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Employment in agriculture has until recently been thought of as employment in farming. Farming and agriculture are not synonymous. The agricultural industry of today includes the agricultural aspects of technical, professional and business occupations that provides services for farmers and those processing and distributing farm products.

Educationally, a vacuum has been created surrounding the information known about off-farm agricultural occupations. This information is needed today by those persons charged with the responsibility of providing education for agricultural occupations.

The primary purpose of this study is to outline a procedure, select a representative sample, and identify various off-farm agricultural occupations in Umatilla County. The information gathered concerning the firms interviewed was sought to help formulate guide lines for planning programs for vocational agriculture.

A preliminary questionnaire was sent to all firms that would require workers with a knowledge of agriculture. A random sample of those firms indicating that a knowledge of agriculture was necessary was taken. From this group 21 firms were selected for comprehensive interviews.

The 21 firms employed 482 workers, of which 220 or 45.66 percent were agriculturally oriented. Future employment opportunities for five years were projected at a level 46 new employees. Most firms used a variety of methods to secure new agricultural employees.

Ten schools indicated an interest in cooperative work experience programs in cooperation with the local high school. Farm experience and work experience were desirable in most employment opportunities. Vocational agriculture training was desirable for 83.63 percent of the occupations reviewed. Broad competencies in agriculture were necessary for most occupations, while specific competencies were regarded as important only in specific job titles.

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in Umatilla County, Oregon

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TABLE OF CONTENTS

INTRODUCTION	1
Statement of the Problem	1
Limitations	2
Assumptions	3
Purpose of the Study	3
Definition of Terms	4
Location of Study	8
Design of the Study	10
REVIEW OF LITERATURE	12
Methods of Obtaining Information	12
Number of Employees Needed	13
Levels of Employment	15
Competencies Needed	16
Educational Requirements	18
Background Required	19
Age Requirements	20
Employment of High School Students	21
Sources Most Frequently Used in Securing New Employees With an Agricultural Background	22
FINDINGS	23
Firms Interviewed	24
Functions Performed	25
Employment	26
Levels of Employment	26
Future Employment Opportunities	28
Sources Most Frequently Used in Securing New Employees With an Agricultural Background	29
Training Opportunities	30
Willingness to Hire a High School Student on a Cooperative Work Experience Program	31
Educational Requirements	32
Age Requirements	33
Background Required	34
Activities and Duties Performed	35
Competencies Needed	36

TABLE OF CONTENTS (CONTINUED)

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	42
Summary	42
Conclusions	44
Recommendations	45
BIBLIOGRAPHY	47
APPENDICES	
Appendix I	50
Appendix II	53
Appendix III	56
Appendix IV	57
Appendix V	58

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Number of firms and employees.	23
2. Function of firms employing agriculturally oriented personnel.	24
3. Functions of firms interviewed employing agriculturally oriented personnel.	25
4. Total employment per type of firm and number of employees within the firm who are agriculturally oriented.	26
5. Number of present employees by levels.	27
6. Employment opportunities.	28
7. Training opportunities and/or facilities for new agriculturally oriented employees.	30
8. Educational requirements for persons entering occupations other than farming.	32
9. Age requirements for persons seeking employment.	
10. Backgrounds helpful to persons seeking employment.	34
11. Background required for employment (in percent).	35
12. Activities persons perform.	37
13. Competencies needed.	38
14. Competencies needed by employees.	39

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THE IDENTIFICATION OF OFF-FARM AGRICULTURAL OCCUPATIONS IN UMATILLA COUNTY, OREGON

INTRODUCTION

The emphasis of employment in agriculture has shifted from a goal of predominantly production to a goal that includes employment in processing, servicing and distribution of agricultural products. This transition in employment has had significant implications for persons charged with the responsibility of providing education for agricultural occupations. The implications result in a program involving a greater number of individuals and wider range of offerings.

As a result of the shifted emphasis, the 88th Congress specified in the Vocational Act of 1963,

any amounts allotted. . . . agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects whether or not such occupations involve work of the farm (27).

The appropriation of funds to implement the provisions of the act has created a critical need for detailed information concerning the nature and extent of off-farm agricultural occupations (6).

Statement of the Problem

Employment in agriculture has until recently been thought of largely as employment in farming. Farming and agriculture are

not synonymous. Agriculture includes the agricultural aspects of technical, professional and business occupations that provides services for farmers and those processing and distributing farm products.

Educationally, a vacuum has been created surrounding the information known about off-farm agricultural occupations. The fundamental problem is that the off-farm agricultural occupations are not presently identified. Specifically they are not identified as to job title, entry level competencies and common educational purposes necessary for entry and advancement in an off-farm agricultural occupation.

Limitations

This study is limited in the following ways to:

1. The off-farm agricultural occupations of Umatilla County, Oregon.
2. The technique of selecting firms to be asked for preliminary information.
3. The random sampling technique used for selection of firms to be interviewed.
4. The validity of the personal interview technique of gathering information.

Assumptions

The following are basic assumptions of the study:

1. There are opportunities for employment in off-farm agricultural occupations for those having the necessary knowledge and skills.
2. Previous training and/or farm experience is beneficial toward employment in agriculture.
3. Production agriculture should be the core of instruction for high school vocational agricultural programs.
4. Entry employment in off-farm agricultural occupations can be found at all levels.
5. Education for entry into agricultural occupations is the responsibility of vocational agriculture.
6. Occupational clusters having common agricultural competencies can be identified.
7. Reliable information concerning off-farm agricultural occupations can be obtained from employers.
8. The preliminary survey could be filled out by a person not qualified to know the educational needs of an employee.

Purpose of the Study

The primary purpose of this study is to identify the

off-farm agricultural occupations found in Umatilla County. The results of the survey will be utilized in the planning of new local programs in agricultural education. Specific objectives of the study are:

1. To determine future opportunities for employment in off-farm occupations.
2. To list competencies needed for entry in off-farm agricultural occupations.
3. To determine levels of entry employment in off-farm agricultural occupations.
4. To group job titles by competencies for common educational purposes and to determine instructional areas in agriculture.
5. To ascertain pre-employment educational needs for secondary school students desiring to enter off-farm agricultural occupations.

Definition of Terms

In order for data collected in this study to be consistent with completed studies, the definition of terms are similar to those defined by Multanen (23) in his study.

1. Agriculturally oriented occupations: Occupations involving agricultural knowledge and skills on a farm or in another

business, agency, or organization which produces, processes, distributes, or services farm products. Workers need competencies in one or more of the primary areas in plant science, animal science, farm management, agricultural mechanization, and agricultural leadership.

2. Off-farm agricultural occupations: An agricultural occupation which is performed primarily in a location other than a farm.
3. Agri-industry: This is an inclusive term which embraces a cluster of agricultural occupations pertaining to the business and/or management phases of manufacturing, servicing, processing, and distribution of products going into and/or coming from farm production.
4. Curriculum: The sum total of all experiences planned and unplanned which compose a student's life and from which he learns. It involves not only in-school but out-of-school experiences of all types.
5. Agricultural education: Classes organized and conducted in public schools for pupils who wish to secure systematic training for an agricultural occupation. Such instruction is organized on graded levels dealing with exploratory agricultural experiences, principles and practices in farming, agri-industry, and technical agricultural occupations with emphasis on supervised participating experiences in each area.

