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EMPLOYMENT OPPORTUNITIES AND USABLE AGRICULTURAL SKILLS IN  
NON-FARM AGRICULTURAL OCCUPATIONS IN APPALACHIA. FINAL  
REPORT.

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EMPLOYMENT OPPORTUNITIES AND AGRICULTURAL COMPETENCIES  
NEEDED BY NONFARM WORKERS IN THE APPALACHIA REGIONS OF  
KENTUCKY AND OHIO WERE IDENTIFIED AND COMPILED. SPECIAL  
EMPHASIS WAS PLACED ON DETERMINING THE POST-HIGH SCHOOL  
EDUCATIONAL CURRICULUMS NEEDED TO PREPARE WORKERS IN  
AGRICULTURAL, TECHNICIAN-LEVEL OCCUPATIONS. SOME GENERAL  
CONCLUSIONS DERIVED FROM THE COLLECTED DATA WERE THAT (1) 40  
PERCENT OF ALL WORKERS EMPLOYED IN NONFARM AGRICULTURAL  
BUSINESSES NEED SOME KNOWLEDGE AND SKILLS IN AGRICULTURE, AND  
(2) 2 1/2 TIMES MORE AGRICULTURAL VOCATIONAL WORKERS THAN  
AGRICULTURAL TECHNICIANS WILL BE NEEDED IN THE NEXT 5 YEARS.  
(GD)

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE  
Office of Education

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**Final Report**

**EMPLOYMENT OPPORTUNITIES AND USABLE AGRICULTURAL SKILLS IN  
NON-FARM AGRICULTURAL OCCUPATIONS IN APPALACHIA**

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## CHAPTER I

### INTRODUCTION TO THE STUDY

#### Statement of the Problem

The study was undertaken in order to determine the employment opportunities and agricultural competencies needed by workers in present and emerging non-farm agricultural occupations in a thirty-eight county area in the Appalachian region. The specific objectives of the study were:

1. To identify the present and emerging jobs in industries and businesses that serve agriculture in selected counties in the Appalachian region.
2. To determine the employment opportunities for the jobs identified.
3. To determine competencies required for a selected number of these jobs.
4. To determine the needed additional post-high school educational programs to prepare workers to enter or progress in these jobs.
5. To determine feasible procedures for implementing the development of educational programs at the post-high school level, for selected clusters of occupations where the data collected indicates that programs are needed.
6. To prepare the way for establishing and evaluating pilot programs at the high school level and at the post-high school level.

#### The Definitions

The terms and phrases used in the study were defined carefully as the research progressed, and are imperative for the proper impact of the results:

1. Business: a firm listed in the "yellow pages" of a telephone directory, and which provides one or more of the following functions:
  - a) Manufacturing
  - b) Purchasing
  - c) Service
  - d) Constructing
  - e) Retailing
  - f) Warehouse

- g) Processing
  - h) Wholesaling
  - i) Contractor
2. Code 1 Business: businesses which are agriculturally oriented non-farm agricultural businesses, and are operationally defined as businesses that:
- a) Produce products used in the production of many celled plants and animals.
  - b) Provide services relating to the production of many celled plants and animals.
  - c) Conduct research relating to the production of many celled plants and animals.
  - d) Provide services relating middlemen activities between production and processing.
  - e) Serve the needs unique to the producers of many celled plants and animals, and the workers in other agricultural oriented businesses.
3. Code 2 Business: businesses which do not appear agriculturally oriented, but are operationally defined as non-agricultural businesses that may have workers in positions requiring knowledge usually taught formally relating to: plant science, animal science and dairy science, economics of agriculture, engineering and mechanics of agriculture, agricultural education, rural sociology, horticulture, floriculture, soils, food and dairy technology, forestry and landscape architecture.
4. Professional Worker: persons employed with four or more years of scientifically oriented education at the higher education level in such areas as medicine, animal science, veterinary science, agronomy, horticulture, agricultural engineering, chemical engineering, sociology, education, electrical engineering, and so forth.
5. Technician: a semi-professional, highly skilled worker who can be differentiated from both the professional person and the highly skilled worker. Many technicians work in a direct, supporting capacity to professional persons and scientists. Many perform tasks which either were at one time, or still continue to be within the range of the functions of professional personnel. A technician is located midway between the skilled person and the professional person in the developmental structure of jobs, in his work performance, and in his educational attainment. The jobs of most technicians may be traced to recent applications of scientific and technological knowledge in the production and distribution to goods and services. The success of a technician depends on his understanding of scientific principles and his ability to apply these scientific principles in solving problems of modern design, production, distribution, and service. (23) (25) (29)

6. Technical worker: defined as a worker who needs some post-high school technical education.
7. Vocational worker: defined as a worker who needs at least a high school education for vocational level jobs identified.
8. Vocational job title: defined as a position in a business where a worker uses knowledge and skills commonly taught at the high school level.
9. Agriculturally-oriented job: a position of employment in which the worker uses knowledge and skills usually taught formally relating to:
  - a) Plant science
  - b) Animal science and dairy science
  - c) Economics of agriculture
  - d) Engineering and mechanics of agriculture
  - e) Agricultural education
  - f) Rural sociology
  - g) Horticulture
  - h) Floriculture
  - i) Soils
  - j) Food and dairy technology
  - k) Forestry
  - l) Landscape architecture
10. Technical job title: defined as a position in a business where the worker uses knowledge and skills at the technician level in performing his job.
11. Agricultural technical job: defined as a position of employment where a worker uses agriculturally oriented knowledge and skills at the technician level, in performing his job.

#### Review of Selected Literature

In recent years there has been an increasing shortage of trained workers and the need for strengthening certain phases of education. One of the areas of greatest need for trained workers and improved training is the area of vocational and technical education.

Increased agricultural production and increased consumption of agricultural products have resulted in a vast new area of opportunities in non-farm agricultural occupations. These opportunities lie chiefly in the field of marketing and processing agricultural products, in supplying equipment and technical services to farmers, and in providing professional agricultural services(2) Three times as many workers are employed in these off-farm agricultural occupations as are employed in farming. Therefore, in addition to opportunities in farming, opportunities exist in increasing numbers in the field of agriculture. These non-farm agricultural occupations require an increasing amount

of technical and professional training. Need for untrained workers is decreasing in agriculture just as in other technical fields.

