DAIRY CATTLE

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Develop rations	61	4.28	44	2.85	6.5	41.0
2. Calculate cost of rations & feed mixtures	61	4.44	44	2.77	2.0	47.0
3. Calculate feed efficiency	61	4.26	44	2.73	8.0	49.0
4. Classify feeds	61	3.84	44	2.70	43.0	50.5
5. Determine amount of feed additives to add to mixtures	60	4.08	43	3.16	25.0	29.0

TABLE IV (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
6. Determine amount of feed per animal	60	4.40	43	3.81	3.50	8.0
7. Determine appropriate form for preparing feed	60	3.95	43	3.26	41.0	25.0
8. Substitute for various feedstuffs in rations	60	3.90	43	2.91	42.0	38.5
9. Determine nutrient level requirements for animals	60	4.23	43	2.95	12.5	37.0
10. Determine purpose of various classes of feed-stuffs in rations & mixtures	60	3.98	43	2.77	36.5	47.0
11. Determine why various nutrients are needed in rations & mixtures	60	3.83	43	2.56	44.0	54.5
12. Determine total amount of feed needed for herds	60	4.23	42	3.31	12.5	22.0
13. Determine water re-quirements for animals	60	3.73	43	3.12	46.5	31.0
14. Determine amount of milk or replacer to feed	60	4.00	43	3.79	34.0	9.0
15. Feed calves from buckets	60	3.18	43	3.58	54.0	13.0
16. Identify moldy or spoil-ed feedstuffs	57	4.25	41	4.29	10.0	2.0
17. Determine what rations & mixtures should be changed	59	4.05	43	3.02	27.5	34.5
18. Determine which feeds & additives may be in-cluded in animal feed mixtures	59	4.05	43	2.67	27.5	53.0
19. Determine which feed-stuffs & amount of feedstuffs may be substituted in rations	60	4.00	43	2.70	34.0	50.5
20. Evaluate the influence the quality of feedstuffs has on production	60	4.47	43	3.35	1.0	18.0
21. Evaluate how ration imbalance may affect production	59	4.29	42	3.26	5.0	25.0
22. Evaluate influence residue has in milk on marketing problems	60	4.28	43	3.51	6.5	15.0

TABLE IV (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
23. Identify factors that influence feed requirements & feed efficiency	60	4.03	43	3.02	29.5	34.5
24. Identify factors that influence quality of feedstuffs	60	4.22	43	3.23	14.0	27.0
25. Determine purpose of various nutrients in rations & mixtures	60	3.97	43	2.79	39.0	45.0
26. Evaluate the influence the digestive system has on feedstuffs that may be fed	59	4.02	43	2.91	31.5	38.5
27. Interpret feed analysis reports	59	3.98	43	2.49	36.5	56.0
28. Interpret feed tags & labels	60	4.17	43	3.26	16.5	25.0
29. Interpret feeding charts & tables	60	3.97	43	3.19	39.0	28.0
30. Select appropriate feeding methods	60	4.12	42	3.38	20.5	17.0
31. Determine how feed palatability may be improved	60	4.13	43	3.09	18.0	33.0
32. Work with veterinarian & feed salesman in formulating feeds & planning feeding programs	60	4.12	43	2.88	20.5	40.0
33. Identify essential nutrients needed in rations & mixtures	60	4.17	43	2.77	16.5	47.0
34. Evaluate how feed additives influence production & efficiency	60	4.12	43	2.81	20.5	43.0
35. Determine amount of weight animals should gain	60	3.73	42	2.81	46.5	43.0
36. Fill feed trough & bunks	60	3.45	43	4.05	51.0	5.0
37. Fill & clean waterers	59	3.81	43	4.47	45.0	1.0
38. Prepare feed mixtures	59	4.03	43	3.93	29.5	6.5
39. Flush animals	58	3.07	42	2.69	55.0	52.0
40. Precondition animals for feedlot	60	3.40	43	2.81	52.5	43.0
41. Evaluate influence of using pasture on feeding requirements	60	4.25	42	3.14	10.0	30.0

TABLE IV (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
42. Wean animals	60	2.83	43	2.56	48.0	12.0
43. Precondition animals for feedlot	60	2.83	43	2.56	57.0	54.5
44. Evaluate affect of various feeding practices on carcass composition & feed efficiency	60	2.85	43	2.23	56.0	57.0
45. Prepare milk replacer solution for calves	58	3.52	42	4.14	50.0	4.0
46. Determine when calves may be started on gain & roughages	58	4.10	41	3.93	23.0	6.5
47. Determine when cows may be turned out to pasture	58	4.12	41	3.17	20.5	10.0
48. Precondition cattle before turning out to pasture	58	3.40	42	3.10	52.5	32.0
49. Determine when dairy cattle should be removed from pasture	58	4.07	42	3.67	26.0	11.0
50. Replace salt & mineral blocks	58	4.09	42	4.19	24.0	3.0
51. Calculate & feed rations for lactating cows	57	4.40	40	3.30	3.5	23.0
52. Calculate & feed rations for dry cows	58	4.19	42	2.98	15.0	36.0
53. Calculate & feed rations for cows just before & after calving	57	4.25	42	3.33	10.0	20.0
54. Calculate & feed rations for calves from weaning to six months of age	58	4.02	42	3.45	31.5	16.0
55. Calculate & feed ration for heifers from six momths of age to freshening	58	3.97	42	3.33	39.0	20.0
56. Operate automatic feed handling equipment	57	3.58	42	3.57	49.0	14.0
57. Correlate feeding to DHI production records	56	4.00	42	3.33	34.0	20.0

As detailed in Table V "Maintaining Dairy Herd Health" is a duty area of extreme to medium importance for the dairy farm operator and extreme to low importance for the dairy farm worker. The task "inspect udders for mastitis and bruises, cuts and bumps" is the highest rank for both occupations and was of extreme importance (4.75 for the dairy farm operator and 4.74 for the dairy farm worker) for both occupations. "Placing a magnet in animals stomach" was ranked last for the dairy farm operator and next to last for the dairy farm worker but was still of medium importance (3.16 for the dairy farm operator and 2.60 for the dairy farm worker) to the occupations. It was also noted that eight task were of extreme importance to the dairy farm operator and two task were of extreme importance to the dairy farm worker.

TABLE V

RATING OF TASKS FOR THE DUTY: MAINTAINING DAIRY HERD HEALTH

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Evaluate influence health has on production	58	4.52	42	3.64	7.5	22.0
2. Identify common livestock internal & external parasites	58	4.41	42	3.86	14.5	17.5
3. Identify sanitation problems which may affect herd health	58	4.59	42	4.12	4.5	11.0

TABLE V (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
4. Identify symptoms of nutritional imbalance	58	4.41	42	3.81	14.5	20.0
5. Select materials to control internal & external parasites	58	4.33	42	2.98	17.0	29.0
6. Work with veterinarians in developing herd health program	58	4.47	42	3.26	12.0	26.0
7. Disinfect & whitewash buildings & equipment	58	3.64	42	4.07	30.0	13.5
8. Select proper chemicals to clean buildings & equipment	58	4.21	42	3.45	20.5	23.0
9. Use insecticide repellents in buildings	58	4.05	42	4.21	24.0	7.0
10. Apply insecticides to cattle to control external parasites	58	431	42	4.31	18.0	4.05
11. Identify symptoms of common cattle diseases	58	4.48	42	4.17	10.5	9.0
12. Identify symptoms of major dairy cattle parasites	58	4.52	42	3.08	7.5	17.5
13. Evaluate life cycles of parasites to determine control procedures	58	3.91	42	3.02	27.0	27.5
14. Calculate cost of treatments	58	3.97	42	2.48	25.0	32.0
15. Supply medication through feed & water	58	3.34	41	3.34	31.0	25.0
16. Isolate animals with transmissible diseases	58	4.45	41	3.88	13.0	16.0
17. Select appropriate method to control diseases	58	4.48	42	3.36	10.5	24.0
18. Worm animals	58	4.21	42	4.19	20.5	8.0
19. Vaccinate animals	58	4.60	42	4.29	3.0	6.0
20. Determine amount of medication or materials needed in specific situations	58	4.59	42	3.71	4.5	21.0
21. Interpret labels on medications & insecticide containers	58	4.62	42	4.14	2.0	10.0
22. Give inter-muscular injections	57	4.12	40	4.10	23.0	12.0

TABLE V (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
23. Determine when to rotate pastures to control diseases & parasites	58	3.83	42	3.02	28.0	27.5
24. Observe new animals for symptoms of animals for parasites	58	4.26	42	3.83	19.0	19.0
25. Determine when the veterinarian should be called	58	4.57	42	4.05	6.0	15.0
26. Apply medication to cuts& bruises	58	3.95	42	4.31	26.0	4.5
27. Identify & isolate injured animals	59	4.36	43	4.42	16.0	3.0
28. Blood test cows	57	3.81	41	2.61	29.0	30.0
29. Inspect udders for mastitis & bruise, cuts & bumps	59	4.75	43	4.74	1.0	1.0
30. Place magnet in animals stomach	58	3.16	43	2.60	32.0	31.0
31. Perform approved mastitis test	59	4.19	43	4.07	22.0	13.5
32. Treat udders with veterinarian prescribed medications	59	4.49	43	4.65	9.0	2.0

Inspection of Table VI reveals that there were significant differences among the mean responses for the two occupations. The task "determine capital requirements for alterations or improvements in dairy buildings" was of high importance (4.10) and ranked first for the dairy farm operator and ranked last and of low importance (2.09) for the dairy farm worker. Therefore, it was determined that it was much more important for the dairy farm operator to

"determine capital requirements for alterations or improvements in dairy buildings" than it was for the dairy farm worker. It was also of low importance (2.26) for the dairy farm worker to "determine the cost of repairs". There were two task in which the mean response was higher for the dairy farm worker than it was for the dairy farm operator. "Construct and repair fences and gates", and "clean and oil electric motors on structures" were task with higher mean responses for the dairy farm worker. However, there was not a significant enough difference since the degree of importance was the same when compared to the mean for the other occupation. In each case the means were with the same established real limits for interpreting these results.