6. Cooperative work experience: Employment undertaken by the student as part of a school course and designed to provide experiences which are supervised by a teacher-coordinator.
7. Levels of employment: Classification for grouping occupations into eight levels based on the functions performed.
 - a. Professional--This level includes occupations that require a high degree of mental activity and are concerned with theoretical or practical aspects of complex fields in human endeavor. Such occupations require either extensive and comprehensive academic background or a combination of such education and experience.
 - b. Technical--Occupations requiring the performance of specific tasks which are functional parts of scientific activities requiring knowledge of fundamental theory and requiring highly developed skills.
 - c. Proprietors and managers--Occupations that are involved primarily with responsible policy-making and require planning, supervision and coordination of the work-activity of others, usually through intermediate supervisors.
 - d. Sales--Occupations concerned with the sale of commodities, investments, real estate, products, and

services, or occupations that are very closely identified with sales transactions even though they do not involve actual participation in such transactions.

- e. Clerical--Occupations concerned with preparing, transcribing, transferring, systematizing, or preserving written communications and records in offices, shops, and other places of work where such functions are needed.
- f. Skilled--This level includes crafts and manual occupations that require: a thorough and comprehensive knowledge of processes involved; the exercise of considerable independent judgement; a high degree of manual dexterity; and, in some instances, extensive responsibility for valuable products or equipment. Workers in these occupations usually become qualified by serving apprenticeships or completing extensive training periods.
- g. Semi-skilled--This level includes manual occupations that are characterized by one or a combination of parts of the following requirements: the exercise of manipulative ability of a high order, but limited to a fairly well-defined work routine;

major reliance, not so much upon the worker's judgment or dexterity, but upon vigilance and alertness in situations in which lapse in performance would cause extensive damage to product or equipment; and the exercise of independent judgment, to meet variables in the work situation, which is not dependent upon wide knowledge of a work field and which is limited either by (a) application over a relatively narrow task situation or (b) decisions of others.

- h. Unskilled--This level includes those jobs that require no special training of any kind and can be performed by almost any person, provided he is physically able.

Location of Study

Location and Size: Umatilla County is located in the northeast area of the State of Oregon. It is bordered on the north by the Columbia River and the State of Washington, by Wallowa and Union Counties on the east, Grant County on the south, and Morrow County on the west. The entire county encompasses an area of 3241 square miles and is approximately 130 miles across at its widest point. Pendleton is the county seat and rests at an elevation of 1068 feet

above sea level (24).

Population: In 1964, Umatilla County had a population of 42,917 (24). Eleven incorporated cities exist within the county and make up 66 percent of the total population. Pendleton is the largest of the cities with a population of 14,146 followed by Hermiston with 4800 residents and Milton-Freewater with 4257.

Climate: Umatilla County has four distinct seasons. The temperatures range from the two extremes of around 25 degrees below zero (Fahrenheit) in the winter to some 100 degrees on the hottest summer day. The average temperature is 69 degrees, and drops to an average of 38 degrees during the winter months. The average monthly precipitation in the summer is recorded at 1.47 inches and rises to 4.17 inches in the winter (24).

Industrial and Economic Aspects: Agriculture is the chief industry in Umatilla County, with lumber, food processing, and cattle occupying important roles. Wheat, the primary agricultural product, grossed approximately five and one-half million dollars income to the county in 1962, and green peas grossed approximately four million dollars (11). Other products which are vital to the county include fruits and vegetables in the Milton-Freewater area, and alfalfa hay and melons in the Hermiston area.

Three large lumber companies, Georgia Pacific and U. S. Gypsum, located in Pilot Rock, and Harris Pine Mills, located in

Pendleton, dominate the lumber industry in Umatilla County. Smaller private mills are located at Athena, Ukiah and Milton-Freewater (10).

Since the introduction of green peas as a major crop in the early 1930's, food processing has been a vital factor in the economy of the area. Several large canneries and frozen food plants operate from the middle of May through July. In the past few years many of these processing plants have diversified their products and operate on a year-round basis.

The feeding of cattle has become increasingly important to the economy of the area. This industry is the result of pea vine silage from the green pea crop and the diversified use of feed grains.

Design of the Study

This study started by reviewing similar studies that are currently underway or have recently been completed. Development of this study is consistent with many completed so that the data collected could be easily compared to them.

A preliminary questionnaire was sent to all firms that, in the opinion of the author, would require workers with a knowledge of agriculture. A list of all businesses that meet the above criteria was compiled. Sources of information included the telephone directory, the Extension Service, Chambers of Commerce, and the Umatilla County Planning Commission. This included all firms

that have aspects of technical, professional and business occupations that provide services for farmers and those processing and distributing farm products.

The preliminary questionnaire was in the form of a post card containing a checklist that would permit quick tabulation of answers and require a small amount of time to complete. A cover letter explaining the purpose of the study was mailed with the preliminary questionnaire post card.

Questionnaires returned were divided into two groups, those that responded "yes" to the question, "Is a knowledge of agriculture beneficial in the performance of any jobs within the firm?", and those that responded, "no". A comprehensive personal interview with a random sampling of those responding "yes" followed the preliminary survey.

REVIEW OF LITERATURE

Growing awareness that the absence of suitable education, and that inadequate vocational preparation contributes to unemployment has stimulated public concern about the scope and nature of current vocational education programs (19).

In the past, programs of vocational education in agriculture have been concerned mostly with preparation for entry into farming. This concept is being challenged by educators who are becoming increasingly aware that agriculture and farming are no longer synonymous (5). Identifying the off-farm portion of agriculture is extremely important in planning new educational programs.

Much more needs to be known about the nature of off-farm agricultural occupations. Homer Judge (18) cites the following:

If agricultural educators are to provide programs to meet the needs of youth who have an interest in and expect to enter off-farm agricultural occupations then these occupations must be identified and additional information secured concerning their nature. Successful occupational education programs for youth preparing to enter these off-farm occupations will depend upon an understanding of the competencies, skills and knowledge needed for entry and advancement in these occupations.

Methods of Obtaining Information

Directions for obtaining information regarding off-farm occupations are expressed by Drake and Craig (13):

Although there are many ways to acquire such information, there are some that have been used with success and may be applicable in any communities. A brief outline of the method follows:

Phase 1

- Identify the geographic area to be served.
- List the off-farm agricultural businesses and services in the area or any business with agricultural competencies.
- Verify these locations of agricultural employment with:
 - Agricultural Advisory group.
 - School Administrators.
 - Other knowledgeable persons in the community.

Phase 2

- Contact employers in the agricultural businesses and services of the identified area.
- Determine present and projected opportunities in the agricultural occupations identified.
- Determine competencies needed by employees.

The outline suggests possible routes to identifying the training needs of workers in off-farm agricultural occupations.

Number of Employees Needed

Current studies reveal there are far more employment opportunities in off-farm agricultural occupations than there are adequately

trained workers (18).