In vocational-technical education, several global studies have been completed to determine employment opportunities and abilities needed by workers in non-farm agricultural jobs. These studies indicate that: (1) jobs can be indentified by analyzing what the worker does, (2) much technical education belongs at the post-high school level because of the difficulty and complexity of the instruction and the maturity of the student. (1)(4)(5)(6)(7)(8)(9)(10)(11)(12) (14)(15)(16)(19)(26)(27)(28)

Kennedy concluded in his study of job requirements in twenty-five agricultural occupations that educational programs: (1) should provide for differing levels and areas of training, (2) should recognize vertical mobility, (3) should be based on what the worker actually does. (20) He suggested that curriculms be built around specific occupations or on a planned course sequence.

Courtney, in his comparison of knowledge and experience levels needed by workers in three agricultural occupations, pointed out that if the "centrifugal" approach was used, both farmers and workers in non-farm agricultural occupations could be served by a single course, (13) Such a course would contain knowledges and experiences common to both groups.

According to the United States Department of Agriculture Economic Research Service, attention needs to be focused on special problems to prepare farm and other youth for productive non-farm agricultural careers. Present data from the Kentucky Department of Commerce indicates that the job titles listed in the countries selected deal only with jobs in production agriculture. The Kentucky Bureau of Economic Security indicates that if attention is focused on the employment opportunities in non-farm agricultural jobs, the out-mobility of rural residents should decrease (3). This would strengthen the Kentucky program of agricultural expansion, which includes new goals for production agriculture and in jobs associated with agriculture. According to 1960 Census of Population, median family income in one-half of the proposed counties in eastern Kentucky was \$1,656 to \$2,708 yearly, and from \$2,708 to \$3,516 for the remaining one-half of the proposed counties in Kentucky. (2)

Statewide studies completed concerning present and future workers needing agricultural competencies also indicate that:

1. Almost one-half of all workers employed in off-farm agricultural businesses need some knowledge or skills in agriculture.
2. There was an estimated median increase of four per cent per year in the number of workers needing agricultural competencies.
3. Hiring of replacement workers is largest in businesses that have the most part-time workers.

4. Vocational agriculture may support, or be supported by, other vocational and technical subjects taught in the comprehensive high school and post-high school institutions.
5. Employers seem unwilling to hire employees under about 20 years of age. Additional education beyond high school seems logical in order to fill the gap.
6. Employers have not had the experience of hiring beginning employees with post-high school education required. In states where a higher amount of technical education above high school is being provided, the per cent of employers requiring this type experience is greater.
7. There will be an increase in the hiring of persons with more than a high school education for entry level positions.
8. Advancement within an occupation required a higher average level of competency than was required to gain initial entry.
9. It is possible to determine the competencies needed for entry and advancement, and to group these competencies into clusters so that common and specialized courses may be offered for groups of jobs having similiar educational requirements. (17) (18) (24)



## CHAPTER II

### THE PROCEDURE FOR CONDUCTING THE STUDY

#### The General Design

The general design of the study was an interview-survey procedure, where trained workers contacted businesses in random samples of:

1. Non-farm agricultural businesses in the region of study.
2. Non-agricultural businesses in the region of study that may have workers who require agricultural knowledge and skills.

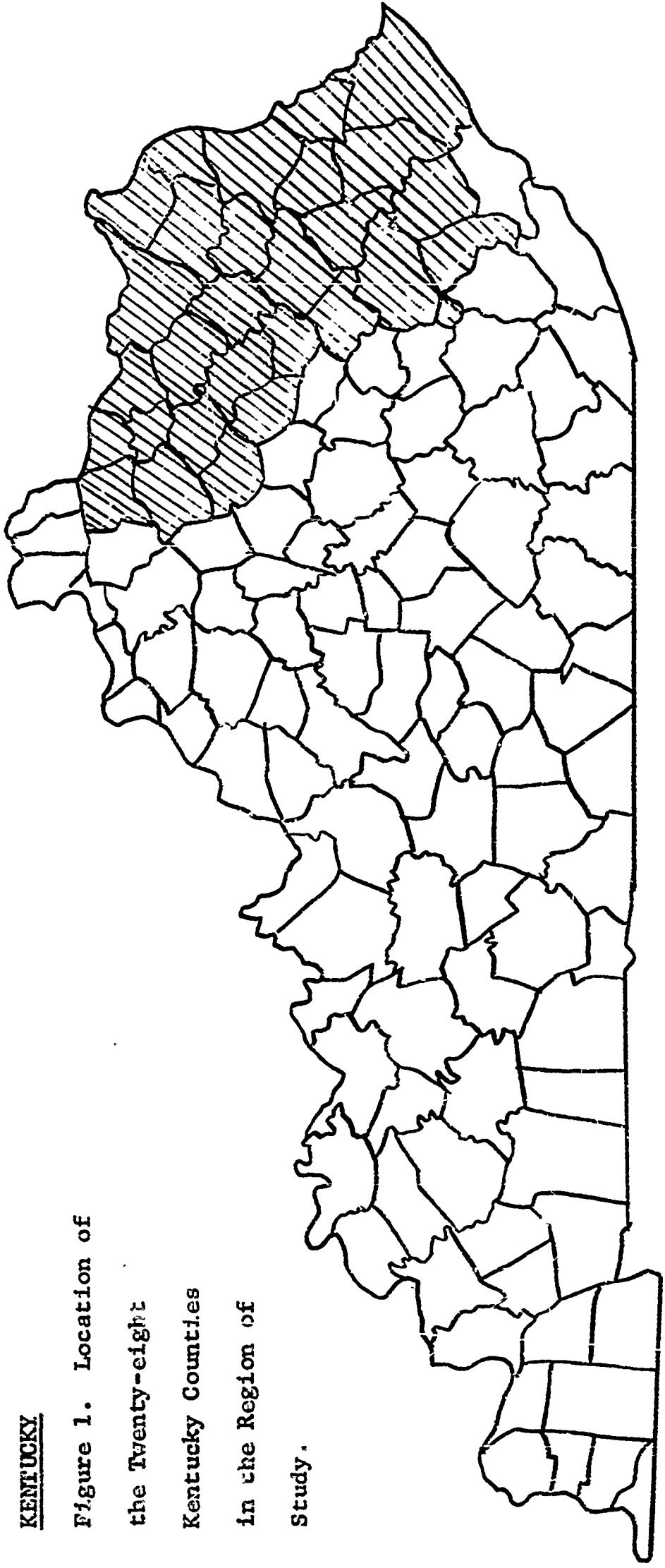
#### Sampling Procedure

The region of study, or universe, was designated as a thirty-eight county area; twenty eight eastern Kentucky counties and ten southern Ohio counties, including the service region of Morehead State University. The counties are listed below, and are shown in Figure 1 and Figure 2.