TABLE VI

RATING OF TASKS FOR THE DUTY: MAINTAINING DAIRY BUILDINGS & STRUCTURES-PLANNING & CONTRUCTION

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Apply wood & metal preservatives	58	3.31	43	3.30	13.0	6.0
2. Clean & oil electric motors on structures	58	3.91	43	3.93	5.0	2.0
3. Build & remove concrete forms	58	3.33	41	3.10	12.0	9.0
4. Determine cost of repairs	58	4.08	43	2.26	2.0	13.0
5. Replace water pipe	58	3.48	42	3.19	9.0	7.5
6. Replace window panes	59	3.39	43	3.35	11.0	5.0
7. Construct & repair fences & gates	59	3.66	43	4.09	7.0	1.0

TABLE VI (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ OPER
8. Wire simple electrical circuit	58	3.69	43	3.40	6.0	3.5
9. Install & repair wood siding on buildings & structures	59	3.29	43	3.19	14.0	7.5
10. Repair metal structures with arc & oxyacetylene welder	58	3.40	42	3.40	10.0	3.5
11. Determine size of building needed for cattle	59	4.03	43	2.65	3.0	11.0
12 Evaluate ventilation systems for livestock numbers & building size	58	3.93	42	2.64	4.0	12.0
13. Control humidity & temperature in housing unit	59	3.59	43	2.98	8.0	10.0
14. Determine capital requirements for alterations or improvements in dairy buildings	59	4.10	43	2.09	1.0	14.0

"Handling and caring for animals is analyzed" in Table VII. There is a wide range of means for the tasks of both occupations. The task "assist animals in delivering young" was the top ranked for both occupations being of extreme importance (4.66) for the dairy farm operator and extreme importance (4.50) for the dairy farm worker. It was also revealed that "clean animals with brush and comb" was of least importance to both occupations. "Clean animals with brush and comb" was of low importance (2.20, 2.16) for the dairy farm worker and dairy farm operator. Other task of

low importance to both occupations was "weigh animals" (2.44, 2.21). "Clip dairy cattle" was also of low importance (2.37) to the dairy farm worker.

TABLE VII

RATING OF TASKS FOR THE DUTY: HANDLING & CARING FOR ANIMALS

	TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1.	Assist animals in delivering young	59	4.66	42	4.50	1.0	1.0
2.	Castrate animals	59	4.03	42	3.95	11.5	10.0
3.	Check animals milk supply	59	4.39	42	4.26	8.0	6.0
4.	Clean newborn animals	59	3.63	42	3.69	21.0	13.0
5.	Dehorn animals	59	4.36	43	3.93	9.0	11.0
6.	Determine space needed for animals	59	3.98	43	3.26	13.0	21.0
7.	Disinfect & clip naval cord	59	3.63	43	3.58	21.0	17.0
8.	Evaluate influence of stress on growth & condition of animals	59	3.95	43	3.40	14.0	18.0
9.	Exercise animals	59	2.51	43	2.63	31.5	31.0
10.	Help young to nurse	59	3.86	43	4.19	16.0	7.0
11.	Identify signs of approaching birth	59	4.47	43	4.40	4.5	3.0
12.	Identify due dates for animals	59	4.51	43	4.05	3.0	8.5
13.	Isolate newly purchased animals for observation	59	4.05	43	3.67	10.0	14.0
14.	Mark animals for identification & keep ID records	59	4.58	43	4.30	2.0	5.0
15.	Move cows to calving pens	59	3.80	43	3.63	18.0	16.0
16.	Move calves to nurse cows	59	3.24	43	3.09	24.0	24.0
17.	Observe animals regularly	59	4.47	43	4.47	4.5	2.0

TABLE VII (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
18. Pen animals according to size, weight & sex	58	4.03	43	3.65	11.5	15.0
19. Remove afterbirth	58	3.88	43	3.21	15.0	22.0
20. Remove non-compatible animals	59	3.83	43	3.35	17.0	19.0
21. Trim hoofs	59	3.03	43	2.70	28.0	30.0
22. Weigh animals	59	2.44	43	2.21	33.0	33.0
23. Regulate air movement & temperature in housing for dairy cattle	59	3.22	43	3.02	25.0	25.0
24. House springing heifers with the milking herd	59	3.07	43	2.81	27.0	28.0
25. Restrain cows with ropes or hobbles	57	2.82	41	2.95	29.0	26.0
26. Remove milking cows to holding pen or area	57	3.65	40	4.05	19.0	8.5
27. Clip dairy cattle	56	2.71	41	2.37	30.0	32.0
28. Determine length of dry period	56	4.45	41	3.29	6.0	20.0
29. Milk fresh cows by hand	57	2.51	41	2.83	31.5	27.0
30. Remove excess teats from heifers	56	3.54	41	2.76	23.0	29.0
31. Clean animals with brush & comb	57	2.16	40	2.20	34.0	34.0
32. Bed animals	57	3.09	40	3.20	26.0	23.0
33. Check udders on heifers & cows	57	4.42	41	4.32	7.0	4.0
34. Prevent animals from stampeding	57	3.63	41	3.83	21.0	12.0

Inspection of Table VIII reveals that the two most important tasks for the duty "Assembling and Installing Dairy Operations Equipment" was observe "safety precautions with all equipment" and "lubricate equipment". "Observe safety

precautions with all equipment" and "lubricate equipment" were of high importance for both occupations. All tasks for the duty "Assembling and Installing Dairy Operations" were found to be of high importance to both the dairy farm operator and dairy farm worker.

TABLE VIII

RATING OF TASKS FOR THE DUTY: ASSEMBLING & INSTALLING DAIRY OPERATIONS EQUIPMENT

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Observe safety precautions with all equipment	57	4.46	41	4.41	1.0	1.0
2. Use operator's manual to maintain materials handling equipment	57	4.32	41	4.17	4.0	5.0
3. Lubricate equipment	57	4.42	41	4.37	2.0	2.0
4. Adjust belts on equipment	57	4.33	41	4.15	3.0	6.5
5. Adjust chains on equipment	57	4.21	41	4.15	7.5	6.5
6. Adjust controls on equipment	57	4.21	41	4.20	7.5	4.0
7. Adjust safety shields on equipment	56	4.27	39	4.26	6.0	3.0
8. Check for missing equipment parts or hardware	57	4.18	41	4.21	9.0	9.0
9. Follow written assembly instructions	47	4.12	41	3.88	11.0	10.0
10. Identify hardware	56	3.75	40	3.63	14.5	13.0
11. Inspect equipment for operating defects	56	4.30	40	4.13	5.0	8.0
12. Install equipment in proper places	57	4.14	41	3.85	10.0	11.5
13. Interpret assembly diagrams	56	3.75	40	3.42	14.5	14.0
14. Interpret assemble instructions	56	3.77	41	3.89	13.0	15.0

TABLE VIII (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
15. Use proper equipment & tools to assemble & install equipment	57	3.88	41	3.85	12.0	11.5

Table IX provides the data for the duty "Sanitizing and Maintaining Milking Equipment". It was found that three tasks for the dairy farm worker had higher mean scores than for the dairy farm operator. "Assemble and sanitize milking system" had a mean of 4.66 for the dairy farm worker while the mean was 4.46 for the dairy farm operator. "Prepare automatic equipment for cleaning and/or sanitizing cycle" had a mean of 4.29 for the dairy farm worker and a 4.07 mean for the dairy farm operator. "Replace rings on milkers" also had a higher mean for the dairy farm worker of 4.10 as compared to a 4.06 for the dairy farm operator. However, it was important to note that the task for both occupations were from high to extreme importance.

"Determine when cow is milked out" was analyzed of extreme importance to both occupations and was ranked first for both occupations in Table X. Table X was the analysis of the duty "Milking Cows". All task for both occupations ranged from high importance to extreme importance. Eleven of the sixteen task for the dairy farm worker had higher

mean scores than did the dairy farm operator. The eleven task with higher mean for the dairy farm workers are "establish and follow milking schedule," "wash and dry udders," "stimulate milk letdown effect," "use strip cup to check for abnormal milk," "attach and adjust milking machine," "set or operate automatic take off units," "determine when cow is milked out," "machine strip if required," "remove milker in proper manner," "dip teat ends with approved disinfectant and sanitize teat cups in approved manner". This, however, did not demonstrate a significant difference in competency since all tasks were defined as high to extreme importance for both occupations.

TABLE IX

RATING OF TASKS FOR THE DUTY: SANITIZING & MAINTAINING MILKING EQUIPMENT

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Adjust vacuum	57	4.61	41	4.24	1.0	8.0
2. Check coolers & water heaters	57	4.47	41	4.34	3.0	3.5
3. Clean pulsators	57	4.40	41	4.34	5.0	3.5
4. Remove milkstone	57	4.37	41	4.29	7.0	6.5
5. Replace inflations	56	4.39	41	4.39	6.0	2.0
6. Replace rings on milker	53	4.06	39	4.10	10.0	10.0
7. Replace teat cup liners	56	4.36	40	4.30	8.0	5.0
8. Select proper cleaning agents & prepare for use	57	4.58	41	4.17	2.0	9.0
9. Set automatic timers	56	3.80	41	3.88	11.0	11.0
10. Prepare automatic equipment for cleaning and/or sanitizing cycle	56	4.07	41	4.29	9.0	6.5

TABLE IX (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
11. Assemble & sanitize milking system	57	4.46	41	4.66	4.0	1.0

TABLE X

RATING OF TASKS FOR THE DUTY:
MILKING COWS

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Read & follow directions for make & type of milking equipment available	57	4.25	41	3.80	12.0	14.0
2. Identify lactating cows	57	4.60	41	4.59	5.0	9.0
3. Establish & follow milking schedule	56	4.64	41	4.71	3.0	5.0
4. Wash & dry udders	57	4.49	41	4.76	6.0	4.0
5. Stimulate milk let-down effect	57	4.30	41	4.63	11.0	8.0
6. Use strip cup to check for abnormal milk	57	3.88	41	4.22	15.0	11.0
7. Attach & adjust milking machine	56	4.39	40	4.70	8.0	6.0
8. Set or operate automatic take off units	52	3.65	39	3.67	16.0	15.5
9. Determine when cow is milked out	57	4.70	41	4.88	1.0	1.0
10. Machine strip if required	57	3.89	41	4.10	14.0	13.0
11. Remove milker in proper manner	57	4.63	41	4.85	4.0	2.5
12. Dip teat ends with approved disinfectant	57	4.65	41	4.85	2.0	2.5
13. Sanitize teat cups in approved manner	59	4.32	43	4.65	10.0	7.0

TABLE X (Continued)

TASKS TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
14. Dry off cows at end of lactation	60	4.43	43	4.16	7.0	12.0
15. Determine when milk is at proper temperature for shipping	60	4.15	43	3.67	13.0	15.5
16. Train fresh heifers to be machine milked	60	4.38	43	4.37	9.0	10.0

Results of Table XI indicated the importance of those tasks related to "Handling and Disposing of Animal Wastes". The rank order of importance was very similar for both occupations but the mean was significantly higher in most instances for the dairy farm operator. The dairy farm operator task ranged from medium to high importance and the diary farm worker also was from medium to high importance. "Determine need for the participate in development of regulatory controls" was the least important task for both the dairy farm operator and worker.