In a recently completed study in Pennsylvania, Hoover (25) reveals the following:

A total of 34,860 employees needed agricultural competencies; 27,720, or 80 per cent, were full-time employees and 7,130, or 20 per cent, were part-time employees. These same businesses expected to have a total of 37,795 employees five years hence. This would be an increase of 2,945 employees of which 80 per cent could be full-time employees.

Employers expect to hire an estimated 12,171 employees during the next five years. This number reflects the expected growth in size of business and the turnover. Of the 12,171 persons expected to be hired, 7,880, or 65 per cent, would be full-time employees.

In the Massachusetts study it was found that three of the largest areas of off-farm agricultural employment according to numbers of workers was found to be (1) Horticulture, (2) Hardware and farm equipment, and (3) Food distribution and processing (18).

Warmbrod (29) in a study of Illinois found that an additional 3,625 workers will be needed due to growth of business firms during the next five years to fill positions requiring a knowledge of agriculture. This represents a 38 per cent increase in employment during the next five years.

The state of Delaware will need 1,888 full-time employees in agricultural occupations within the next five years. According to Barwick (6) this indicates that each department of vocational agriculture will need to graduate approximately 34 persons per year to fill the employment opportunities in each of several groups of

agricultural occupations.

If similar trends exist in Oregon, the 100 departments of vocational agriculture in the state will have to be enrolling, training and graduating a similar staggering number of workers.

Levels of Employment

The level of employment for entry into an off-farm agricultural occupation is directly related to the level for which training should occur. In a Virginia study the distribution of 13,851 off-farm agricultural workers found that the greatest potential for developing programs appears to lie with the "semi-skilled" level. This level contained about 30 percent of the total. The "skilled" level ranked next with 20.5 percent, followed by "sales" with 11.7 percent (5).

The Delaware study is most comprehensive in the findings of levels of employment in off-farm agricultural occupations. Barwick (6) utilizes an eight occupational family criteria as well as eight levels of occupations. The largest number of people employed are in the supervisory category, with managerial second and the semi-skilled worker third.

Cushman (11) in a study of off-farming agricultural occupations in New York State identifies the semi-skilled worker as holding 57 percent of the jobs. The managerial classification was found to be 15 percent, with professional occupations at four percent.

In an Oregon study by Multanen (21), the semi-skilled level included 26 percent of the total employment. In this country-wide study a higher percentage of jobs was found in the managerial and sales class. The two levels of employment encompassed 22 percent of the total sample, which is significantly higher than in most studies.

The indications from the studies are that the largest number of jobs are found at the skilled and semi-skilled levels.

Competencies Needed

Identifying off-farm agricultural occupations is not enough.

The competencies that are needed to gain entry and advance are of primary importance. The Pennsylvania study interviewed 1691 employers in 17 counties and a list of some 60 different competencies was derived. This list of 60 can readily be resolved into 11 factors that can be translated into major course content areas. The factors as grouped in this study are (25):

Competency factor groups in agriculture

Plant Science

Animal Science

Agricultural mechanics

Agricultural business management

Competency factor groups in business and distribution

- Business management and economics
- Sales and business skills
- Job and employee characteristics
- Employee-supervisor relations

Competency factor groups in trade and industry

- Building construction technology
- Industrial mechanics
- Industrial quality control

Hoover (16) summarizes the findings regarding competencies in off-farm agricultural occupations as follows:

Agricultural competencies needed are mainly determined by the products handled by the business. Many agricultural subjects taught to students preparing for production farming also will be needed by students who enter off-farm agricultural occupations.

Salesmanship, human relations, and business management are competencies that are needed by all employees, but in varying degrees. There are many instances in which vocational agriculture may support, or be supported by, other vocational subjects taught.

The occupational families requiring the greater percentages of employees needing agricultural competencies are "Farm machinery sales and services and ornamental horticulture, 64.5 and 45.4 respectively," is a conclusion drawn by a Delaware study (6). In Massachusetts, a total of 20,275 workers need some degree of competency in agriculture in order to perform their jobs. This is 63 percent of all persons employed by firms included in the study (18).

In Oregon, Multanen (21) states that in 81 percent of all job titles identified, a general knowledge of agriculture was required. It was also noted that 46 percent of the agricultural oriented job

titles needed supporting competencies in bookkeeping, business and typing.

Of the studies reviewed, most indicated that competencies in general agriculture was desirable for employment. It must also be noted that many of the studies found that supporting competencies in business and industry were significant to the employee.

Educational Requirements

The educational requirements for employment ranges from that of the 8th grade level through the baccalaureate degree. The majority, 57 percent, of full-time workers in a New York study required a high school education, 17 percent less than a high school education (11). Griffin (15) indicated that positions in the managerial level require a college education, whereas in the sales level only one-half of the employers felt that a college education was enough.

A review of completed studies show that a high school education is necessary for employment. The following is a summary of three studies:

<u>Educational Level</u>	<u>Pennsylvania</u>	<u>Oregon</u>	<u>Massachusetts</u>
Less than High School	11	0	26.9
High School	57	69	56.3
Technical education	14	12.6	4.4
Some College	10	8.4	4.6
Bachelor degree	9	9.9	7.8

The small number of respondents indicating a preference for workers with an education level of post high school technical education is probably due, at least in part, to the lack of training programs designed to prepare workers for agricultural positions at this level (18).

In view of the fact that the majority of employers required a high school diploma, the educational programs provided in high schools for agricultural occupations should be accommodating this group. It is indicated that a post high school technical education is currently of relatively little importance. This may be due to the lack of training programs at this level.

Background Required

The background of workers in off-farm agricultural occupations is varied according to completed studies. In the Pennsylvania study, farm reared employees were preferred by 53 percent of the employers, 14 percent preferred non-farm rural youth, one percent preferred urban employees, and 32 percent had no preference as to the background of the employee (25).

Employers in Griffin's (15) study felt that it was desirable that employees have a farm background. The study also indicated that some work experience in agriculturally oriented work was desirable for the new employee.

The Massachusetts study does not support the results of the previously cited studies. The results of this study are as follows:

<u>Residential Background Preferred of Workers</u>	<u>Percent of Respondents</u>
Farm Background	20.9
Rural, non-farm background	4.6
Urban background	3.2
No preference	71.3

A 71.3 percent majority indicated that they had no preference of residential background for employees in off-farm agricultural occupations.

The data collected by these studies indicates the farm and rural non-farm youth have a definite advantage over prospective employees from urban areas for those occupations that are farm related.

Age Requirements

According to studies reviewed, the majority of employment opportunities for entry into off-farm agricultural occupations comes after the high school age. The minimum age for which most employers would consider hiring new employees in Griffin's (15) study ranged from 18 to 25 years. This age range for entry employment is supported by Multanen (21) who found the range from 20 to 24 years preferred in Oregon. The preferred entry age for those in sales and management was 25 years or older in Griffin's study and 22 to 24 years old in the study by Multanen.

The maximum entry age employers would consider ranged from 47 to 55 years of age in the study by Griffin (15). Multanen (21) found that the maximum entry age in Yamhill County ranged from 41 years in sales, to 50 years of age in the technical and professional levels.