Kentucky		Ohio
Bath	Lewis	Adams
Bourbon	Magoffin	Brown
Boyd	Martin	Clermont
Bracken	Mason	Gallatin
Breathitt	Menifee	Highland
Carter	Montgomery	Jackson
Elliott	Morgan	Lawrence
Fleming	Nicholas	Meigs
Floyd	Pendleton	Pike
Greenup	Perry	Scioto
Harrison	Pike	
Johnson	Robertson	
Knott	Rowan	
Lawrence	Wolfe	

In order to obtain the final list of businesses to be interviewed a two-stage random-sampling technique with two-way stratification was used. The decision was made to obtain the names of businesses to be interviewed from the yellow pages of the telephone directories published by the telephone exchanges serving the area to be studied.

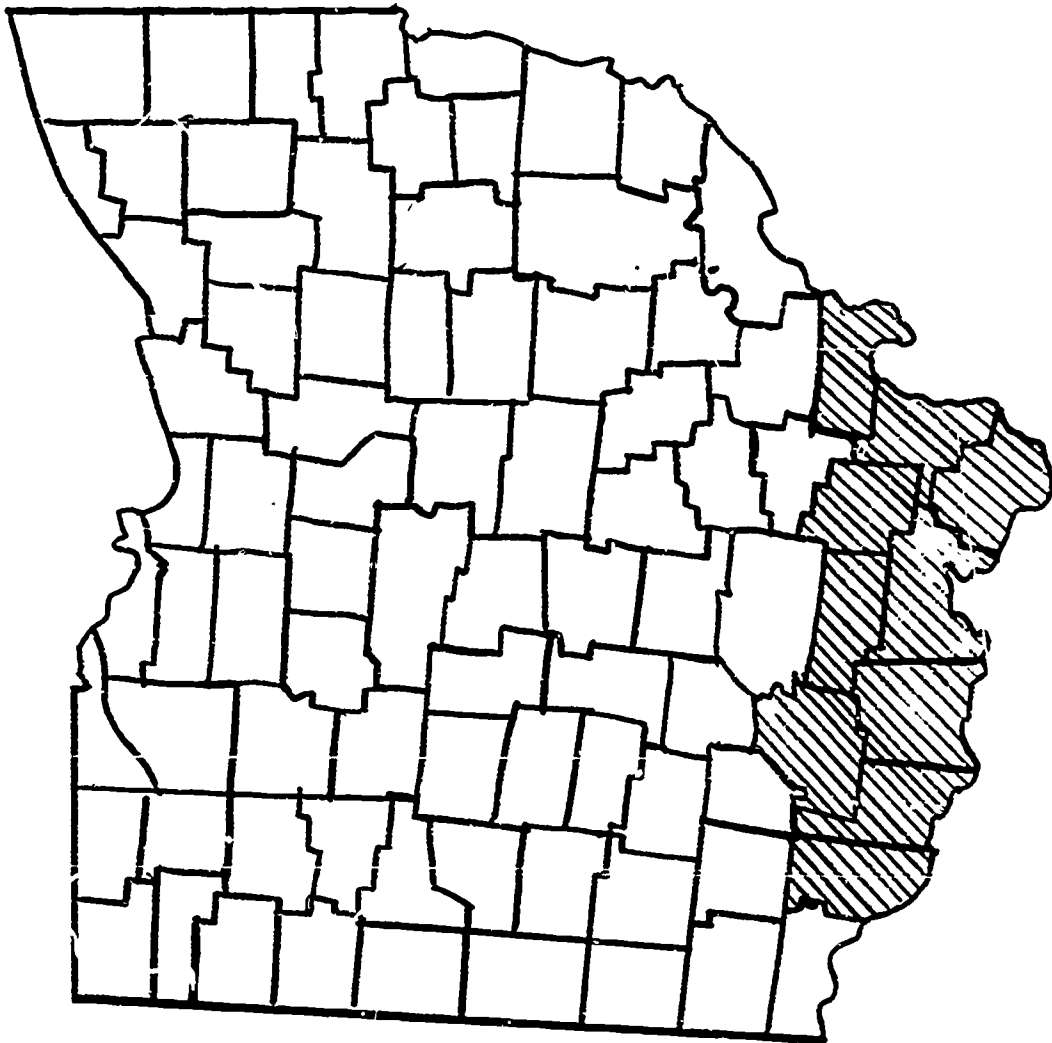
Since it was impossible to survey all businesses in all exchanges it was necessary to reduce the number of exchanges and business within the exchanges to a number which, it was estimated, could be surveyed within the limits of manpower and time available. This judgement was made on the basis of other studies previously completed. The step-by-step sampling procedure was as follows:



KENTUCKY  
Figure 1. Location of  
the Twenty-eight  
Kentucky Counties  
in the Region of  
Study.

OHIO.

Figure 2. Location  
of the Ten Ohio  
Counties in the  
Region of Study.



1. The names of all the telephone companies serving the thirty-eight county region of study were obtained from the State Department of Commerce in Kentucky and Ohio. The names of all the telephone exchanges serving the thirty-eight county area were then obtained from each telephone company. The 159 telephone exchanges included all the land area in the geographical region of study. The 159 exchanges were then grouped into three strata based on the population of the largest city or town served by the exchange. This procedure was used to insure a final sample which was representative of the types of firms found in rural, suburban, and city areas. A stratified random sample of forty-one telephone exchanges was then selected, as shown in Table 1. The table of random numbers was used for the selection. A list of the names and locations of each exchange in the random sample is included as Appendix A.

TABLE 1

SAMPLE OF TELEPHONE EXCHANGES IN THE THIRTY-EIGHT  
COUNTY REGION OF STUDY

Population Stratum	No. of Telephone Exchanges in 38 County Area	No. of Telephone Exchanges in the Sample
0-1000	95	25% or 2
1000-5000	49	25% or 12
5000-over	<u>15</u>	<u>30% or 5</u>
TOTAL	159	41

2. The names of all businesses in the forty-one telephone exchanges in the sample were then obtained from the yellow page listings of the forty-one telephone directories. Where necessary they were checked against the white page alphabetical listings and with knowledgeable persons in the area such as the County Extension Agent of the Vocational Agriculture Teacher, to be sure all businesses were listed. The listing of businesses from each exchange was done within the population stratum from which it came, and this identity was retained for the remainder of the sampling. A 50 per cent sample of all businesses listed was then drawn by taking a 50 per cent sample from each telephone exchange within each of the three strata. This procedure was used to insure proportionate representation from each of the exchanges within each population stratum in the final sample, since the number of businesses in each telephone exchange and within each stratum were not equal. Table 2 shows the data for the second step. All sampling was done by use of the random numbers table.