Table XII indicates many task of low importance to the dairy farm worker. The tasks for the duty "marketing and shipping dairy products and dairy cattle" ranged from high (3.93) to low importance (1.74) for the dairy farm worker. The task ranged from high importance (4.32)to medium importance (2.98) for the dairy farm operator. "Load animals" was ranked highest for the dairy farm worker

but was twentieth for the dairy farm operator. Task that were of low importance for the dairy farm worker were "identify all information of milk payroll," "calculate expected returns and profits on sales," "evaluate influence of market grade or class on returns," "select markets," "prepare advertising announcement for selling animals," "interpret market reports," "analyze market cycles," "select appropriate marketing system of milk," "select truckers," "determine affect middlemen and retailers have on producers' prices," "determine whether animals should be held over for another year's income," "estimate market grades," "develop plan to spread marketing throughout year," "determine the affect milk substitutes have on prices and demands," "take pictures of animals for advertising announcements," "determine when calves are ready to market," "consign outstanding individuals at sales," "determine base butterfat test," "compare milk hauling expenses of companies," "compare company base milk prices and differential prices for butterfat differences," and "particupate in milk marketing policy decision making organizations". Twenty-one tasks of the twenty-five for the dairy farm worker were of low importance. "Marketing and shipping dairy products and dairy cattle" was much more important to the dairy farm operator.

TABLE XI

RATING OF TASKS FOR THE DUTY: HANDLING & DISPOSING OF ANIMAL WASTES

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Evaluate animal waste management alternatives	60	3.95	43	3.00	3.0	6.0
2. Prevent waste runoff from feed lots & housing quarters	60	3.83	43	3.02	5.0	5.0
3. Dispose of dead animals properly	59	4.22	43	3.84	1.0	2.0
4. Remove manure from pens & quarters	60	4.08	43	4.07	2.0	1.0
5. Spread manure on fields when bare or unfrozen	59	3.58	42	3.33	6.0	4.0
6. Determine need for & participate in development of regulatory controls	60	3.47	43	2.81	7.0	7.0
7. Operate waste disposal system to maintain health of operator & livestock	60	3.85	43	3.63	4.0	3.0

TABLE XII

RATING OF TASKS FOR THE DUTY: MARKETING & SHIPPING DAIRY PRODUCTS & DAIRY CATTLE

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Identify all information of milk payroll	60	4.32	43	2.19	2.0	8.0
2. Calculate expected returns & profits on sale	60	4.32	43	1.98	2.0	16.0
3. Evaluate influence of market grade or class on returns.	60	4.05	43	2.09	6.0	9.5
4. Load animals	59	3.46	42	3.93	20.0	1.0

TABLE XII (Continued)

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
5. Prepare truck for hauling animals	60	3.70	43	3.70	12.5	3.0
6. Select markets	60	4.12	43	2.07	4.0	11.0
7. Prepare advertising announcement for selling animals	60	3.55	43	1.91	16.0	19.5
8. Interpret market reports	60	3.92	43	1.95	7.5	17.5
9. Analyze market cycles	59	3.69	41	1.78	14.0	24.0
10. Select appropriate marketing system of milk	60	3.78	43	1.86	10.0	21.0
11. Select truckers	58	2.98	42	1.74	25.0	25.0
12. Determine affect middlemen & retailers have on producers' prices	58	3.45	43	1.84	21.0	22.5
13. Determine wheter animals should be held over for another year's income	60	4.32	43	2.42	2.0	5.5
14. Estimate market grades	59	3.37	43	1.84	22.0	22.5
15. Develop plan to spread marketing throughout year	60	3.68	43	2.02	15.0	12.5
16. Determine the affect milk substitutes have on prices & demands	60	3.50	43	2.21	19.0	7.0
17. Take pictures of animals for advertising announcements	60	3.13	43	2.00	24.0	14.5
18. Determine when calves are ready to market	60	3.77	43	2.42	11.0	5.5
19. Determine number of animals to load on trucks	60	3.83	43	2.93	9.0	4.0
20. Consign outstanding individuals at sales	60	3.53	43	2.02	17.0	12.5
21. Determine base butterfat test	59	3.92	43	2.09	7.5	9.5
22. Compare milk hauling expenses of companies	60	3.33	43	1.95	23.0	17.5
23. Compare company base milk prices & differential prices for butterfat differences	60	3.52	43	1.91	18.0	19.5
24. Read measuring stick on bulk tank	60	4.08	43	3.74	5.0	2.0
25. Participate in milk marketing policy decision making organizations	60	3.70	43	2.00	12.5	14.5

"Following General Safety Precautions" was analyzed in Table XIII. The task for this duty are from high to extreme importance to both the dairy farm operator and worker. "Store chemicals away from feed, animals and children" was the highest ranked and of extreme importance for both occupations. The other important task to both occupations were "follow safe work habits," "identify potential safety hazards" and "correct potential safety hazards". Although these task ranked the highest, all other means for the other remaining task were of at least high importance.

TABLE XIII

RATING OF TASKS FOR THE DUTY: FOLLOWING GENERAL SAFTEY PRECAUTIONS

TASK TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1. Follow safe work habits	60	4.42	44	4.45	3.0	2.0
2. Identify potential safety hazards	60	4.47	44	4.39	2.0	3.0
3. Store chemicals away from feed, animals & children	60	4.63	44	4.50	1.0	1.0
4. Use fire extinguishers	60	3.85	44	4.02	16.0	10.5
5. Wear appropriate protective clothing	60	3.78	44	3.84	17.0	16.0
6. Ventilate work areas & manure pits	61	4.00	45	4.11	12.0	7.5
7. Interpret information on labels & signs	61	4.34	45	4.09	5.0	9.0
8. Use proper liftng & carrying metholds	61	4.13	45	4.02	10.0	10.5
9. Store inflammable materials	61	4.21	45	4.11	6.0	7.5
10. Wear appropriate work clothes	61	3.95	45	3.89	14.0	14.0

TABLE XIII (Continued)

TASKS TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
11. Adjust safety devices	61	4.15	44	3.89	9.0	14.5
12. Install safety devices	61	4.10	44	3.95	11.0	12.0
13. Determine when climatic conditions provide unsafe work situations	61	3.89	44	3.75	15.0	17.0
14. Correct potential safety hazards	61	4.41	45	4.22	4.0	4.0
15. Remove debris from work areas	61	3.97	45	4.16	13.0	6.0
16. Use electrical connectors & safety devices	61	4.18	45	4.20	8.0	5.0
17. Dispose of chemical containers	61	4.20	45	3.93	7.0	13.0

According to the data from Table XIV, "Fitting and Showing Dairy Cattle" is of medium (3.27) to high importance (3.78) for the dairy farm operator. To the dairy farm worker the duty is medium (3.32)to low importance(2.41). "Register animals for exhibition" is rank highest for the dairy farm operator (3.78) and the lowest for the dairy farm worker (2.41). "Training animals for showing" is the first ranked task for the dairy farm worker(3.32). "Showing animals" is ranked last for the dairy farm operator(3.27).

TABLE XIV

RATING OF TASKS FOR THE DUTY: FITTING & SHOWING DAIRY CATTLE

TASK	TOTAL N = 61	n	OPER/ MEAN	n	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
1.	Train animals for showing	60	3.48	44	3.32	3.5	1.0
2.	Fit animals for showing	60	3.48	44	3.14	3.5	2.0
3.	Register animals for exhibition	60	3.78	44	2.41	1.0	5.0
4.	Observe health regulations for show cattle	60	3.77	44	2.73	2.0	4.0
5.	Show animals	60	3.27	44	2.91	5.0	3.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

The major purpose of this study was to establish the importance of the skills and competencies most needed by the dairy farm operator and the dairy farm worker.

To accomplish this purpose, the following objectives were formulated:

1. Determine employment skills needed for the dairy farm operator and dairy farm worker in Oklahoma as perceived by dairy farm owners.

2. Determine the level of skill necessary for employment for operators and workers in dairy production.

Methodology

A total of 61 dairy farm operators completed the survey that was given to them by their local vocational agriculture instructor in the spring of 1984. The dairy farm operators were asked to respond to the instrument rating the importance of task for both the dairy farm worker and dairy farm operator. The instrument was constructed in two parts with the first part being demographic information concerning the

dairy operation responding to the survey and the second part was the task listing to be rated.

The sample of dairy operators participated in the study to identify competencies, and to indicate the performance level required of dairy farm operators and dairy farm workers. The survey consisted of fourteen major duty areas and their related task. The dairy operator responded to each of the following duties considered important to diary farming: "Observing Legal Requirements in Dairy Operations," "Selecting Breeding Cows and Replacement Stock," "Breeding Cows and Heifers," "Formulating Feeds and Feeding Dairy Cattle," "Maintaining Dairy Herd Health," "Maintaining Dairy Building and Structures-planning and Construction," "Handling and Caring for Animals," "Assembling and Installing Dairy Operations Equipment," "Sanitizing and Maintaining Milking Equipment," "Milking Cows," "Handling and Disposing of Animal Wastes," "Marketing and Shipping Dairy Products and Dairy Cattle," "Following General Safety Precautions," and"Fitting and Showing Dairy Cattle". Upon collection of the survey, responses were hand tabulated to disclose mean responses, then analyzed and summarized.

The study was conducted to identify the skills needed by dairy farm operators and dairy farm workers. The questionnaire survey was completed by randomly selected dairy operators. The survey consisted of two hundred and sixty-two tasks of which the dairy farm operator rated the importance of each task for a dairy operator and a dairy worker. Two

basic questions were ask about each task: (1) How important is the task to you as a dairy farm operator? (2) How important is the task to your dairy farm worker? The findings indicated that all duty areas were important to both the dairy operator and the dairy worker.