In general the studies indicate that entry age for employment in off-farm agricultural occupations rises as the level of employment advances.

Employment of High School Students

It is becoming more important that students have actual work experience along with classroom instruction, so that they may develop a complete concept of the world of work. In the Massachusetts study (18) over 60 percent of the employers interviewed indicated that they would be willing to hire high school students as trainees. Griffin (15) relates that over one-half of the employers would be willing to hire high school students as long as they weren't "just any student." Those that would be employed for training purposes must be willing to learn, be able to apply themselves and carry a full work load.

The employers in Griffin's study (15) that were not willing to employ high school students listed the following reasons:

1. Union Rules would not permit student's working.
2. Insurance would not cover students.
3. Company policy would not permit students' employment.

The study by Multanen (21) supports the above statements as to the reasons that employers would not employ high school students as trainees in off-farm agricultural occupations. Multanen also found that many employers were willing to train high school students under the supervision of a school instructor.

Sources Most Frequently Used in Securing New Employees With an Agricultural Background

It is important to know just what contacts and sources are made by the related businesses in locating and recruiting new agriculturally oriented employees. There is a lack of a predominate pattern which employers use in securing new employees. Most frequently used by employers were friends, present employee recommendations, and persons dropping in according to the study by Griffin (15).

Multanen found (27) similar trends in Yamhill County. One significant fact was the absence of any placement through the public high school. This could indicate the lack of employer-school communication or that the potential high school age employee is not often thought of by the employer.

FINDINGS

In Umatilla County a total of 76 firms completed and returned the preliminary survey questionnaire. To the primary question, "is a knowledge of agriculture beneficial in the performance of any of the jobs within this firm?", 64 firms responded "yes".

The 76 firms reported an employment of 3200 workers, of which 1370 were seasonal part-time employees. Eight hundred forty eight of the reported 3200 employees needed an agricultural background or were agriculturally oriented.

Table 1. Number of firms and employees.

Number of firms	Total employment	Average employed per firm	Number agriculturally oriented	Average number agriculturally oriented	Percent agriculturally oriented
76	3,200	42.10	848	11.14	20.65

A complete listing of the firms responding to the mailed questionnaire can be found in Appendix II.

The 64 firms which had agriculturally oriented employees in this study were engaged in a number of activities. In many cases, individual firms performed more than one function.

Table 2. Functions of firms employing agriculturally oriented personnel.

Function	Number of firms performing specific functions	Percent of firms performing specific functions
Retailing	30	46.87
Wholesaling	15	23.43
Purchasing	7	10.93
Processing	18	28.12
Manufacturing	7	10.93
Service	24	37.50
Warehouse	5	7.81
Transportation	3	4.68
Construction	3	4.68
Other	6	9.35
Base	64	

As indicated in Table 3, almost one-half of the firms were engaged in retailing, followed closely by those firms providing services to production agriculture.

Firms Interviewed

Twenty-one firms were selected for interviewing by a random sample method. Because of the three distinct population centers within Umatilla County the returned questionnaires were sorted by geographical area and the sample taken from each area. The areas are Hermiston, Pendleton, and Milton-Freewater. This allowed an

even distribution for interviewing throughout this sparsely populated county.

Functions Performed

The 21 firms interviewed performed 44 different functions, indicating that most firms performed more than one function. A large cooperative listed six different functions that it was performing. Retailing was the most popular function and is consistent with the results of the mailed questionnaire. However, these firms dealing in warehousing show a significant increase of 19.04 percent in the random sample. Wholesaling and service functions remain relatively high as functions performed.

Table 3. Functions of firms interviewed employing agriculturally oriented personnel.*

Function	Number of firms performing specific functions	Percent of firms performing specific functions
Retailing	13	61.90
Wholesaling	6	28.57
Purchasing	3	14.28
Processing	7	33.33
Manufacturing	2	9.52
Service	7	33.33
Warehouse	4	19.04
Construction	1	4.76
Other	1	4.76

*The percent of firms performing specific function is computed by dividing the total number of firms interviewed by the number of firms performing the function. For example, 13 of the 21 firms or 61.90 percent of those interviewed performed retailing functions.

Employment

There was a total of 220 agriculturally oriented employees working in the 21 firms interviewed. This figure represents 45.66 percent of the total employment. This indicates that approximately one-half of the employees employed by agricultural firms needs an agricultural background for employment.

Table 4. Total employment per type of firm and number of employees within the firm who are agriculturally oriented.

Number of firms	Total employment	Average employed per firm	Number agriculturally oriented	Average number per firm agriculturally oriented	Percent agriculturally oriented
21	422	22.95	220	10.47	45.66

A comparison of Table 2 and Table 5 reveals that while the average number of agriculturally oriented employees remains about the same--11.41 as to 10.47--the percentage agriculturally oriented raises from 20.65 percent to 45.66 percent.

Levels of Employment

The grouping of employees into levels by the employer indicates the largest number of employees are in the skilled group.

Table 5. Number of present employees by levels.

Level of Employment	Number	Percent
Professional	1	.45
Technical	21	9.55
Proprietors and managers	47	21.36
Sales	26	11.82
Clerical	9	4.09
Skilled	75	34.09
Semi-skilled	30	13.64
Unskilled	11	5.00
Total	220	100 percent

The skilled group accounted for 34.09 percent of the employees followed by proprietors and managers at 21.36 percent and semi-skilled employees at 13.64 percent. The large number of skilled workers is indicative of the type of function that the firm performs. Appendix II lists the 75 skilled jobs and indicates a large number of these are mechanically oriented.

Proprietors and managers also rank high in numbers due to the large cooperatives and supply firms that have up to four branch managers in each firm.

Technical occupations, according to Table 5, made up 9.56 percent of the employees and is important in that employers are

recognizing technical occupations in agriculture.

Future Employment Opportunities

Future employment in agriculturally oriented occupations seems favorable as shown in Table 6. An indicated need for 46 additional employees does not reflect the number of replacement employees the firms interviewed will need. The largest area of future employment is the skilled and semi-skilled levels, with proprietors and managers in good demand.

Table 6. Employment opportunities.

Level	Present	Next year	Next five years
Professional	1	2	3
Technical	21	22	27
Proprietors and managers	47	52	58
Sales	26	28	32
Clerical	9	9	9
Skilled	75	77	88
Semi-skilled	30	30	40
Unskilled	11	11	11
Total	220	231	266

One firm that performs four functions indicated a growth of five employees per year for the next five years. No firm interviewed expressed a decline in employees in the next five years.

However, several indicated that they would probably reach a level in two or three years and stabilize the number of employees hired due to economic factors. Replacement employment was not indicated in Table 6.

Sources Most Frequently Used in Securing New Employees with an Agricultural Background

Employers in Umatilla County most frequently used the state employment service for securing new employees. Equally used were personal interview, friends' recommendation and college placement bureaus. Securing of employees from college in all but one case referred to the skilled trades being sought from technical or junior colleges. Employers know they could get well trained employees from these sources.