TABLE 2

NUMBER OF BUSINESS FIRMS IN THE FIFTY-PER CENT  
RANDOM SAMPLE IN THREE POPULATION STRATA

Population Stratum	Total No. of Businesses	Per Cent Sampled	Number of Businesses in Sample Drawn
0-1000	625	50	313
1000-5000	1366	50	683
5000-over	<u>2754</u>	50	<u>1377</u>
TOTAL	4745		2373

3. The 2,373 businesses retained in the 50 per cent sample were divided into three categories based on the business title and yellow page heading, by stratum. The 3 categories were:

"Code 1" Non-farm agricultural businesses.

"Code 2" Non-agricultural businesses that may have workers who require agricultural knowledge and skills.

"Code 3" Those businesses not included in the above and deemed not to employ any persons requiring agricultural knowledge and skills.

A list of the yellow page headings used as guides for determining the category placement is included as Appendix B.

4. Those businesses in category "1", non-farm agricultural businesses, were further categorized into one of seven types of business to insure a cross-sectional representation of different types of non-farm agricultural businesses in the final sample. The agricultural businesses were categorized as follows:

- |                    |                             |
|--------------------|-----------------------------|
| a) Horticulture    | d) Agricultural Education   |
| b) Livestock       | e) Agricultural Economics   |
| c) Crops and Soils | f) Agricultural Engineering |
| g) Poultry         |                             |

5. A 70 per cent sample was drawn in each of the seven types of sub-categories in code "1", non-farm agricultural businesses. In business category "2" a 10 per cent sample was drawn of the non-farm agricultural businesses with possibilities. An additional 5 per cent ~~was~~ drawn to provide added businesses to be interviewed if time permitted. Table 3 shows the breakdown of category "1" businesses and the number of firms drawn as the final sample to be interviewed. All sampling was done by using the table of random numbers.

T A B L E 3

NUMBER OF NON-FARM AGRICULTURAL BUSINESSES  
IN THE FINAL RANDOM SAMPLE  
OF FIRMS TO BE INTERVIEWED

Population Stratum	Non-Farm Agricultural Businesses (Types)	Total Businesses	70% Per Cent Sample to be Interviewed
(1) 0-1000	Horticulture	2	2
	Livestock	18	13
	Crops - Soils	9	7
	Agr. Education	1	1
	Agr. Economics	0	0
	Agr. Engineering	6	5
	Poultry	1	1
	SUM	37	29*
(2) 1000-5000	Horticulture	9	7
	Livestock	17	12
	Crops- Soils	2	2
	Agr. Education	0	0
	Agr. Economics	0	0
	Agr. Engineering	30	20
	Poultry	1	1
	SUM	59	42*
(3) 5000-over	Horticulture	13	10
	Livestock	43	32
	Crops - Soils	9	7
	Agr. Education	0	0
	Agr. Economics	1	1
	Agr. Engineering	23	17
	Poultry	4	3
	SUM	93	70*
TOTAL		189	141*

\*This figure exceeds 70% due to rounding.

Table 4 shows the number of firms in the final sample of category "2" businesses, including the extra 5 per cent sample to be interviewed if time permitted.

The 50 per cent random sample of "Code 3 " or non-agricultural businesses was put aside at this point, for a later study.

TABLE 4

NUMBER OF NON-FARM  
AGRICULTURAL BUSINESSES WITH POSSIBILITIES FOR  
AGRICULTURALLY TRAINED PERSONNEL, TO BE INTERVIEWED

Population Stratum	Total Non-Agricultural Businesses With Possibilities For Agricultural Trained Personnel	10% Sample Phase I	Additional 5% Sample Phase II	TOTAL
0-1000	196	20	10	30
1000-5000	433	44	26	70
5000-over	<u>785</u>	<u>79</u>	<u>39</u>	<u>118</u>
	SUM	143	75	218

Table 5 shows the composite number of firms in the sample of exchanges in each population stratum, and the number of firms in the final random sample in each stratum.

A total of 141 category (1) "non-farm agricultural businesses" and 143 category (2) "non-agricultural businesses with possibilities for agriculturally trained personnel, " were interviewed. This was a total of 284 firms.

Interviewer Training

The interviewer-training program began in May, 1965, as the staff was familiarized with the objectives of the study, the sampling procedure, the kinds of data to be collected, and the data analyses contemplated. At the July 29-30, 1965, meeting of the special consultants, one full-day was utilized with small group sessions with research assistant participation. The special consultants were used to:

- 1) Discuss the proposed sampling procedures.
- 2) Discuss the proposed interview techniques.
- 3) Discuss procedures for completing the instrument.

TABLE 5  
 NUMBER OF BUSINESSES IN THE FORTY-ONE TELEPHONE EXCHANGES IN THE SAMPLE AND THE  
 NUMBER OF FIRMS IN THE FINAL RANDOM SAMPLE OF FIRMS IN EACH STRATUM

POPULATION STRATUM	NUMBER OF BUSINESS FIRMS											
	TYPE OF BUSINESS							NON AGRICULTURAL WITH POSSIBILITIES	NON AGRICULTURAL	TOTAL SAMPLE EXCHANGES	TOTAL (SAMPLE)	
	NON-FARM AGRICULTURAL BUSINESS											
	Horticulture	Livestock	Crops-Soils	Ag. Ed.	Ag. Econ.	Ag. Engr.	Poultry	TOTAL				
0- Sample Exchanges	2	18	9	1	0	6	1	37	196	80	625	313
1,000 Sample Businesses	2	13	7	1	0	5	1	29	10% = 20 15% = 30	NOT STUDIED	---	---
1,000- Sample Exchanges	9	17	2	0	0	30	1	59	433	191	1366	683
5,000 Sample Businesses	7	12	2	0	0	20	1	42	10% = 44 15% = 70	NOT STUDIED	---	---
5,000- Sample Exchanges	13	43	9	0	1	23	4	93	785	499	2754	1377
up Sample Businesses	10	32	7	0	1	17	3	70	10% = 118 15% = 178	NOT STUDIED	---	---
TOTAL Sample Exchanges	24	78	20	1	1	59	6	189	1414	770	4745	2373
TOTAL Sample Businesses	19	57	16	1	1	42	5	141	10% = 143 15% = 218	---	---	---



A draft copy of an interviewer's training manual was prepared during the early summer, and revised after the consultant's conference held in July, 1965. The final copy was coordinated with the project staff and printed just prior to the start of the interviewer training period. Several revisions were made after the pilot interviews in October, 1965. This manual served as a reference for the interviewer during the data collection phase.