Findings

Each task was rated within its duty area. Results showed that a majority of the tasks for the diary farm operator were of high or extreme importance to the occupation. Results also showed that a majority of the tasks for the dairy farm worker were of medium or high importance to the occupations. There were some tasks that were rated of low importance for the dairy farm worker. Those tasks rating low importance for the dairy farm worker are as follows: "evaluate advantages of various breeds," "interpret feed analysis reports," "evaluate affect of various feeding practices on carcass composition and feed efficiency," "calculate costs of treatments," "determine costs of repairs," "determine capital requirements for alterations or improvements in dairy buildings," "weigh animals," "clip dairy cattle," "clean animals with brush and comb," "identify all information of milk payroll," "calculate expected returns and profits on sales," "evaluate influence of market grade or class on returns," "select markets," "prepare advertising announcement for selling animals," "interpret market reports," "analyze market cycles," "select appropriate

marketing system of milk," "select truckers," "determine affect middlemen and retailers have on producers prices," "determine whether animals should be held over for another year's income," "estimate market grades," "develop plan to spread marketing throughout year," "determine the affect milk substitutes have on prices and demands," "take pictures of animals for advertising announcements," "determine when calves are ready to market," "consign outstanding individuals at sales," "determine base butterfat test," "compare milk hauling expenses of companies," "compare compamy base milk prices and differential prices for butterfat differences," "participate in milk marketing policy decision making organizations," and "register animals for exhibition". The tasks were of low importance to the dairy farm worker, however, for the dairy farm operator the task are of medium to extreme importance.

It was also interesting to note the tasks that were of extreme importance to the dairy farm operator. The tasks of extreme importance to the dairy farm operator were "follow laws relating to chemical use," "evaluate overall performance and health," "select foundation stock," "determine when to breed," "evaluate influence health has on production," "identify sanitation problems which may affect herd health," "identify symptoms of major dairy cattle parasites," "vaccinate animals," "determine amount of major dairy cattle parasites," "vaccinate animals," "determine amount of medication or materials needed in specific situations,"

"interpret labels on medication & insecticide containers," "determine when the veterinarian should be called," "inspect udders for mastitis & bruises, cuts & bumps," "assist animals in delivering young," "identify due dates for animals," "mark animals for identification & keep I.D. records," "adjust vacumm," "select proper cleaning agents & prepare for use," "identify lactating cows," " establish & follow milking schedule," "determine when cow is milked out," "remove milker in proper manner," "dip teat ends with approved disinfectant," and "store chemicals away from feed, animals & children".

The findings also indicated that the level of importance ratings for the dairy farm operator were consistantly higher (with a few exceptions) than the importance ratings of the dairy farm worker. Many of the tasks that were of low importance to the dairy farm worker were of high to extreme importance for the operator.

Table XV idicates the importance of duties for the dairy farm operator and the dairy farm worker. "Milking Cows" was ranked second and of high importance (4.34) for the dairy farm operator. "Milking Cows" ranked first and of high importance (4.41) for the dairy farm worker. When comparing the mean score of "Milking Cows" between the two occupations, the dairy farm worker had a higher mean. Milking Cows" is a high importance to both occupations. The duty "marketing and shipping dairy products and dairy cattle was of low importance (2.26) to the dairy farm

worker but of high importance (3.72) to the dairy farm operator.

Duties of high importance to the dairy farm operator were: "observing legal requirements in dairy operations," "selecting breeding cows and replacement stock," "breeding cows and heifers," "formulating feeds and feeding dairy cattle," "maintaining dairy herd health," "maintaining dairy buildings and structures-planning".

All duties were of high importance to the dairy farm operator. Duties that were less than high importance to the dairy farm worker were: "selecting breeding cows and replacement heifers" (medium importance), "breeding cows and heifers" (medium importance), "formulating feeds and feeding dairy cattle" (medium importance), "maintaining dairy building & structures-planning & construction" (medium importance), "handling & carrying for animals" (medium importance), "handling & disposing of animal wastes" (medium importance", "fitting & showing dairy cattle" (medium importance), and "marketing & shipping dairy products & dairy cattle" (low importance).

Duties that were of high importance to the dairy farm worker were: "observing legal requirements," "maintaining dairy herd health," "assembling & installing dairy operations equipment," "sanitizing & maintaining milking equipment," "milking cows," and "following general safety precautions".

TABLE XV

IMPORTANCE OF DUTIES FOR DAIRY FARM OPERATOR AND DAIRY FARM WORKER

TASK TOTAL N = 61	OPER/ MEAN	WRKR/ MEAN	RANK/ OPER	RANK/ WRKR
A. Observing legal requirements in dairy operations	4.44	3.87	1	5.0
B. Selecting breeding cows & replacement stock	4.21	3.11	6	11.5
C. Breeding cows & heifers	4.23	3.48	5	7.0
D. Formulating feeds & feeding dairy cattle	3.96	3.21	9	10.0
E. Maintaining dairy herd health	4.24	3.74	4	6.0
F. Maintaining dairy buildings & structures-planning & construction	3.66	3.11	13	11.5
G. Handling & caring for animals	3.67	3.46	12	8.0
H. Assembling & installing dairy operations equipment	4.14	4.00	8	4.0
I. Sanitizing & maintaining milking cows	4.32	4.32	3	2.0
J. Milking cows	4.34	4.41	2	1.0
K. Handling & disposing of animal wastes	3.85	3.39	10	9.0
L. Marketing & shipping dairy products dairy cattle	3.72	2.26	11	14.0
M. Following general safety precautions	4.16	4.09	7	3.0
N. Fitting & showing dairy	3.56	2.90	14	13.0

A task list was determined to be the basic core for both dairy farm operators and dairy farm workers and is summarized in Table XVI. This table is composed of those tasks that were of medium to extreme importance to both occupations.

TABLE XVI

BASIC CORE TASK LIST FOR DAIRY FARM OPERATOR AND DAIRY FARM WORKER

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
DUTY A. Observing Legal Requirements in Dairy Operations		
1. Follow laws relating to chemical use	extreme	high
2. Interpret feed additive mixing regulations	high	high
3. Determine when additive should be withdrawn	high	high
4. Interpret milk prodution standards, identify EPA, AMPPI, & Oklahoma Dept. of Agriculture regulations which apply to dairy operations	high	high
DUTY B. Selecting Breeding Cows & Replacement Stock		
1. Determine age of animals	high	medium
2. Establish production goals for culling purposes	high	medium
3. Evaluate general condition of animals	high	high
4. Evaluate overal performance & health	extreme	high
5. Evaluate the degree of various traits & characteristic	high	medium
6. Identify parts of animals	high	medium
7. Identify reputable sources for obtaining stock	high	medium
8. Inspect animals for defects	high	high
9. Inspect animals for desirable traits & characteristics	high	medium
10. Select breeding system to follow	high	medium
11. Select foundation stock for production & type	extreme	medium
12. Evaluate advantages of raising replacements vs. buying replacements	high	medium
13. Identify breeds	high	medium
DUTY C. Breeding Cows & Heifers		
1. Determine the onset of the heat period	high	high
2. Determine when to breed	extreme	high
3. Calculate due date for animals	high	high

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
4. Identify various causes of breeding difficulty	high	high
5. Select a breeding method	high	medium
6. Pregnancy test animals	high	medium
7. Store and prepare semen	high	high
8. Artificially inseminate animals	high	high
9. Identify & explain function of reproductive organs	high	medium
10. Evaluate sire trait information & select for desired improvements	high	medium
11. Record & utilize reproduction records	high	high
DUTY D. Formulating Feeds & Feeding Dairy Cattle		
1. Develop rations	high	medium
2. Calculate cost of rations & feed mixtures	high	medium
3. Calculate feed efficiency	high	medium
4. Classify feeds	high	medium
5. Determine amount of feed additives to add to mixtures	high	medium
6. Determine amount to feed per animal	high	high
7. Determine appropriate form for preparing feed	high	medium
8. Substitute for various feedstuffs in rations	high	medium
9. Determine nutrient level requirements for animals	high	medium
10. Determine purpose of various classes of feedstuffs in rations & mixtures	high	medium
11. Determine why various nutrients are needed in rations & mixtures	high	medium
12. Determine total amount of feed needed for herds	high	medium
13. Determine water requirements for animals	high	medium
14. Determine amount of milk or replacer to feed	high	high
15. Feed calves from buckets	medium	high
16. Identify moldy or spoiled feedstuffs	high	high
17. Determine what rations & mixtures should be changed	high	medium

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
18. Determine which feeds & additives may be included in animal feed mixtures	high	medium
19. Determine which feedstuffs & amount of feedstuffs may be substituted in rations	high	medium
20. Evaluate the influence the quality of feedstuffs has on prodution	high	medium
21. Evaluate how ration imbalance may affect production	high	medium
22. Evaluate influence residue has in milk on marketing problems	high	high
23. Identify factors that influence feed requirements & feed efficiency	high	medium
24. Identify factors that influence quality of feedstuffs	high	medium
25. Determine purpose of various nutrients in rations & mixtures	high	medium
26. Evaluate the influence the digestive system has on feedstuffs that may be fed	high	medium
27. Interpret feed tags & labels	high	medium
28. Interpret feeding charts & tables	high	medium
29. Select appropriate feeding methods	high	medium
30. Determine how feed palatability may be improved	high	medium
31. Work with veterinarian & feed salesman in formulating feeds & planning feeding programs	high	medium
32. Identify essential nutrients needed in rations & mixtures	high	medium
33. Evaluate how feed additives influence production & efficiency	high	medium
34. Determine amount of weight animals should gain	high	medium
35. Fill feed troughs & bunks	medium	high
36. Fill & clean waterers	high	high
37. Prepare feed mixtures	high	high
38. Flush animals	medium	medium
39. Precondition animals for shipping	medium	medium
40. Evaluate influence of using pasture on feeding requirements	high	medium
41. Wean animals	high	high
42. Precondition animals for feedlot	medium	medium

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
43. Prepare milk replacer solution for calves	high	high
44. Determine when calves may be started on grain & roughages	high	high
45. Determine when cows may be turned out to pasture	high	high
46. Precondition cattle before turning out to pasture	medium	medium
47. Determine when dairy cattle should be removed from pasture	high	high
48. Replace salt & mineral blocks	high	high
49. Calculate & feed rations for lactating cows	high	medium
50. Calculate feed rations for dry cows	high	medium
51. Calculate & feed rations for cows just before & after calving	high	medium
52. Calculate & feed rations for calves from weaning to six months of age	high	medium
53. Calculate & feed ration for heifers from six months of age to freshening	high	medium
54. Operate automatic feed handling equipment	high	high
55. Correlate feeding to DHI production records	high	medium
DUTY E. Maintaining Dairy Herd Health		
1. Evaluate influence health has on production	extreme	high
2. Identify common livestock internal & external parasites	high	high
3. Identify common livestock internal may affect herd health	extreme	high
4. Identify sanitation problems which imbalance	high	high
5. Select materials to control internal & external parasites	high	medium
6. Work with veterinarians in developing herd health program	high	medium
7. Disinfect & whitewash buildings & equipment	high	high
8. Select proper chemicals to clean buildings & equipment	high	high