Number of firms	21
State employment service	6
Advertisements	1
Personal interviews	4
Friends' recommendations	4
College placement	4
Public high schools	2

One employer expressed his interest in seeking employees

from one of the various anti-poverty training programs but had as yet not used this source. The employers that used the high school for securing employees were involved with the cooperative work experience programs. The high schools involved in these programs were in Pendleton and Athena.

As shown in the above information the prospective agriculturally oriented employee has many avenues of seeking and securing employment.

Training Opportunities

Seventeen of the 21 employers provided some type of training for new agriculturally oriented employees. Most new employees received informal on-the-job training in their particular occupations. The formal on-the-job training opportunities were apprenticeships coordinated through the employer and the apprenticeship council.

Three firms dealing with fertilizers and chemicals sent their technicians to specialized classes provided by their suppliers.

Those that provided no training to new employees felt that the employee had to be competent at the onset of employment.

Table 7. Training opportunities and/or facilities for new agriculturally oriented employees.

Number of firms	None	Formal on-the-job	Informal on-the-job	Evening classes	Special classes away	Other
21	4	2	10	1	3	1

Willingness to Hire a High School Student on
a Cooperative Work Experience Program

The interviewer asked each employer if he would be willing to hire a high school student on a part-time basis, under teacher supervision in order that the student might learn about an occupation within the firm. Fifteen responded "yes" and six replied "no".

In two firms cooperative work experience programs were in operation. Asked about the success of this type of training program both employers responded favorably. It appears there are employers willing to hire work experience students that have not been contacted by vocational agriculture instructors in Umatilla County.

The six firms that were not willing to hire high school students gave the following reasons:

1. The wage and hour laws provided unfair wage standards.
2. There is not adequate time to spend training the young person.
3. There is no need of additional help.
4. There are wage drawbacks due to the limited budget for employee wages.
5. The students are not available during the hours needed.

All employers wanted high school students of at least average intelligence, neat in appearance, dependable and willing to work.

Also of importance was loyalty to the employer and to the job.

Educational Requirements

The educational requirements for 220 agriculturally oriented employees are listed in Table 8. High school education was a minimum requirement in all but five jobs. College education was required in eight of the listed occupations.

The prerequisite of technical school or some college for 46 jobs indicates in the author's opinion that employers are becoming more aware that technical post secondary education is becoming increasingly important in view of current technological advances.

Table 8. Educational requirements for persons entering occupations other than farming.

Level	Eighth grade	High school	Technical school	Some school	College completion
Professional					1
Technical		4	5	10	2
Proprietor and manager		19	5	18	5
Sales		22	2	2	
Clerical		7	2		
Skilled	1	72	2		
Semi-skilled	1	29			
Unskilled	3	8			
Total	5	161	16	30	8

Age Requirements

Employers would not consider hiring new agriculturally oriented employees less than 18 years of age or more than 55. The minimum age reflects the present labor law concerning minimum ages for employment especially in hazardous employment areas.

Table 9. Age requirements for persons seeking employment.

Level	Average age		Preferred age		
	Minimum	Maximum	20-24	25-39	30-39
Professional	24	50		1	
Technical	20	55	1	20	
Proprietor and manager	26	50	3	35	9
Sales	22	50	4	20	2
Clerical	18	50	4	5	
Skilled	21	50	7	65	3
Semi-skilled	18	50	9	21	
Unskilled	18	45	11		
Total			39	167	14

The largest percentage of employers preferred to hire new employees in the 25 to 39 age range. Many employers expressed the opinion that new employees below age 25 were not stable enough to take the responsibility of their respective jobs. The proprietor and manager level reflects a somewhat different trend with nine

employees over 30 years of age. Employers that reported this age preference stated that more maturity and experience were necessary in those occupations.

With the exception of clerical, semi-skilled and unskilled levels it would seem appropriate to encourage students to remain in school for a greater number of years for additional training, which would probably enable them to enter an agriculturally oriented occupation at a higher wage level.

Background Required

Employers were asked to rate each agricultural occupation within their firm on the basis of background preferred for prospective employees seeking that occupation. The results are listed in Table 10.

Table 10. Backgrounds helpful to persons seeking employment.

Level	<u>Work experience</u>			<u>Farm experience</u>			<u>Vocational agriculture</u>			<u>College training in agriculture</u>		
	E	D	U	E	D	U	E	D	U	E	D	U
Professional	1				1			1			1	
Technical		21		2	19			21		2	19	
Proprietor and manager	20	27		7	40			45	2	5	42	
Sales	3	23		2	24			24	3		4	22
Clerical		9			9			2	7			9
Skilled	5	70		3	60	12		57	18		2	73
Semi-skilled		30			20	10		24	6			30
Unskilled		11			7	4		11				11
Total	29	191		14	180	26		184	36	8	67	145

E - Essential

D - Desirable

U - Unnecessary

Table 11 lists the percentages of the totals of Table 10. Work experience was rated as being desirable in 90.50 percent of the agriculturally oriented jobs, while college training in agriculture was desirable in 30.50 percent of the jobs. Vocational agriculture training was rated as desirable for 83.63 percent of those seeking employment. This is important for those involved in training high school students for agricultural occupations. Farm experience was desirable for 81.81 percent of the occupations which reflects the high value placed on farm experience by employers. A typical comment expressed by an employer was that he felt farm reared people had a better sense of value, especially when handling supplies and doing service work for customers.

Table 11. Background required for employment (in percent).

	Work experience	Farm experience	Vocational agriculture	College training in agriculture
Essential	9.50	6.36		3.60
Desirable	90.50	81.82	83.63	30.50
Unnecessary		11.82	16.37	65.90
Total	100.00%	100.00%	100.00%	100.00%

Activities and Duties Performed

The interviewer asked each employer to describe the work of the employee with reference to each job title. The employers discussed broad functions of each job and then related specific details

concerning the competencies needed for employment.

The results of this portion of the interview are given in Table 12. According to employers, 200 employees performed duties or activities involving production, products, materials or service. This category received the highest number of persons performing those functions over all other activities performed. Also rating high with 173 jobs was the category labeled "work with people outside of the firm."

The lowest number of persons employed work with customers' equipment, tools, and supplies.

Competencies Needed

Employers agreed that a knowledge of some phase of agriculture was important for all persons performing agriculturally oriented jobs. The author asked the employer to identify in broad subject matter areas the employees' need for entry employment. Those areas were:

1. Agricultural Mechanics
2. Animal Science
3. Plant Science
4. Farm Management
5. General Agricultural Knowledge
6. Supportive competencies

Table 12. Activities persons perform.

Level	Total number	Work people outside	Work people inside	Production products materials service	Customers' equipment tools and supplies	Firms' equipment	Business problems
Professional	1	1	1			1	1
Technical	21	20	21	21	5	21	16
Proprietors and managers	47	47	47	47		42	47
Sales	26	26	10	15	3	3	26
Clerical	9	9	9	5		4	9
Skilled	75	37	17	71	42	37	35
Semi-skilled	30	30		30	21	30	24
Unskilled	11	3		11	9	11	6
Total	220	173	105	200	80	149	164

Table 13. Competencies needed.