Beginning about October 1, 1965, a formal training program was undertaken which included the following steps:

1. In staff meeting, a careful review was made of the best procedures to use in contacting businesses and conducting interviews. The principles of the proposed interview procedure were outlined.
2. The complete instrument and interviewer's manual were presented and incorporated into the interview training procedure.
3. A demonstration interview was given by the project staff.
4. Each prospective interviewer role-played an interview situation before the project staff. A tape recorder was used to record the interviews, and a play-back and critique was made of each person's role-play situation.
5. Each prospective interviewer role-played and recorded an interview situation before a small group of research assistants. Each person's interview was evaluated and critique held by the project staff.
6. The Morehead telephone exchange does not fall in the sample of exchanges, and was selected as the exchange for conducting of the pilot interviews. All the non-farm agricultural businesses and non-agricultural businesses with the possibilities for agricultural jobs in the Morehead, Kentucky telephone exchange, were then listed.
7. Each prospective interviewer observed an actual interview conducted by one of the staff investigators in a business in the Morehead exchange. Two research assistants were taken at one time; and after the interview, a critique was held to determine if the prospective interviewer had obtained the same data as did the staff investigator.
8. Each prospective interviewer then selected a team-mate, and each team made calls to two different firms. Each person had an opportunity to perform a pilot interview. The team-mate observed and also took data. After each team visit, a critique was held with one of the staff investigators to determine if the procedures had been effective, and if the data obtained by each member of the team indicated procedural validity.

9. A total of seventeen firms in the Morehead Telephone exchange area were visited by the prospective interviewers during the pilot interviews.
10. At the end of the training period, three staff meetings were held to evaluate and coordinate the results of the pilot interviews, and to discuss the procedural changes and practices to be made as a result of the pilot interviews. The revisions were incorporated into the interviewer's manual as amendments.

#### The Instrument

The final form of the instrument was completed at the end of the pilot interview phase of the training program:

The complete instrument contained three forms. The purpose of each was:

- Form 1: To obtain information about the functions of each firm, the kinds and numbers of workers in present and anticipated job titles in the firm, and future employment needs.
- Form 2: To obtain information about specific jobs in each firm; specifically the activities in which the worker engages, and the knowledges he uses in his job.
- Form 3: To obtain a narrative description of the job, and a determination of the level of the job; i.e., unskilled, semi-skilled, skilled, technical, semi-professional, professional.

A copy of the instrument is included as Appendix C.

#### The Data Collection

Beginning November 1, 1965, the field data was collected by a nine-member research assistant team, who made personal contacts with each of the 284 business firms in the final random sample. A total of 15,414 miles was driven by the interviewers during this phase of the project.

After the data were obtained, the raw-data forms were carefully coded, and checked. All the data were then punched onto IBM cards by the research assistant staff. The cards were visually verified and a card sort was made, by column, on all decks to insure that the correct coding procedure had been used. The coding procedure is included as Appendix D. The data for the 736 job positions identified were carefully evaluated by the project staff. Using the data obtained on each job position, the raw data form was given a descriptive title which best reflected the worker's function. An additional purpose was to consolidate titles for more effective data analysis purposes. The list of descriptive job titles is included as Appendix E.

## CHAPTER III

### ANALYSIS OF THE DATA

#### Identification of Present and Emerging Jobs

Data were obtained on a total of 736 job positions in the 284 businesses in the total sample. These 736 job positions represented 267 different descriptive job titles, and are listed in Appendix E.

Of the 736 positions, 306 job positions were defined as agriculturally-oriented jobs, and represented 126 different vocational and technical job titles. These 126 titles are included as Appendix F.

Of the 126 different agriculturally-oriented job titles, 67 titles were defined as agricultural-technician job titles. There 67 different job titles are included as Appendix G.

#### Employment and Employment Opportunities for Agricultural Workers Identified

##### Total Number of Workers Currently Employed

Estimates of total number of workers indicate that there were 122,440 workers (Table 6) employed in business firms in the thirty-eight county region of study. This estimate pertains to workers employed in Type 1 and Type 2 businesses only. Workers in agricultural businesses (Type 1) constitute about 10 per cent of the total workers, with 71.1 per cent of the agricultural workers employed in Type 2 firms.

As shown in Table 7, of the 284 business firms contacted, 146 firms had one or more jobs requiring the use of agricultural knowledge and skills. It was estimated that 4531 businesses in the region of study employ agricultural workers.

Table 7 also emphasizes the importance of the Type 2 businesses as a source of employment for workers who use specialized agricultural knowledge and skills. Estimates indicate that 80 per cent of the businesses in the universe which employ workers needing agricultural knowledge and skills were Type 2 businesses.

##### Number of Workers Currently Employed in Agriculturally-Oriented Jobs

As shown in Table 8 it was estimated that there were 11,752 persons employed in agriculturally-oriented jobs in the region of study. These workers were defined as needing agricultural knowledge and skills at a vocational or technical level in performing their jobs.

Of the total workers in agriculturally-oriented jobs, it was estimated that 3359 were technical level workers and 8343 were vocational level workers.

TABLE 6

ESTIMATES OF THE TOTAL NUMBER OF WORKERS  
EMPLOYED IN TYPE 1 AND TYPE 2 BUSINESSES  
IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Workers		
	In Sample	In Universe	Per Cent
<u>Strata 1</u>			
Type 1	174	1776	1.5
Type 2	<u>81</u>	<u>6480</u>	5.3
	255	8256	
<u>Strata 2</u>			
Type 1	199	2232	1.8
Type 2	<u>216</u>	<u>17280</u>	14.1
	415	19512	
<u>Strata 3</u>			
Type 1	855	7559	6.2
Type 2	<u>1308</u>	<u>87113</u>	71.1
	2163	94672	
Totals	2,833	122,440	100.0

TABLE 7

ESTIMATES OF THE TOTAL NUMBER OF BUSINESS FIRMS HAVING WORKERS  
WHO REQUIRE VOCATIONAL AND TECHNICAL AGRICULTURAL EDUCATION,  
IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Workers		
	In Sample	In Universe	Per Cent
<u>Strata 1</u>			
Type 1	24	244	5.4
Type 2	<u>7</u>	<u>560</u>	12.4
	31	804	
<u>Strata 2</u>			
Type 1	29	324	7.1
Type 2	<u>16</u>	<u>1280</u>	28.3
	45	1604	
<u>Strata 3</u>			
Type 1	44	390	8.6
Type 2	<u>26</u>	<u>1733</u>	38.2
	70	2123	
Totals	146	4531	100.0