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
9. Use insecticide repellents in buildings	high	high
10. Apply insecticides to cattle to control external parasites	high	high
11. Identify symptoms of common cattle diseases	high	high
12. Identify symptoms of major dairy cattle parasites	extreme	high
13. Evaluate life cycles of parasites to determine control procedures	high	medium
14. Supply medication through feed & water	medium	medium
15. Isolate animals with transmissible diseases	high	high
16. Select appropriate method to control diseases	high	high
17. Worm animals	high	high
18. Vaccinate animals	extreme	high
19. Determine amount of medication or materials needed in specific situations	extreme	high
20. Interpret labels on medications & insecticide containers	extreme	high
21. Give intra-muscular injections	high	high
22. Determine when to rotate pasture to control disease & parasites	high	medium
23. Observe new animals for symptoms of disease & parasites	high	high
24. Determine when the veterinarian should be called	extreme	high
25. Apply medication to cuts & bruises	high	high
26. Identify & isolate injured animals	high	high
27. Blood test cows	high	medium
28. Inspect udders for mastitis & bruises, cuts & bumps	extreme	extreme
29. Place magnet in animal's stomach	medium	medium
30. Perform appproved mastitis test	high	high
31. Treat udders with veterinarian prescribed medications	high	extreme
DUTY F. Maintaining Dairy Buildings & Structures-Planning & Contruction		
1. Apply wood & metal preservatives	medium	medium
2. Clean & oil electic motors on structure	high	high

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
3. Build & remove concrete forms	medium	medium
4. Replace water pipe	medium	medium
5. Replace window panes	medium	medium
6. Construct & repair fences & gates	high	high
7. Wire simple electrical circuit	high	medium
8. Install & repair wood siding on buildings & structures	medium	medium
9. Repair metal structures with arc & oxyacetylene welder	medium	medium
10. Determine size of building needed for cattle	high	medium
11. Evaluate ventilation system for livestock number & building size	high	medium
12. Control humidity & temperature in housing unit	high	medium
DUTY G. Handling & Caring for Animals		
1. Assist animals in delivering young	extreme	high
2. Castrate animals	high	high
3. Check animals milk supply	high	high
4. Clean newborn animals	high	high
5. Dehorn animals	high	high
6. Determine space needed for animals	high	medium
7. Disinfect & clip navel cord	high	high
8. Evaluate influence of stress on growth & condition of animals	high	medium
9. Exercise animals	medium	medium
10. Help young to nurse	high	high
11. Identify signs of approaching birth	high	high
12. Identify due dates for animals	extreme	high
13. Isolate newly purchased animals for observation	high	high
14. Mark animals for identification & keep I.D. records	extreme	high
15. Move cows to calving pens	high	high
16. Move calves to nurse cows	medium	medium
17. Observe animals regularly	high	high
18. Pen animals according to size, weight & sex	high	high
19. Remove afterbirth	high	medium
20. Remove non-compatible animals	high	medium
21. Trim hoofs	medium	medium

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
22. Regulate air movement & temperature in housing for daily cattle	medium	medium
23. House springing heifers with the milking herd	medium	medium
24. Restrain cows with ropes or hobbles	medium	medium
25. Remove milking cows to holding pen or area	high	high
26. Determine length of dry period	high	medium
27. Milk fresh cows by hand	medium	medium
28. Remove excess teats from heifers	high	medium
29. Bed animals	medium	medium
30. Check udders on heifers & cows	high	high
31. Prevent animals from stampeding	high	high
DUTY H. Assembling & Installing Dairy Operations Equipment		
1. Observe safety precautions with all equipment	high	high
2. Use operator's manual to maintain materials handling equipment	high	high
3. Lubricate equipment	high	high
4. Adjust belts on equipment	high	high
5. Adjust chains on equipment	high	high
6. Adjust controls on equipment	high	high
7. Adjust safety shields on equipment	high	high
8. Check for missing equipmemt parts or hardware	high	high
9. Follow written assembly instructions	high	high
10. Identify hardware	high	high
11. Inspect equipment for operating defects	high	high
12. Install equipment in proper places	high	high
13. Interpret assembly diagrams	high	medium
14. Interpret assembly instructions	high	medium
15. Use proper eqiupment & tools to assemble & install equipment	high	high
DUTY I. Sanitizing & Maintaining Milking Equipment		
1. Adjust vacum	extreme	high
2. Check coolers & water heaters	high	high
3. Clean pulsators	high	high
4. Remove milkstone	high	high

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
5. Replace inflations	high	high
6. Replace rings on milker heads	high	high
7. Replace teat cup liners	high	high
8. Select proper cleaning agents & prepare for us	extreme	high
9. Set automatic timers	high	high
10. Prepare automatic equipment for cleaning and/or sanitize cycle	high	high
11. Assemble & sanitize milking system	high	extreme
DUTY J. Milking Cows		
1. Read & follow directions for make & type of milking equipment available	high	high
2. Identify lactating cows	extreme	extreme
3. Establish & follow milking schedule	extreme	extreme
4. Wash & dry udders	high	extreme
5. Stimulate milk let-down effect	high	extreme
6. Use strip cup to check for abnormal milk	high	high
7. Attach & adjust milking machine	high	extreme
8. Set or operate automatic take off units	high	high
9. Determine when cow is milked out	extreme	extreme
10. Machine strip if required	high	high
11. Remove milker in proper manner	extreme	extreme
12. Dip teat ends with approved disinfectant	extreme	extreme
13. Sanitize teat cups in approved manner	high	extreme
14. Dry off cows at end of lactation	high	high
15. Determine when milk is a proper temperature for shipping	high	high
16. Train fresh heifers to be machine milked	high	high
DUTY K. Handling & Disposing of Animal Wastes		
1. Evaluate animal waste management alternatives	high	medium
2. Prevent waste runoff from feed lots & housing quarters	high	medium
3. Dispose of dead animals properly	high	high
4. Remove manure from pens & quarters	high	high

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
6. Use strip cup to check for abnormal milk	high	high
7. Attach & adjust milking machine	high	extreme
8. Set or operate automatic take off units	high	high
9. Determine when cow is milked out	extreme	extreme
10. Machine strip if required	high	high
11. Remove milker in proper manner	extreme	extreme
12. Dip teat ends with approved disinfectant	extreme	extreme
13. Sanitize teat cups in approved manner	high	extreme
14. Dry off cows at end of lactation	high	high
15. Determine when milk is a proper temperature for shipping	high	high
16. Train fresh heifers to be machine milked	high	high
DUTY K. Handling & Disposing of Animal Wastes		
1. Evaluate animal waste management alternatives	high	medium
2. Prevent waste runoff from feed lots & housing quarters	high	medium
3. Dispose of dead animals properly	high	high
4. Remove manure from pens & quarters	high	high
5. Spread manure on fields when bare or unfrozen	high	high
6. Determine need for & participate in development of regulatory controls	high	medium
7. Operate waste disposal system of maintain health of operator & livestock	high	high
DUTY L. Marketing & Shipping Dairy Products & Dairy Cattle		
1. Load animals	medium	high
2. Determine number of animals to load on truck	high	medium
3. Read measuring stick on bulk milk	high	high
4. Prepare truck for hauling animals	high	high
DUTY M. Following General Safety Precautions		
1. Follow safe work habits	high	high
2. Identify potential safety hazards	high	high

TABLE XVI (Continued)

DUTIES/TASKS	OPERATOR IMPORTANCE	WORKER IMPORTANCE
3. Store chemicals away from feed, Animals & children	extreme	extreme
4. Use fire extinguishers	high	high
5. Wear appropriate protective clothing	high	high
6. Ventilate work areas & manure pits	high	high
7. Interpret information on labels & signs	high	high
8. Use proper lifting & carring methods	high	high
9. Store inflammable materials	high	high
10. Wear appropriate work clothes	high	high
11. Adjust safety devices	high	high
12. Install safety devices	high	high
13. Determine when climatic conditions provide unsafe work situations	high	high
14. Correct potential safety hazards	high	high
15. Remove debris from work areas	high	high
16. Use electrical connectors & safety devices	high	high
17. Dispose of chemical containers	high	high
DUTY N. Fitting & Showing Dairy Cattle		
1. Train animals for showing	medium	medium
2. Fit animals for showing	medium	medium
3. Observe health regulatons for showing cattle	high	medium
4. Show animals	medium	medium

A task list determined to be the specialized tasks need by the dairy farm operator are summarized in Table XVII. This table is composed of those tasks found to be of low importance to the dairy worker.

TABLE XVII

SPECIALIZED TASK LIST FOR DAIRY FARM OPERATORS

DUTY/TASKS	OPERATOR IMPORTANCE
DUTY B. Selecting Breeding Cows & Replacement Stock	
1. Select advantages of various breeds	high
DUTY D. Formulating Feed & Feeding Dairy Cattle	
1. Interpret feed analysis reports	medium
2. Evaluate affect of various feeding practice on carcass composition & feed efficiency	
DUTY E. Maintaining Dairy Herd Health	
1. Calculate cost of treatments	high
DUTY F. Maintaining Dairy Buildings & Structures-Planning & Construction	
1. Determine cost of repairs	high
2. Determine capital requirements for alterations or improvements in dairy buildings	high
DUTY G. Handling & Caring for animals	
1. Weigh animals	low
2. Clip dairy cattle	medium
3. Clean animals with brush & comb	low
DUTY L. Marketing & Shipping Dairy Products & Dairy Cattle	
1. Identify all information of milk payroll	high
2. Calculate expected returns & profits on sales	high
3. Evaluate influence of market grade or class on returns	high
4. Select markets	high
5. Prepare advertising announcement for selling animals	high
6. Interpret market reports	high
7. Analyze market cycles	high
8. Select appropriate marketing system of milk	high
9. Select Truckers	medium

TABLE XVII (Continued)

DUTY/TASKS	OPERATOR IMPORTANCE
10. Determine affect middleman & retailers have on producers' prices	medium
11. Determine whether animals should be held over for another year's income	high
12. Estimate market grades	medium
13. Develop plan to spread marketing throughout year	medium
14. Determine the affect milk substitutes have on prices & demands	high
15. Take pictures of animals for advertising announcements	medium
16. Determine when calves are ready to market	high
17. Consign outstanding individuals at sales	high
18. Determine base butterfat test	high
19. Compare milk hauling expenses of companies	medium
20. Compare company base milk prices & differential prices for butterfat differences	high
21. Participate in milk marketing policy decision making organizations	high
DUTY N. Fitting & Showing Dairy Cattle	
1. Register animals for exhibition	high

Conclusions

Based on the data analyzed the following listed conclusions are appropriate.