Level	Total number	Agricultural mechanics	Animal science	Plant science	Farm Management	General Ag. knowledge	Support competence
Professional	1	1	1	1	1	1	1
Technical	21	21	9	20	19	21	21
Proprietors and managers	47	46	28	43	45	47	47
Sales	26	10	16	19	11	26	9
Clerical	9	4	1	6		6	9
Skilled	75	60	3	20		69	3
Semi-skilled	30	16	2	4		17	9
Unskilled	11	3	2	6		9	
Total	220	170	62	119	76	196	99

The results are summarized in Table 14. A general knowledge of agriculture was rated as necessary for 89.09 percent of the employees. Other competencies in the order of percent rankings are:

Table 14. Competencies needed by employees.*

Competency	Percent
Agricultural Mechanics	77.27
Plant Science	54.09
Support Competencies	45.00
Farm Management	34.54
Animal Science	28.18

*Table 14 is a composite of the totals for each competency from Table 13, expressed in percentage.

Employers were asked to be more specific in identifying competencies with each broad subject matter area. Specific competencies identified in agricultural mechanics are:

1. General shop work
2. Mechanics
3. Farm tractors and equipment
4. Welding
5. Farm buildings

The animal science area reflects the type of animal industry found in Umatilla County. Employers rated specific animal science competencies as:

1. Livestock production
2. Animal nutrition and feeds
3. Animal diseases and parasites
4. Livestock equipment
5. Processing livestock products

The most commonly checked competencies in plant science were:

1. Crop production
2. Water management
3. Processing crops
4. Agricultural chemicals
5. Insect and pest control

Farm management competencies were needed for 34.54 percent of all agriculturally oriented employees. Those most frequently checked were:

1. Farm credit
2. Farm insurance

Other competencies involved in farm management were checked an insufficient number of times to make them significant.

Employers felt that 89.09 percent of their employees should have a general knowledge of rural and agricultural life. Leadership training was checked the most frequently. Employers related that this training was particularly important for people involved in sales

and management. One employer sends all managers, salesmen and office workers to a nationally acclaimed leadership development course.

Support competencies listed as being important to 45.00 percent of the employees included the following specific competencies:

1. Typing
2. Bookkeeping
3. Business law

The relative importance of the business support areas indicates that approximately 50% of the students graduating with an agricultural occupation for an objective should be exposed to some business training.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Employment in agriculture has until recently been thought of as mostly employment in farming. Farming and agriculture are not synonymous. The agricultural industry of today includes the agricultural aspects of technical, professional and business occupations that provides services for farmers and those processing and distributing farm products.

Educationally a vacuum has been created surrounding the information known about off-farm agricultural occupations. This information is needed today by those persons charged with the responsibility of providing education for agricultural occupations.

The primary purpose of this study is to select a representative sample, and identify various off-farm agricultural occupations in Umatilla County. The information gathered concerning the firms interviewed was sought to help formulate guide lines for planning new programs for vocational agriculture in Umatilla County.

A preliminary questionnaire was sent to all firms that in the opinion of the author, would require workers with a knowledge of agriculture. A random sample of those firms indicating that knowledge of agriculture was beneficial for employees within the firms

resulted in interviews with 21 firms.

The 21 firms interviewed employed 482 workers of which 220 or 45.66 percent were agriculturally oriented. Forty-four functions were performed by the 21 firms indicating that each firm performed more than one function. The highest number of employees worked in the skilled level of employment. Opportunities for future employment reveal approximately 46 new openings in the next five years within the 21 firms interviewed. Most firms secured new employees by a variety of methods, with the state employment service used most frequently.

Fifteen of the 21 firms indicated they would hire students on a cooperative basis with the local high school. High school education was the the minimum educational requirement for all but five occupations. Age requirements for entry level varied from a minimum of 18 to a maximum of 55, indicating a wide range.

Farm experience and work experience was desirable in most employment opportunities. Vocational agriculture training was desirable for 83.63 percent of the occupations reviewed. Broad competencies in agriculture were necessary for most occupations, while specific competencies were regarded as important for specific job titles.

Conclusions

1. Off-farm employment is available in numbers sufficient to provide vocational agriculture students with opportunities for entry into specific agricultural oriented occupations.
2. Opportunities exist for local high schools to join in a cooperative effort with employers to provide training for agriculturally oriented students.
3. A minimum educational standard for off-farm employment is a high school education.
4. Age requirements for entry reflect a preference for employees within the 25-40 age group.
5. A farm background or agriculturally oriented work experience is a desirable characteristic for those seeking entry employment in agriculturally oriented occupations.
6. Competencies required for entry employment are varied and specific according to level of employment and job title.
7. Support competencies in business procedures are important in approximately one-half of all agricultural occupations.
8. Most employers do not use the high school as an agent in

securing new agriculturally oriented employees.

Recommendations

The following recommendations are based on the review of literature, and findings of this study:

1. That vocational agriculture instructors should become acquainted with agricultural occupations within their communities in order to provide occupational information to their students.
2. High school vocational agriculture programs in Umatilla County should articulate curriculum with the community college to provide a continuing educational experience for students.
3. High school vocational agriculture programs should continue to use production agriculture as the core of instruction.
4. Students interested in agricultural occupations who live in non-farm situations should be provided farm experiences by cooperative work experience or school farm operations.
5. A continuing emphasis should be placed on leadership training for agriculture students through the Future Farmers of America.

6. High schools should articulate vocational agriculture and business education courses for the benefit of those students planning to enter agricultural occupations.
7. Some method should be used to evaluate former students employed in off-farm agricultural occupations in an effort to determine the effectiveness of current vocational agriculture programs.

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APPENDIX I

JOB TITLES ACCORDING TO LEVELS OF FIRMS INTERVIEWED

<u>Level</u>	<u>Total Number</u>	<u>Number</u>	<u>Job Title</u>
Professional	1	1	Veterinarian
Technical	21	1	Seed technician
		3	Irrigation technician
		1	Hydraulic systems technician
		2	Herbicide technician
		5	Fertilizer technician
		2	Soils technician
		2	Fruit specialists
		3	Vegetable specialists
		1	Dairy Products technician
		1	Veterinarian assistant
Proprietors and managers	47	2	Feed and seed owners
		2	Machine shop owners
		2	Machinery dealers
		5	Machinery parts manager
		4	Equipment Service manager
		1	Golf course manager
		1	Meat processing owner
		2	Irrigation equipment owners
		1	Irrigation Service manager
		1	Irrigation shop manager
		1	Seed processing manager
		1	Farm machinery credit manager
		1	Farm machinery distribution manager
		5	Farm machinery branch managers
		5	Supply cooperative branch managers
1	Feed mill manager		
1	Feed mill assistant manager		