TABLE 8

ESTIMATES OF NUMBERS OF WORKERS IN  
AGRICULTURALLY ORIENTED JOBS IN THE  
THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Workers		
	In Sample	In Universe	Per Cent
<u>Strata 1</u>			
Type 1	89	912	7.8
Type 2	<u>9</u>	<u>720</u>	6.1
	98	1632	
<u>Strata 2</u>			
Type 1	97	1088	9.3
Type 2	<u>17</u>	<u>1360</u>	11.6
	114	2448	
<u>Strata 3</u>			
Type 1	295	2611	22.2
Type 2	<u>76</u>	<u>5061</u>	43.0
	371	7672	
Totals	583	11,752	100.0

Number of Agricultural Technicians Currently Employed

After careful inspection of the interview data, 122 different agricultural job titles were identified in which some degree of technical-education was required. These 122 job titles included 190 agricultural technicians currently employed. The knowledges required to perform their job activities, and the responsibilities associated with their activities clearly indicated effective job performance at the time of employment could be expected only if the workers had obtained a level of technical education beyond high school.

It was found that 40 businesses of the 284 surveyed had positions which required people defined as agricultural technicians. The detailed information obtained for these positions was given by people active in the work and management of the companies contacted and should accurately reflect how the worker uses knowledge and skills in performing his job. Table 9 shows that 57.5 per cent of the people interviewed were owners while 27.5 per cent were managers. All of these companies were small enough so that the owner or manager had first-hand knowledge of the requirements of each position and knew the workers occupying the position. Table 9 shows the position of the person interviewed in the 40 businesses having agricultural technicians.

TABLE 9

PERSONS INTERVIEWED, BY POSITION IN COMPANY,  
IN THE 40 BUSINESSES FROM WHICH DETAILED  
AGRICULTURAL TECHNICAL JOB INFORMATION WAS OBTAINED

Position in Company	Number	Per Cent
Owner	3	7.5
Owner-Manager	20	50.0
Manager, hired	10	25.0
Manager, sales	0	0.0
Manager, office	1	2.5
Personnel director	0	0.0
Other	<u>6</u>	<u>15.0</u>
	40	100.0

As shown in Table 10, it was estimated that 3359 agricultural technicians were currently employed in the 2351 business firms indentified in the region of study.

It should be noted that less than 50 per cent of the agricultural technicians were currently employed in Type 1 businesses. This indicates the importance of potential job openings in Type 2 businesses for persons trained in agricultural skills and with agricultural knowledge.

#### Functions of the Businesses Studied

The data in Table 11 show that: (1) purchasing was the predominant function of 40 firms studied that hire agricultural technicians, and (2) that many of the businesses performed more than one function.

The servicing and retailing functions were provided by 18 and 15 respectively of the 40 businesses studied.

TABLE 10

ESTIMATED NUMBER OF AGRICULTURAL TECHNICIANS CURRENTLY  
EMPLOYED IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Technicians	
	In Sample	In Universe
<u>Strata 1</u>		
Type 1	19	192
Type 2	<u>1</u>	<u>80</u>
	20	272
<u>Strata 2</u>		
Type 1	37	416
Type 2	<u>4</u>	<u>320</u>
	41	736
<u>Strata 3</u>		
Type 1	108	952
Type 2	<u>21</u>	<u>1399</u>
	129	2351
<b>Totals</b>	<b>190</b>	<b>3359</b>

TABLE 11

FUNCTIONS OF THE 40 BUSINESSES FROM WHICH  
DETAILED JOB INFORMATION WAS OBTAINED  
ON AGRICULTURAL TECHNICIANS

Function of Businesses	Number of Firms Having Each Function	Per Cent Having Each Function
Construction	2	5.0
Contracting	5	12.5
Manufacturing	1	2.5
Processing	12	30.0
Purchasing	22	55.0
Retailing	15	37.5
Servicing	18	45.0
Warehousing	8	20.0
Wholesaling	12	30.0
Other	4	10.0

### Additional Agricultural Technicians Needed

The employers were asked how many different persons had been employed in each job defined as an agricultural-technician job over the past five years, in an effort to estimate employee turnover. Table 12 shows there had been a turnover of 12,017 agricultural technicians in the last five years in the region of study.

TABLE 12

ESTIMATES OF THE NUMBER OF AGRICULTURAL TECHNICIANS  
EMPLOYED IN THE LAST 5 YEARS  
IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Technicians		
	In Sample	In Universe	Per Cent
<u>Strata 1</u>			
Type 1	117	1192	9.9
Type 2	<u>6</u>	<u>480</u>	4.0
	123	1672	
<u>Strata 2</u>			
Type 1	100	1120	9.3
Type 2	<u>20</u>	<u>1600</u>	13.3
	120	2720	
<u>Strata 3</u>			
Type 1	230	2031	16.9
Type 2	<u>84</u>	<u>5594</u>	46.6
	314	7625	
<hr/>			
Totals	557	12,017	100.0

Employers were also asked to estimate the number of additional workers that would be needed in the next three years and within the next five years due to business growth and employee turnover. According to the data in Tables 13 and 14, the number of additional agricultural technicians needed in the next 3 and 5 year period will be 1155 and 1591 respectively. The 5 year estimate includes the 3 year estimate.

Table 12 clearly shows that the number of agricultural technical workers employed in the past 5 years is considerably larger than the number expected to be needed in the next 3 and 5 year period. This larger number probably reflects business growth, employee turnover, promotions, retirement, lack of educational participation, and a certain satisfaction with workers currently employed. It is also likely that the employer responded to the interviewer's question about workers needed in the future primarily in terms of new workers needed for expansion and did not include the anticipated turnover, retirement, and promotions. The investigators believe it



is safe to assume that the actual need for agricultural technicians will approach the proportion employed in the last 5 years. This rationale is based upon more than the numerical information collected, and was an impression obtained which was unqualified, but helps explain the quantified data. There was no data obtained on the inter-group cycling of workers, but this is not assumed to be large since the trend in the Appalachian is for skilled workers to move out of the area to more lucrative positions elsewhere.

As shown in Tables 12 and 13, estimates also indicate that a relatively small number of the positions are open on a part-time basis, and constitute less than 10 per cent of the agricultural technician positions to be filled in the next 3 and 5 year period.