1. Since a majority of the tasks were judged as being important for dairy farm operators, it is concluded that this list of competency task is a valid list upon which training programs and curriculum can be built.

2. Based on the tasks being rated as medium to extreme importance for the dairy farm worker, it is concluded that this list of competency task is a valid list upon which training programs and curriculum can be built.

3. That based on the consistantly high ratings of importance for the dairy farm operator to be successful, the operator must demonstrate a higher level of competency than the dairy farm worker.

4. Tasks related to management decisions or finances were of low importance to the dairy farm worker.

Recommendations

It appears that the following recommendations are appropriate.

1. That these lists of validated competencies be distributed to vocational agriculture teacher educators, state supervisors, vocational agriculture instructors, and others. The lists is to be used in training program development, curriculum development, and competency-test development.

2. Further, that the Curriculum and Instructional Materials Center, Oklahoma State Department of Vocational and Technical Education give serious consideration to developing instructional materials for the dairy farm operator and worker.

3. That the instructional materials be developed with a basic core which would consist of tasks rated for both the dairy farm operator and worker as medium to extreme importance.

4. That a specialized instructional manual be developed for the dairy farm operator to contain those tasks that were of low importance to the dairy farm worker but were higher importance to the dairy farm operator.

5. Many of the tasks that would be found in a specialized dairy farm operators manual are being taught in the Oklahoma Farm Business Management Programs. Therefore, dairy farm operators' wishing technological update or training should be recruited into the Oklahoma Farm Business Management Programs.

Implications

Based on the findings of this study there are two valid occupations, the dairy farm operator and the dairy farm worker. Each of these occupations can be discribed or defined according to the validated task list resulting from this study. Based on the findings of this study it appears that competency-based and/or performance-based instruction would be a reasonable and logical way of training dairy operators.

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APPENDIX

SAMPLE OF SURVEY

DAIRY FARM CLUSTER SURVEY

NAME_____

ADDRESS_____

_____

1. Number of part-time employees_____

2. Number of full-time employees_____

3. Age of employees (Circle the category which applies to your employees and give the number in that age category.)

AGE	PART-TIME NUMBER OF EMPLOYEES	FULL-TIME NUMBER OF EMPLOYEES
14-19	_____	_____
20-30	_____	_____
31-40	_____	_____
41 & Over	_____	_____

4. Size or scope of operation:

   Number of acres of cropland_____

   Number of acres of pastureland_____

   Types of livestock in dairy farm operation:

TYPE OF LIVESTOCK	NUMBER OF HEAD/YEAR
Dry cows	_____
Lactating cows	_____
Heifers	_____

2

INSTRUCTIONS: Please circle each numbered task indicating what degree of importance it holds for a dairy farm operator and dairy farm worker using the following rating scale:

1 = NO IMPORTANCE

2 = LOW IMPORTANCE

3 = MEDIUM IMPORTANCE

4 = HIGH IMPORTANCE

5 = EXTREME IMPORTANCE

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
A. Observing Legal Requirements in Dairy Operations		
1. Follow laws relating to chemical use	1 2 3 4 5	1 2 3 4 5
2. Interpret feed additive mixing regulations	1 2 3 4 5	1 2 3 4 5
3. Determine when additive should be withdrawn	1 2 3 4 5	1 2 3 4 5
4. Interpret milk production standards, identify EPA, AMPI & Oklahoma Dept. of Agriculture regulations which apply to dairy operations	1 2 3 4 5	1 2 3 4 5
B. Selecting Breeding Cows & Replacement Stock		
1. Determine age of animals	1 2 3 4 5	1 2 3 4 5
2. Establish production goals for culling purposes	1 2 3 4 5	1 2 3 4 5
3. Evaluate advantages of various breeds	1 2 3 4 5	1 2 3 4 5
4. Evaluate general condition of animals	1 2 3 4 5	1 2 3 4 5
5. Evaluate overall performance & health	1 2 3 4 5	1 2 3 4 5
6. Evaluate the degree of various traits & characteristics	1 2 3 4 5	1 2 3 4 5
7. Identify parts of animals	1 2 3 4 5	1 2 3 4 5
8. Identify reputable sources for obtaining stock	1 2 3 4 5	1 2 3 4 5

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
9. Inspect animals for defects	1 2 3 4 5	1 2 3 4 5
10. Inspect animals for desirable traits & characteristics	1 2 3 4 5	1 2 3 4 5
11. Select breeding system to follow	1 2 3 4 5	1 2 3 4 5
12. Select foundation stock for production & type	1 2 3 4 5	1 2 3 4 5
13. Evaluate advantages of raising replacements vs. buying replacements	1 2 3 4 5	1 2 3 4 5
14. Identify breeds	1 2 3 4 5	1 2 3 4 5
C. Breeding Cows & Heifers		
1. Determine the onset of the heat period	1 2 3 4 5	1 2 3 4 5
2. Determine when to breed	1 2 3 4 5	1 2 3 4 5
3. Calculate due date for animals	1 2 3 4 5	1 2 3 4 5
4. Identify various causes of breeding difficulty	1 2 3 4 5	1 2 3 4 5
5. Select a breeding method	1 2 3 4 5	1 2 3 4 5
6. Pregnancy test animals	1 2 3 4 5	1 2 3 4 5
7. Store and prepare semen	1 2 3 4 5	1 2 3 4 5
8. Artificially inseminate animals	1 2 3 4 5	1 2 3 4 5
9. Identify & explain function of reproductive organs	1 2 3 4 5	1 2 3 4 5
10. Evaluate sire trait information & select for desired improvements	1 2 3 4 5	1 2 3 4 5
11. Record & utilize reproduction records	1 2 3 4 5	1 2 3 4 5
D. Formulating Feeds & Feeding Dairy Cattle		
1. Develop rations	1 2 3 4 5	1 2 3 4 5
2. Calculate cost of rations & feed mixtures	1 2 3 4 5	1 2 3 4 5
3. Calculate feed efficiency	1 2 3 4 5	1 2 3 4 5
4. Classify feeds	1 2 3 4 5	1 2 3 4 5

4

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
5. Determine amount of feed additives to add to mixtures	1 2 3 4 5	1 2 3 4 5
6. Determine amount to feed per animal	1 2 3 4 5	1 2 3 4 5
7. Determine appropriate form for preparing feed	1 2 3 4 5	1 2 3 4 5
8. Substitute for various feedstuffs in rations	1 2 3 4 5	1 2 3 4 5
9. Determine nutrient level requirements for animals	1 2 3 4 5	1 2 3 4 5
10. Determine purpose of various classes of feedstuffs in rations & mixtures	1 2 3 4 5	1 2 3 4 5
11. Determine why various nutrients are needed in rations & mixtures	1 2 3 4 5	1 2 3 4 5
12. Determine total amount of feed needed for herds	1 2 3 4 5	1 2 3 4 5
13. Determine water requirements for animals	1 2 3 4 5	1 2 3 4 5
14. Determine amount of milk or replacer to feed	1 2 3 4 5	1 2 3 4 5
15. Feed calves from buckets	1 2 3 4 5	1 2 3 4 5
16. Identify moldy or spoiled feedstuffs	1 2 3 4 5	1 2 3 4 5
17. Determine what rations & mixtures should be changed	1 2 3 4 5	1 2 3 4 5
18. Determine which feeds & additives may be included in animal feed mixtures	1 2 3 4 5	1 2 3 4 5
19. Determine which feedstuffs & amount of feedstuffs may be substituted in rations	1 2 3 4 5	1 2 3 4 5
20. Evaluate the influence the quality of feedstuffs has on production	1 2 3 4 5	1 2 3 4 5
21. Evaluate how ration imbalance may affect production	1 2 3 4 5	1 2 3 4 5
22. Evaluate influence residue has in milk on marketing problems	1 2 3 4 5	1 2 3 4 5
23. Identify factors that influence feed requirements & feed efficiency	1 2 3 4 5	1 2 3 4 5
24. Identify factors that influence quality of feedstuffs	1 2 3 4 5	1 2 3 4 5

5

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

	TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
25.	Determine purpose of various nutrients in rations & mixtures	1 2 3 4 5	1 2 3 4 5
26.	Evaluate the influence the digestive system has on feedstuffs that may be fed	1 2 3 4 5	1 2 3 4 5
27.	Interpret feed analysis reports	1 2 3 4 5	1 2 3 4 5
28.	Interpret feed tags & labels	1 2 3 4 5	1 2 3 4 5
29.	Interpret feeding charts & tables	1 2 3 4 5	1 2 3 4 5
30.	Select appropriate feeding methods	1 2 3 4 5	1 2 3 4 5
31.	Determine how feed palatability may be improved	1 2 3 4 5	1 2 3 4 5
32.	Work with veterinarian & feed salesman in formulating feeds & planning feeding programs	1 2 3 4 5	1 2 3 4 5
33.	Identify essential nutrients needed in rations & mixtures	1 2 3 4 5	1 2 3 4 5
34.	Evaluate how feed additives influence production & efficiency	1 2 3 4 5	1 2 3 4 5
35.	Determine amount of weight animals should gain	1 2 3 4 5	1 2 3 4 5
36.	Fill feed troughs & bunks	1 2 3 4 5	1 2 3 4 5
37.	Fill & clean waterers	1 2 3 4 5	1 2 3 4 5
38.	Prepare feed mixtures	1 2 3 4 5	1 2 3 4 5
39.	Flush animals	1 2 3 4 5	1 2 3 4 5
40.	Precondition animals for shipping	1 2 3 4 5	1 2 3 4 5
41.	Evaluate influence of using pasture on feeding requirements	1 2 3 4 5	1 2 3 4 5
42.	Wean animals	1 2 3 4 5	1 2 3 4 5
43.	Precondition animals for feedlot	1 2 3 4 5	1 2 3 4 5
44.	Evaluate affect of various feeding practices on carcass composition & feed efficiency	1 2 3 4 5	1 2 3 4 5