<u>Level</u>	<u>Total Number</u>	<u>Number</u>	<u>Job Title</u>
Proprietors and managers (cont'd)		5	Fertilizer plant manager
		2	Grain warehouse managers
		1	Agricultural chemical owner
		3	Ag. chemical branch manager
		2	Fruit and vegetable processing managers
		1	Nursery owner
		1	Milk processing manager
		Sales	26
3	Irrigation equipment salesmen		
1	Feed salesman		
15	Farm supply salesmen		
Clerical	9		
		2	Irrigation equipment bookkeepers
		1	Farm chemicals secretary
		2	Feed and seed bookkeepers
		1	Grain warehouse secretary
		1	Veterinarian clinic receptionist
		Skilled	75
4	Welders		
25	Farm machinery mechanics		
1	Golf course watermaster		
1	Golf course groundskeeper		
1	Meat cutter		
1	Machinist		
1	Electric motor repairman		
2	Irrigation pump installers		
1	Truck foreman		
8	Farm machinery shop foremen		

<u>Level</u>	<u>Total Number</u>	<u>Number</u>	<u>Job Title</u>
Skilled (cont'd)		5	Truck mechanics
		8	Machinery set-up men
		6	Fertilizer and chemical applicators
		3	Vegetable fieldmen
		5	Vegetable plant foremen
		1	Fertilizer dispatcher
		1	Grain elevator operator
Semi-skilled	30	9	Grain warehousemen
		1	Meat wrapper
		4	Petroleum products deliverymen
		12	Feed truck drivers
		1	Kennel boy
		3	Receiving men
Unskilled	11	11	Agricultural supply material handlers

APPENDIX II

FIRMS IN UMATILLA COUNTY WHO RETURNED MAILED QUESTIONNAIRES

(See Appendix III, Form I, page , for key to this listing)

A	C	D	E	F	G
Agri-Chem-Adams	4	1, 2	1	27	27
Allied Seed Company - Pendleton	4	3, 4	1	4	2
Allison Well Drilling - Hermiston	1	10	2	2	0
Athena Garage Corp. - Athena	3	1, 6	1	4	4
Berg Bros. Company - Hermiston	1	2	4	5	5
Blue Mountain Growers - Milton-Freewater	4	2, 4	4	1	3
Blue Mountain Plan Center - Pendleton	2	6	1	1	1
Campbell Equipment Company - Hermiston	2	1	1	5	3
Carnation Company - Umatilla	7	1, 2	2	1	0
Carnation Company - Milton-Freewater	6	1, 2, 4, 5	1	110	1
City of Echo Golf Course - Echo	4	6	1	4	2
C and B Livestock Inc. - Hermiston	3	6	1	30	25
Columbia Pump Company - Pendleton	3	6	1	6	6
Dobyns-Hart Pest Control - Pendleton	1	6	1	4	4
Farm Chemicals Inc. - Athena	2	1, 2	1	37	30
Farmco, Inc. - Pendleton	1	1, 3, 5, 6	1	6	6
Farm Fertilizer Service - Milton-Freewater	3	1	1	8	6
Farmers Mutual Warehouse - Helix	4	1, 4, 7	1	14	6
Frontier Machinery - Pendleton	2	1, 6	1	24	24
Gemmell Bros. Machinery - Pendleton	3	1, 6	1	5	3
General Foods Corp. - Pendleton	4	4, 10	1	47	5

A	C	D	E	F	G
Engdahl Ranches Inc. - Pendleton	3	10	1	4	4
Hat Rock Irrigation - Hermiston	1	1, 2, 3	1	1	1
Harris and Associates - Pendleton	1	6	2	5	0
Hermiston Equipment Co. - Hermiston	1	6	1	2	2
Hermiston Livestock Commission - Hermiston	1	2	1	20	20
Hermiston Veterinarian Clinic - Hermiston	1	6	1	3	3
Hubbs' Nursery - Milton-Freewater	1	1	1	4	4
Key Dollar Co. - Milton-Freewater	3	10	1	32	32
Key Equipment Co. - Milton-Freewater	3	5	1	2	2
Lamb-Weston, Inc. - Weston	3	4	1	300	6
Lewis Livestock - Pendleton	1	10	1	2	2
Jimmys' Flowers - Hermiston	1	1	2	3	0
Mayflower Farms - Hermiston	4	1, 2, 6	1	22	2
Mayflower Farms - Pendleton	4	1, 2, 6	1	8	8
Mayflower Farms - Milton-Freewater	4	1, 2, 6	1	13	3
McKeller Services, Inc. - Pendleton	2	6	1	3	2
Mission Valley Gardens - Pendleton	1	1	1	1	1
Mountain Machinery Co. - Pendleton	3	1, 6	1	7	7
Pacific Fruit and Produce Co. - Pendleton	4	2	2	7	0
Pendleton Frozen Foods - Pendleton	4	4	1	200	20
Pendleton Grain Growers - Athena	4	1, 6	1	8	5
Pendleton Grain Growers - Milton-Freewater	4	1, 3, 5, 6, 7	1	20	20
Pendleton Grain Growers - Hermiston	4	1, 2, 4, 5	1	66	30
Pendleton Grain Growers - Pendleton	4	1, 4, 6, 7	1	132	30
Pendleton Iron Works - Pendleton	3	1, 10	1	2	2
Pendleton Veterinary Clinic - Pendleton	1	6	1	6	3
Pollard Leasing, Inc. - Milton-Freewater	4	1, 5	1	31	15

A	C	D	E	F	G
Ross Machine Works - Hermiston	1	5	1	8	2
Sheas' Lockers - Pendleton	1	1,2,3,4,7	1	3	3
Smith Canning and Freezing - Pendleton	4	4	1	200	20
Spout Springs Ski Lodge - Weston	3	6	1	6	6
Stanfield Irrigation District - Stanfield	4	10	1	4	4
Stewards' Peony Gardens - Milton-Freewater	1	2	1	25	15
Stone Machinery Co. - Pendleton	4	1	1	18	18
Topcut Feedlots, Inc. - Hermiston	3	6	1	6	3
Tonlinson Dairy Mart - Milton-Freewater	2	1,2,3,4	1	65	65
Umapine Chemical Applicators - Milton-Freewater	6	1, 6,10	1	12	12
Umatilla Canning Co. - Milton-Freewater	10	4	1	100	20
Umatilla Canning Co. - Plant B	4	4	1	600	200
Umatilla Canning Co. - Plant C	10	2, 4	1	70	15
United Meat Co. - Stanfield	2	1, 2, 4	1	1	1
Weaver Exterminating Co. - Milton-Freewater	2	6	2	25	0
Webbs' Cold Storage - Pendleton	1	4	2	2	0
Westland Irrigation District - Hermiston	10	10	1	4	3
Western Farmers Association - Pendleton	7	1,2,3,4	1	200	200
Widner Electric Co. - Milton-Freewater	1	10	2	6	0
Woods' Soil Analysis Laboratory - Milton-Freewater	1	6	1	2	1
Youngs' Veterinary Clinic - Pendleton	10	6	1	1	1
Zigmans' Flowers - Pendleton	1	1	1	4	1