TABLE 13

ESTIMATES OF THE NUMBER OF ADDITIONAL AGRICULTURAL  
TECHNICIANS NEEDED IN THE NEXT 3 YEARS  
IN TYPE 1 AND 2 BUSINESSES IN THE  
THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Agricultural Technicians			
	In Sample		In Universe	
	Full time	Part time	Full time	Part time
<u>Strata 1</u>				
Type 1	0	0	0	0
Type 2	0	0	0	0
<u>Strata 2</u>				
Type 1	9	3	104	32
Type 2	2	0	160	0
<u>Strata 3</u>				
Type 1	37	0	326	0
Type 2	7	1	466	67
Totals	55	4	1056	99
			Total	1155

TABLE 14

ESTIMATES OF THE NUMBER OF ADDITIONAL AGRICULTURAL  
TECHNICIANS NEEDED IN THE NEXT 5 YEARS  
IN TYPE 1 and 2 BUSINESSES IN THE  
THIRTY-EIGHT COUNTY REGION OF STUDY

Population Stratum and Type of Business	Number of Agricultural Technicians			
	In Sample		In Universe	
	Full time	Part time	Full time	Part time
<u>Strata 1</u>				
Type 1	0	0	0	0
Type 2	1	0	80	0
<u>Strata 2</u>				
Type 1	11	3	120	32
Type 2	2	0	160	0
<u>Strata 3</u>				
Type 1	53	0	466	0
Type 2	<u>10</u>	<u>1</u>	<u>666</u>	<u>67</u>
Totals	77	4	1492	99
			Total	1591

Educational Requirements

At the time of the study, agricultural job titles requiring workers with technical education were being filled with persons who did not possess at time of employment the level of education required for effective job performance. Based on the opinion of employers interviewed, as shown in Table 15, it was estimated that the number of persons classified as agricultural technicians for whose job schooling beyond the high school level was required, was 746. This was about 25 per cent of the total estimated workers classified by definition as agricultural technicians. The interviewers reported that employers indicated a high percentage of the agricultural technicians presently employed were trained on-the-job, and that employers based their opinions on the past experience of hiring a vocational level person and training him on the job for technical level responsibilities. Table 16 shows that nearly 35 per cent of the 190 agricultural technicians employed at the time of the study would be replaced with persons possessing no post-high school education.

The employers' opinions reflected their experiences based on the types of educational programs in existence and the characteristics of the labor force at the time of the study. It has been shown in earlier studies that in states where trained technical workers were available, positions were available for them. Employers in the thirty-eight county region of study have historically not had trained persons available to them.

TABLE 15

AGRICULTURAL TECHNICIANS WHO NEED POST-HIGH SCHOOL EDUCATION  
ACCORDING TO THE PERSON INTERVIEWED

Population Stratum and Type of Business	Number of Technicians					
	In Sample			In Universe		
	More than 12 yrs.	College Degree	Per Cent	More than 12 yrs.	College Degree	Per Cent
<u>Strata 1</u>						
Type 1	5	0	6.4	48	0	
Type 2	1	0	10.7	80	0	
<u>Strata 2</u>						
Type 1	3	0	4.3	32	0	
Type 2	1	0	10.7	80	0	
<u>Strata 3</u>						
Type 1	8	11	9.8	73	100	13.4
Type 2	4	1	35.7	266	67	9.0
	<u>22</u>	<u>12</u>		<u>579</u>	<u>167</u>	
				746		100.0

TABLE 16

LEVEL OF EDUCATION REQUIREMENTS OF REPLACEMENTS FOR 190  
AGRICULTURAL TECHNICIANS EMPLOYED IN 122 TECHNICAL  
JOBS BY TYPES OF BUSINESS

Employers Opinion Regarding Level of Education Required	TYPE OF BUSINESS			
	1		2	
	No. of Workers	PerCent	No. of Workers	PerCent
Secondary Education or less	121	73.7	16	61.5
Post Secondary Education	43	26.3	10	38.5
TOTAL	164	100.0	26	100.0

If trained technical workers were available, employers indicated they would rather hire and pay a higher wage to a trained technical-level person rather than train a vocational-level worker for technical-level responsibilities.

It was estimated that 2667 workers will be needed in the next five years in the job titles defined as agriculture technicians, in the region of study. This estimate is based primarily on business growth, and would be about 525 per year. If we examine the number of agricultural technicians needed during the same period based on employee turnover data we find that 2400 agricultural technicians are needed per year. Therefore, more than 500, but not more than 2400 can be estimated as a realistic goal in establishing educational programs.

#### Work Experience Requirements

Most agricultural technicians and other technical workers needing technical education must prepare for effective job performance by gaining work experience prior to employment, through formal training on the job, or both. As shown in Table 17, approximately 90.5 per cent of all future agricultural technicians would be required by employers in Type 1 and Type 2 businesses to possess work experience prior to employment, obtain on-the-job training after employment, or both. However, well planned post-high school educational programs should contain work experiences which would shorten the on-the-job training period.

TABLE 17

WORK EXPERIENCE REQUIREMENTS OF REPLACEMENTS FOR  
190 AGRICULTURAL TECHNICIANS IN 122 TECHNICAL  
JOBS, BY TYPE OF BUSINESS

Employer's opinions regarding work experience requirements	TYPE OF BUSINESS			
	1		2	
	No. of Workers	Per Cent	No. of Workers	Per Cent
Work experience prior to employment, formal on-the-job training, or both	152	92.6	23	88.4
No work experience	12	7.4	3	11.6
TOTAL	164	100.0	26	100.0

#### Age Limitations

Age limitations other than those established by law or insurance regulations do not appear to be a major concern of the employers. Employers indicated that a special age requirement was a specific criterion for employment for approximately 115 of the agricultural technicians, as shown in Table 18.

TABLE 18

MINIMUM AGE LIMITATIONS FOR INITIAL EMPLOYMENT OF  
REPLACEMENTS FOR 1950 AGRICULTURAL TECHNICIANS

Employer's opinion regarding special age limitations	TYPE OF BUSINESS			
	1		2	
	No. of Workers	Per Cent	No. of Workers	Per Cent
Limitations specified	94	57.8	21	80.7
None specified	70	42.2	5	19.3
TOTAL	164	100.0	26	100.0

The data showed that age requirements were most often related to the problem of obtaining workers who needed a certain degree of maturity and experience. Three major age ranges were identified, as shown in Table 19. The most frequently mentioned minimum age ranges for initial employment fell between 18-24 and 25-36.