6

	TASKS TO COMPLETE JOB AREA	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE DAIRY FARM OPERATOR	DAIRY FARM WORKER
45.	Prepare milk replacer solution for calves	1 2 3 4 5	1 2 3 4 5
46.	Determine when calves may be started on grain & roughages	1 2 3 4 5	1 2 3 4 5
47.	Determine when cows may be turned out to pasture	1 2 3 4 5	1 2 3 4 5
48.	Precondition cattle before turning out to pasture	1 2 3 4 5	1 2 3 4 5
49.	Determine when dairy cattle should be removed from pasture	1 2 3 4 5	1 2 3 4 5
50.	Replace salt & mineral blocks	1 2 3 4 5	1 2 3 4 5
51.	Calculate & feed rations for lactating cows	1 2 3 4 5	1 2 3 4 5
52.	Calculate & feed rations for dry cows	1 2 3 4 5	1 2 3 4 5
53.	Calculate & feed rations for cows just before & after calving	1 2 3 4 5	1 2 3 4 5
54.	Calculate & feed rations for calves from weaning to six months of age	1 2 3 4 5	1 2 3 4 5
55.	Calculate & feed ration for heifers from six months of age to freshening	1 2 3 4 5	1 2 3 4 5
56.	Operate automatic feed handling equipment	1 2 3 4 5	1 2 3 4 5
57.	Correlate feeding to DHI production records	1 2 3 4 5	1 2 3 4 5
E.	**Maintaining Dairy Herd Health**		
1.	Evaluate influence health has on production	1 2 3 4 5	1 2 3 4 5
2.	Identify common livestock internal & external parasites	1 2 3 4 5	1 2 3 4 5
3.	Identify sanitation problems which may affect herd health	1 2 3 4 5	1 2 3 4 5
4.	Identify symptoms of nutritional imbalance	1 2 3 4 5	1 2 3 4 5
5.	Select materials to control internal & external parasites	1 2 3 4 5	1 2 3 4 5
6.	Work with veterinarians in developing herd health program	1 2 3 4 5	1 2 3 4 5

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

	TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
7.	Disinfect & whitewash buildings & equipment	1 2 3 4 5	1 2 3 4 5
8.	Select proper chemicals to clean buildings & equipment	1 2 3 4 5	1 2 3 4 5
9.	Use insecticide repellents in buildings	1 2 3 4 5	1 2 3 4 5
10.	Apply insecticides to cattle to control external parasites	1 2 3 4 5	1 2 3 4 5
11.	Identify symptoms of common cattle diseases	1 2 3 4 5	1 2 3 4 5
12.	Identify symptoms of major dairy cattle parasites	1 2 3 4 5	1 2 3 4 5
13.	Evaluate life cycles of parasites to determine control procedures	1 2 3 4 5	1 2 3 4 5
14.	Calculate cost of treatments	1 2 3 4 5	1 2 3 4 5
15.	Supply medication through feed & water	1 2 3 4 5	1 2 3 4 5
16.	Isolate animals with transmissible diseases	1 2 3 4 5	1 2 3 4 5
17.	Select appropriate method to control diseases	1 2 3 4 5	1 2 3 4 5
18.	Worm animals	1 2 3 4 5	1 2 3 4 5
19.	Vaccinate animals	1 2 3 4 5	1 2 3 4 5
20.	Determine amount of medication or materials needed in specific situations	1 2 3 4 5	1 2 3 4 5
21.	Interpret labels on medications & insecticide containers	1 2 3 4 5	1 2 3 4 5
22.	Give intra-muscular injections	1 2 3 4 5	1 2 3 4 5
23.	Determine when to rotate pastures to control diseases & parasites	1 2 3 4 5	1 2 3 4 5
24.	Observe new animals for symptoms of diseases & parasites	1 2 3 4 5	1 2 3 4 5
25.	Determine when the veterinarian should be called	1 2 3 4 5	1 2 3 4 5
26.	Apply medication to cuts & bruises	1 2 3 4 5	1 2 3 4 5

8

TASKS TO COMPLETE JOB AREA		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE DAIRY FARM OPERATOR	DAIRY FARM WORKER
27.	Identify & isolate injured animals	1 2 3 4 5	1 2 3 4 5
28.	Blood test cows	1 2 3 4 5	1 2 3 4 5
29.	Inspect udders for mastitis & bruises, cuts & bumps	1 2 3 4 5	1 2 3 4 5
30.	Place magnet in animals' stomach	1 2 3 4 5	1 2 3 4 5
31.	Perform approved mastitis test	1 2 3 4 5	1 2 3 4 5
32.	Treat udders with veterinarian prescribed medications	1 2 3 4 5	1 2 3 4 5
F.	**Maintaining Dairy Buildings & Structures - Planning & Construction**		
1.	Apply wood & metal preservatives	1 2 3 4 5	1 2 3 4 5
2.	Clean & oil electric motors on structures	1 2 3 4 5	1 2 3 4 5
3.	Build & remove concrete forms	1 2 3 4 5	1 2 3 4 5
4.	Determine cost of repairs	1 2 3 4 5	1 2 3 4 5
5.	Replace water pipe	1 2 3 4 5	1 2 3 4 5
6.	Replace window panes	1 2 3 4 5	1 2 3 4 5
7.	Construct & repair fences & gates	1 2 3 4 5	1 2 3 4 5
8.	Wire simple electrical circuit	1 2 3 4 5	1 2 3 4 5
9.	Install & repair wood siding on buildings & structures	1 2 3 4 5	1 2 3 4 5
10.	Repair metal structures with arc & oxyacetylene welder	1 2 3 4 5	1 2 3 4 5
11.	Determine size of building needed for cattle	1 2 3 4 5	1 2 3 4 5
12.	Evaluate ventilation systems for livestock number & building size	1 2 3 4 5	1 2 3 4 5
13.	Control humidity & temperature in housing unit	1 2 3 4 5	1 2 3 4 5
14.	Determine capital requirements for alterations or improvements in dairy buildings	1 2 3 4 5	1 2 3 4 5

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
G. Handling & Caring for Animals		
1. Assist animals in delivering young	1 2 3 4 5	1 2 3 4 5
2. Castrate animals	1 2 3 4 5	1 2 3 4 5
3. Check animals milk supply	1 2 3 4 5	1 2 3 4 5
4. Clean newborn animals	1 2 3 4 5	1 2 3 4 5
5. Dehorn animals	1 2 3 4 5	1 2 3 4 5
6. Determine space needed for animals	1 2 3 4 5	1 2 3 4 5
7. Disinfect & clip naval cord	1 2 3 4 5	1 2 3 4 5
8. Evaluate influence of stress on growth & condition of animals	1 2 3 4 5	1 2 3 4 5
9. Exercise animals	1 2 3 4 5	1 2 3 4 5
10. Help young to nurse	1 2 3 4 5	1 2 3 4 5
11. Identify signs of approaching birth	1 2 3 4 5	1 2 3 4 5
12. Identify due dates for animals	1 2 3 4 5	1 2 3 4 5
13. Isolate newly purchased animals for observation	1 2 3 4 5	1 2 3 4 5
14. Mark animals for identification & keep ID records	1 2 3 4 5	1 2 3 4 5
15. Move cows to calving pens	1 2 3 4 5	1 2 3 4 5
16. Move calves to nurse cows	1 2 3 4 5	1 2 3 4 5
17. Observe animals regularly	1 2 3 4 5	1 2 3 4 5
18. Pen animals according to size, weight & sex	1 2 3 4 5	1 2 3 4 5
19. Remove afterbirth	1 2 3 4 5	1 2 3 4 5
20. Remove non-compatible animals	1 2 3 4 5	1 2 3 4 5
21. Trim hoofs	1 2 3 4 5	1 2 3 4 5
22. Weigh animals	1 2 3 4 5	1 2 3 4 5
23. Regulate air movement & temperature in housing for dairy cattle	1 2 3 4 5	1 2 3 4 5
24. House springing heifers with the milking herd	1 2 3 4 5	1 2 3 4 5

10

	TASKS TO COMPLETE JOB AREA	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE DAIRY FARM OPERATOR	DAIRY FARM WORKER
25.	Restrain cows with ropes or hobbles	1 2 3 4 5	1 2 3 4 5
26.	Remove milking cows to holding pen or area	1 2 3 4 5	1 2 3 4 5
27.	Clip dairy cattle	1 2 3 4 5	1 2 3 4 5
28.	Determine length of dry period	1 2 3 4 5	1 2 3 4 5
29.	Milk fresh cows by hand	1 2 3 4 5	1 2 3 4 5
30.	Remove excess teats from heifers	1 2 3 4 5	1 2 3 4 5
31.	Clean animals with brush & comb	1 2 3 4 5	1 2 3 4 5
32.	Bed animals	1 2 3 4 5	1 2 3 4 5
33.	Check udders on heifers & cows	1 2 3 4 5	1 2 3 4 5
34.	Prevent animals from stampeding	1 2 3 4 5	1 2 3 4 5
H.	**Assembling & Installing Dairy Operations Equipment**		
1.	Observe safety precautions with all equipment	1 2 3 4 5	1 2 3 4 5
2.	Use operator's manual to maintain materials handling equipment	1 2 3 4 5	1 2 3 4 5
3.	Lubricate equipment	1 2 3 4 5	1 2 3 4 5
4.	Adjust belts on equipment	1 2 3 4 5	1 2 3 4 5
5.	Adjust chains on equipment	1 2 3 4 5	1 2 3 4 5
6.	Adjust controls on equipment	1 2 3 4 5	1 2 3 4 5
7.	Adjust safety shields on equipment	1 2 3 4 5	1 2 3 4 5
8.	Check for missing equipment parts or hardware	1 2 3 4 5	1 2 3 4 5
9.	Follow written assembly instructions	1 2 3 4 5	1 2 3 4 5
10.	Identify hardware	1 2 3 4 5	1 2 3 4 5
11.	Inspect equipment for operating defects	1 2 3 4 5	1 2 3 4 5
12.	Install equipment in proper places	1 2 3 4 5	1 2 3 4 5
13.	Interpret assembly diagrams	1 2 3 4 5	1 2 3 4 5
14.	Interpret assembly instructions	1 2 3 4 5	1 2 3 4 5
15.	Use proper equipment & tools to assemble & install equipment	1 2 3 4 5	1 2 3 4 5