APPENDIX III
FORM I
AGRICULTURAL OCCUPATIONAL SURVEY
UMATILLA COUNTY

A. Name of Firm _____

Address _____

B. Name of Person Reporting _____

C. Position of Person Reporting

() 1. Owner

() 6. Office Manager

() 2. Owner Manager

() 7. Supervisor

() 3. Co-owner Manager

() 8. Sales Manager

() 4. Manager Hired

() 9. Other _____

() 5. Personnel Director

D. Main Function of Firm

() 1. Retailing

() 6. Service

() 2. Wholesaling

() 7. Warehouse

() 3. Purchasing

() 8. Transportation

() 4. Processing

() 9. Construction

() 5. Manufacturing

() 10. Other _____

E. () 1. Yes Is a knowledge of agriculture beneficial in the performance of any of the jobs within this firm?

() 2. No

F. _____ Total number of people working for this firm.

G. _____ Number of employees that need an agricultural background or are agriculturally oriented.

APPENDIX V

OFF-FARM AGRICULTURAL OCCUPATIONAL SURVEY
UMATILLA COUNTY, OREGON
1967

Firm _____

A. ___ Job Title _____
 ___ Level of Employment _____

B. Total ___ Male ___ Female ___ No. Employed permanently with this job title.

C. Total ___ Male ___ Female ___ No. Employed part-time with this job title.
 () Year around () No. of months
 () 1. Seasonal

D. ___ No. of different persons employed with this job title last year.
 ___ Anticipated number to be employed with this job title next year.
 ___ Anticipated additional openings in next 5 years due to growth.
 ___ Average annual turnover.

E. What are the educational requirements for this job?
 () 0. None () 3. Technical schooling
 () 1. 8th grade completion () 4. Some college
 () 2. High school completion () 5. College completion

F. What are the age requirements for new employees?
 ___ Minimum Preferred check with: 1. 19 and under 4. 30 to 39
 ___ Maximum 2. 20 to 24 5. 40 to 49
 ___ Preferred 3. 25 to 29 6. 50 and under

G. To what extent would the following backgrounds be helpful in securing this job?
 ___ Previous work experience Check with: 1. Essential
 ___ Farm experience or background 2. Desirable
 ___ High school training in agriculture 3. Unnecessary
 ___ College training in agriculture
 ___ Other _____

H. Is any special training provided for a new employee with this job title?
 () 0. No Explain _____
 () 1. Yes _____

What activities and duties do persons with this job title perform?

() I. Work with people outside the firm

() 8. Buying	() 39. Remodeling
() 9. Selling	() 40. Adjusting
() 10. Advising, consulting, and diagnosing	() 41. Installing
() 11. Meeting farm people	() 42. Calibrating
() 12. Meeting non-farm people	() 43. Selecting
() 13. Estimating cost	() 44. Inspecting, testing, trouble shooting
() 14. Other _____	() 45. Other _____

Comments _____

Firm Code

Job Title Code

Level Code

What activities and duties do persons with this job title perform? (continued)

- () J. Work with people in the firm
- () 15. Handling personnel
 - () 16. Supervising others
 - () 17. Appraising work of others
 - () 18. Training others
 - () 19. Inducting new personnel
 - () 20. Other _____
- Comments _____
- () K. Working with production, products, materials, or service
- () 21. Assembling
 - () 22. Mixing
 - () 23. Inspecting
 - () 24. Testing
 - () 25. Calculating cost
 - () 26. Developing techniques
 - () 27. Planning production for service
 - () 28. Sketching and drawing
 - () 29. Designing
 - () 30. Making and/or building
 - () 31. Using technical and service manuals, parts lists
 - () 32. Other _____
- Comments _____
- () L. Working with customer's equipment, tools, supplies, or instruments
- () 33. Constructing the above items
 - () 34. Designing
 - () 35. Repairing
 - () 36. Maintaining
 - () 37. Operating
 - () 38. Assembling
 - () 39. Remodeling
 - () 40. Adjusting
 - () 41. Installing
 - () 42. Calibrating
 - () 43. Selecting
 - () 44. Inspecting, testing, trouble shooting
 - () 45. Other _____
- Comments _____
- () M. Working with firm's tools, equipment, supplies or instruments
- () 46. Constructing the above items
 - () 47. Designing
 - () 48. Repairing
 - () 49. Operating
 - () 50. Assembling
 - () 51. Remodeling
 - () 52. Adjusting
 - () 53. Installing
 - () 54. Calibrating
 - () 55. Selecting
 - () 56. Inspecting, testing, trouble shooting
 - () 57. Other _____
- Comments _____
- () N. Working with business problems
- () 58. Policy making
 - () 59. Planning
 - () 60. Promoting
 - () 61. Keeping records and accounts
 - () 62. Filing
 - () 63. Inventory
 - () 64. Handling money
 - () 65. Making technical reports
 - () 66. Reading technical reports
 - () 67. Writing articles, copy, etc.
 - () 68. Making speeches
 - () 69. Decision making
 - () 70. Other _____
- Comments _____
- () O. Agricultural mechanics
- () 8. Farm mechanization
 - () 9. Farm buildings
 - () 10. Farm conveniences
 - () 11. Tractors and other power units
 - () 12. Electricity
 - () 13. Welding
 - () 14. Plumbing
 - () 15. Concrete
 - () 16. Carpentry
 - () 17. Shop work
 - () 18. Mechanics
 - () 19. Metallurgy
 - () 20. Heat
 - () 21. Hydraulics
 - () 22. Other

- | ____ Firm Code | ____ Job Title Code | ____ Level Code |
|--|--|---|
| () P. Animal Science | | Q. Continued. |
| () 23. Livestock production | | () 53. Plant nutrition |
| () 24. Animal nutrition | | () 54. Cropland management |
| () 25. Selecting and grading | | () 55. Crop harvesting, storing & drying |
| () 26. Diseases and parasites | | () 56. Crop marketing |
| () 27. Animal breeding | | () 57. Horticulture |
| () 28. Livestock marketing | | () 58. Floriculture |
| () 29. Processing livestock products | | () 59. Forestry |
| () 30. Marketing livestock products | | () 60. Other_____ |
| () 31. Livestock housing and equipment | () R. Farm Management | |
| () 32. Dairying | () 61. Economic principles | |
| () 33. Dairy housing and equipment | () 62. Farm credit and capital | |
| () 34. Marketing dairy products | () 63. Farm insurance | |
| () 35. Processing dairy products | () 64. Farm taxes | |
| () 36. Artificial insemination | () 65. Farm layout | |
| () 37. Poultry production | () 66. Farm labor | |
| () 38. Poultry housing and equipment | () 67. Farm law | |
| () 39. Marketing poultry products | () 68. Other_____ | |
| () 40. Processing poultry products | () S. General | |
| () 41. Poultry diseases and parasites | () 69. General agriculture and rural life | |
| () 42. Other | () 70. Research procedure | |
| () Q. Plant Science | () 71. Rural recreation | |
| () 43. Soil structure and management | () 72. Leadership training | |
| () 44. Water management | () 73. Other_____ | |
| () 45. Crop production | () T. Supporting Competencies | |
| () 46. Processing crop | () 74. Building trades | |
| () 47. Plant diseases | () 75. Typing | |
| () 48. Agricultural chemicals | () 76. Business law | |
| () 49. Insect and pest control | () 77. Bookkeeping | |
| () 50. Selection and grading | () 78. Mechanical drafting and design | |
| () 51. Plant breeding | () 80. Other_____ | |
| () 52. Production equipment
(maintenance, use, etc.) | | |