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
I. Sanitizing & Maintaining Milking Equipment		
1. Adjust vacuum	1 2 3 4 5	1 2 3 4 5
2. Check coolers & water heaters	1 2 3 4 5	1 2 3 4 5
3. Clean pulsators	1 2 3 4 5	1 2 3 4 5
4. Remove milkstone	1 2 3 4 5	1 2 3 4 5
5. Replace inflations	1 2 3 4 5	1 2 3 4 5
6. Replace rings on milker heads	1 2 3 4 5	1 2 3 4 5
7. Replace teat cup liners	1 2 3 4 5	1 2 3 4 5
8. Select proper cleaning agents & prepare for use	1 2 3 4 5	1 2 3 4 5
9. Set automatic timers	1 2 3 4 5	1 2 3 4 5
10. Prepare automatic equipment for cleaning and/or sanitizing cycle	1 2 3 4 5	1 2 3 4 5
11. Assemble & sanitize milking system	1 2 3 4 5	1 2 3 4 5
J. Milking Cows		
1. Read & follow directions for make & type of milking equipment available	1 2 3 4 5	1 2 3 4 5
2. Identify lactating cows	1 2 3 4 5	1 2 3 4 5
3. Establish & follow milking schedule	1 2 3 4 5	1 2 3 4 5
4. Wash & dry udders	1 2 3 4 5	1 2 3 4 5
5. Stimulate milk let-down effect	1 2 3 4 5	1 2 3 4 5
6. Use strip cup to check for abnormal milk	1 2 3 4 5	1 2 3 4 5
7. Attach & adjust milking machine	1 2 3 4 5	1 2 3 4 5
8. Set or operate automatic take off units	1 2 3 4 5	1 2 3 4 5
9. Determine when cow is milked out	1 2 3 4 5	1 2 3 4 5
10. Machine strip if required	1 2 3 4 5	1 2 3 4 5
11. Remove milker in proper manner	1 2 3 4 5	1 2 3 4 5
12. Dip teat ends with approved disinfectant	1 2 3 4 5	1 2 3 4 5

12

TASKS TO COMPLETE JOB AREA		1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE DAIRY FARM OPERATOR	DAIRY FARM WORKER
13.	Sanitize teat cups in approved manner	1 2 3 4 5	1 2 3 4 5
14.	Dry off cows at end of lactation	1 2 3 4 5	1 2 3 4 5
15.	Determine when milk is at proper temperature for shipping	1 2 3 4 5	1 2 3 4 5
16.	Train fresh heifers to be machine milked	1 2 3 4 5	1 2 3 4 5
K.	**Handling & Disposing of Animal Wastes**		
1.	Evaluate animal waste management alternatives	1 2 3 4 5	1 2 3 4 5
2.	Prevent waste runoff from feed lots & housing quarters	1 2 3 4 5	1 2 3 4 5
3.	Dispose of dead animals properly	1 2 3 4 5	1 2 3 4 5
4.	Remove manure from pens & quarters	1 2 3 4 5	1 2 3 4 5
5.	Spread manure on fields when bare or unfrozen	1 2 3 4 5	1 2 3 4 5
6.	Determine need for & participate in development of regulatory controls	1 2 3 4 5	1 2 3 4 5
7.	Operate waste disposal system to maintain health of operator & livestock	1 2 3 4 5	1 2 3 4 5
L.	**Marketing & Shipping Dairy Products & Dairy Cattle**		
1.	Identify all information of milk payroll	1 2 3 4 5	1 2 3 4 5
2.	Calculate expected returns & profits on sales	1 2 3 4 5	1 2 3 4 5
3.	Evaluate influence of market grade or class on returns	1 2 3 4 5	1 2 3 4 5
4.	Load animals	1 2 3 4 5	1 2 3 4 5
5.	Prepare truck for hauling animals	1 2 3 4 5	1 2 3 4 5
6.	Select markets	1 2 3 4 5	1 2 3 4 5
7.	Prepare advertising announcement for selling animals	1 2 3 4 5	1 2 3 4 5
8.	Interpret market reports	1 2 3 4 5	1 2 3 4 5

1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE

TASKS TO COMPLETE JOB AREA	DAIRY FARM OPERATOR	DAIRY FARM WORKER
9. Analyze market cycles	1 2 3 4 5	1 2 3 4 5
10. Select appropriate marketing system of milk	1 2 3 4 5	1 2 3 4 5
11. Select truckers	1 2 3 4 5	1 2 3 4 5
12. Determine affect middlemen & retailers have on producers' prices	1 2 3 4 5	1 2 3 4 5
13. Determine whether animals should be held over for another year's income	1 2 3 4 5	1 2 3 4 5
14. Estimate market grades	1 2 3 4 5	1 2 3 4 5
15. Develop plan to spread marketing throughout year	1 2 3 4 5	1 2 3 4 5
16. Determine the affect milk substitutes have on prices & demands	1 2 3 4 5	1 2 3 4 5
17. Take pictures of animals for advertising announcements	1 2 3 4 5	1 2 3 4 5
18. Determine when calves are ready to market	1 2 3 4 5	1 2 3 4 5
19. Determine number of animals to load on trucks	1 2 3 4 5	1 2 3 4 5
20. Consign outstanding individuals at sales	1 2 3 4 5	1 2 3 4 5
21. Determine base butterfat test	1 2 3 4 5	1 2 3 4 5
22. Compare milk hauling expenses of companies	1 2 3 4 5	1 2 3 4 5
23. Compare company base milk prices & differential prices for butterfat differences	1 2 3 4 5	1 2 3 4 5
24. Read measuring stick on bulk tank	1 2 3 4 5	1 2 3 4 5
25. Participate in milk marketing policy decision making organizations	1 2 3 4 5	1 2 3 4 5
M. Following General Safety Precautions		
1. Follow safe work habits	1 2 3 4 5	1 2 3 4 5
2. Identify potential safety hazards	1 2 3 4 5	1 2 3 4 5
3. Store chemicals away from feed, animals & children	1 2 3 4 5	1 2 3 4 5
4. Use fire extinguishers	1 2 3 4 5	1 2 3 4 5

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TASKS TO COMPLETE JOB AREA	1 = NO IMPORTANCE 5 = EXTREME IMPORTANCE DAIRY FARM OPERATOR	DAIRY FARM WORKER
5. Wear appropriate protective clothing	1 2 3 4 5	1 2 3 4 5
6. Ventilate work areas & manure pits	1 2 3 4 5	1 2 3 4 5
7. Interpret information on labels & signs	1 2 3 4 5	1 2 3 4 5
8. Use proper lifting & carrying methods	1 2 3 4 5	1 2 3 4 5
9. Store inflammable materials	1 2 3 4 5	1 2 3 4 5
10. Wear appropriate work clothes	1 2 3 4 5	1 2 3 4 5
11. Adjust safety devices	1 2 3 4 5	1 2 3 4 5
12. Install safety devices	1 2 3 4 5	1 2 3 4 5
13. Determine when climatic conditions provide unsafe work situations	1 2 3 4 5	1 2 3 4 5
14. Correct potential safety hazards	1 2 3 4 5	1 2 3 4 5
15. Remove debris from work areas	1 2 3 4 5	1 2 3 4 5
16. Use electrical connectors & safety devices	1 2 3 4 5	1 2 3 4 5
17. Dispose of chemical containers	1 2 3 4 5	1 2 3 4 5
N. Fitting & Showing Dairy Cattle		
1. Train animals for showing	1 2 3 4 5	1 2 3 4 5
2. Fit animals for showing	1 2 3 4 5	1 2 3 4 5
3. Register animals for exhibition	1 2 3 4 5	1 2 3 4 5
4. Observe health regulations for show cattle	1 2 3 4 5	1 2 3 4 5
5. Show animals	1 2 3 4 5	1 2 3 4 5

OKLAHOMA STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION
FRANCIS TUTTLE, DIRECTOR • 1515 WEST SIXTH AVE., • STILLWATER, OKLAHOMA 74074 • A.C. (405) 377-2000

August 3, 1984

Dear Vocational Agriculture Instructor:

As you know, the State Department of Vocational and Technical Education has had a strong commitment for the development of instructional materials for vocational and technical education. The first set of instructional materials ever developed here at the department was in the field of vocational agriculture. The strength of our development is you, the vocational agriculture instructor. We need your assistance once again.

We have a research project where we are trying to secure significant information to be used in developing two future sets of instructional materials. We need to validate the competencies of a dairy farm operator and a dairy farm worker. We are asking that you have **one** dairy farm operator complete the enclosed survey and indicate the importance of the listed tasks for both a dairy farm operator and a dairy farm worker.

We recognize that this is a very busy time of the year for you, but we would appreciate your quick response in submitting the survey. You will need to spend 30 to 45 minutes with **one** of your local dairymen to complete the task list. Return the completed survey to our office prior to **August 31** in the enclosed envelope.

If you have questions or need additional information, please contact Greg Pierce at (405) 377-2000, extension 425. Thank you in advance for your help.

Sincerely,

Francis Tuttle

Francis Tuttle
Director

FT:jd

82-000704

OKLAHOMA STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION
FRANCIS TUTTLE, DIRECTOR • 1515 WEST SIXTH AVE., • STILLWATER, OKLAHOMA 74074 • A.C. (405) 377-2000

March 16, 1984

MEMORANDUM

TO: Selected Vocational Agriculture Instructors

FROM: Greg Pierce, Assistant Coordinator, CIMC

SUBJECT: Dairy Farm Operator and Worker Survey

Earlier, you had received a letter from Dr. Tuttle requesting your assistance. Your assistance is urgently needed to complete this project on a timely basis. Please have two dairymen in your area complete the surveys and return the surveys in the business reply envelope provided immediately. We must have responses from all those teachers receiving the surveys.

GP:shp

82-000704

VITA

GREGORY ERVIN PIERCE

Candidate for the Degree of

Master of Science

Thesis: STUDY OF IMPORTANCE OF DUTIES AND TASKS FOR DAIRY FARM OPERATOR AND DAIRY FARM WORKER

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Duncan, Oklahoma, December 18, 1947, the son of Ervin and Joyce Pierce.

Education: Graduated from Velma-Alma High School, Velma, Oklahoma, in May 1966; received the Bachelor of Science degree from Oklahoma State University, Stillwater, Oklahoma in July, 1970; completed the requirements for the Master of Science degree at Oklahoma State University in May, 1985.

Professional Experience: Vocational Agriculture Instructor in Tishomingo, Oklahoma, 1971-1978; Agriculture Curriculum Specialist at Oklahoma State Department of Vocational and Technical Education, 1978-1980; Assistant Coordinator, Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education 1980-84; Cordinator, Evaluation and Testing, State Department of Vocational and Education, 1985; Executive Director, Mid-America Vocational Curriculum Consortium, Stillwater, Oklahoma, 1985 to present.

Professional Organizations: Oklahoma Vocational Association; American Vocational Association; Oklahoma Council of Local Administrators; Oklahoma State School Boards Association; Vocational Instructional Materials Division of New and Related Services of the American Vocational Association.