TABLE 19

MINIMUM AGE RANGE FOR INITIAL EMPLOYMENT OF REPLACEMENTS FOR  
AGRICULTURAL TECHNICIANS IN JOBS WITH AGE LIMITATIONS

Employer's opinion regarding minimum age range for initial employment	TYPE OF BUSINESS			
	1		2	
	No. of Workers	Per Cent	No. of Workers	Per Cent
18-24	57	34.8	12	47
25-30	10	6.0	2	7.6
31 or above	2	1.2	1	.4
No specification	95	58.0	11	45
TOTAL	164	100.0	26	100.0

Determination of Principal Axis Factors  
For Activities and Knowledges

Since the primary emphasis in the study was to be on jobs requiring agricultural knowledge and skills, it was decided by the investigators that the analyses pertaining to competencies needed would be performed with the 306 agriculturally-oriented job positions on which data had been gathered.

At the time each employer who was interviewed furnished information about present and future employees in each job title in the business, a checklist of activities and knowledges was completed separately for each job title. For each item on the checklist (a total of 92 items) the employer noted the degree to which the worker performed the activity or used the knowledge in his job, on a three-point scale:

- 0 = Does not perform the activity or utilize the knowledge in his job.
- 1 = Performs the activity or utilizes the knowledge "some" or "little" in his job.
- 2 = Performs the activity or utilizes the knowledge "much" or "often" in his job.

A list of the 92 activity and knowledge variables is shown in Appendix C.

A factor analysis with varimax rotation technique was performed using the IBM 7040 Computer, using the data on the 92 activity and knowledge variables for the 306 agriculturally-oriented job positions. Fifteen factors or "clusters" were identified, with variance accounted for of 63.57 per cent. The fifteen factors which emerged were groupings of competencies with high "factor loadings", and can be translated into major course content areas:

#1. Personnel Supervision and Business Management

- Appraising work of others
- Supervising others
- Handling men
- Inducting new personnel
- Training others
- Policy-making
- Decision-making
- Planning
- Buying
- Taxes
- Selecting
- Planning production or service
- Calculating costs
- Inventorying

## #2. Mechanical Science and Technology

Adjusting  
Repairing  
Maintaining  
Inspecting, testing, trouble shooting  
Operating  
Calibrating  
Assembling  
Installing  
Remodeling  
Testing  
Mixing  
Inspecting  
Using technical & service manuals,  
parts lists

## #3. Animal Science

Feeds  
Animal Nutrition  
Livestock  
Dairy  
Poultry  
Animal Diseases  
Rural Recreation

## #4. Sales and Business Skills

Selling  
Meeting non-farm people  
Handling money  
Promoting  
Salesmanship  
Meeting farm people  
Keeping records and accounts  
General agriculture and rural life knowledge  
Estimating costs

## #5. Plant and Soil Science

Soils  
Plant Diseases  
Soil and water management  
Horticulture  
Agricultural chemicals  
Insect and pest control  
Crops  
Floriculture

#6. Physical Science Technology

Metallurgy  
Electronics  
Sound and light  
Mechanics  
Hydraulics

#7. Technical and Business Communications

Making speeches  
Writing articles and copy  
Making technical reports  
Developing techniques  
Reading technical reports

#8. Agricultural Mechanics

Farm mechanization  
Farm conveniences  
Tractors and other power units  
Agricultural economics  
Shop work

#9. Building Design and Construction Technology

Making and building  
Designing  
Constructing  
Assembling

#10. Business Operation

Business principles  
Office procedures  
Accounting  
Credit  
Insurance

#11. Farm Building Technology

Farm buildings  
Electricity

#12. Food Processing

Food processing



### #13. Architectural Technology

Architecture  
Sketching & drawing  
Carpentry  
Forestry

### #14. Physical Science Research

Research procedures  
Physics  
Conducting research  
Chemistry

### #15. Mathematics

Advanced mathematics

The data for each of the fifteen activity and knowledge factors are included in Appendix H.

### Determination of Principal Axis Factors For Job Titles

A factor analysis with varimax rotation technique was performed using the IBM 7040 Computer, to cluster the 126 different agriculturally-oriented job titles (306 job positions) based upon the workers' responses concerning activities and knowledges used in their jobs. A representative profile of the degree of competency needed in each worker activity or area of knowledge was first made for each of the 126 agricultural jobs by calculating the mean to the nearest whole number and tenth value. When the varimax rotation technique was performed, ten "factors" emerged as groupings of job titles with high "factor loadings". The variance accounted for was 64.05 per cent using the rotation technique. The ten factors were:

#### #1 Management and Supervision

General director of rural grocery and variety store.  
General director and distributor for wholesale and retail dairy products, meat, and grocery company.  
General director of small farm building, farm equipment, and lumber company.  
Agent for insurance company.  
General director of hardware store and feed mill.  
General director of motor company.  
General director of ware, electrical and building supply, paint, and wallpaper company.  
General director of garage and service station.  
General director of farm machinery and equipment sales and service company, including auto and truck sales and service.  
General director of pest control company.  
General director and district distributor in petroleum bulk plant.  
General director for heating and plumbing company.  
General director of feed mill, farm supply store, and farm machinery sales and service.

#1. Management and Supervision-continued

Bookkeeper in livestock sales company.  
Office director or branch manager for wholesale and retail dairy products, meat, and grocery company.  
General director of show and riding academy, horse farm and hospital.  
General director of ice cream and dairy products company.  
General director of fuel distribution and service company.  
General director and manager of tobacco warehouse company.  
General director of retail florist shop.  
General director for egg buying, grading and wholesale-retail company.  
General director of large farm building construction, farm equipment sales, and lumber company.  
General director of grocery store.  
Sales manager for insurance company.  
General director of vegetable producing company.  
Director of general farm supply and service company.  
General manager of public utilities and fuel distribution company.  
General director of landscaping, florist, and greenhouse business.  
Naturalist in State Park.  
General director of grain elevator and farm supply store.  
General director of restaurant and liquors store.  
Director of retail meat and grocery store.  
General director for feed and coal distribution company.  
General manager of real estate company.  
General director for insurance company.  
Office manager for farm machinery sales and service company.  
Director of aluminum siding company.  
General director of wholesale vegetable produce and sales company.  
Product salesman and office manager for stone company.  
Service supervisor for farm machinery company.  
General director of livestock auction company.  
Shop foreman for farm building construction, farm equipment, lumber, and coal company.  
General director of ready mix concrete and concrete block company.  
General director of slaughter and meat processing company.  
General director of feed and livestock supply company.  
Salesman in pest control company.  
General director for livestock marketing cooperative.  
Service director of pest control company.  
General director of state police district station.  
Office director of livestock marketing cooperative.  
Life insurance agent.  
Sales manager for hardware, electrical, plumbing, and building-supply store.  
General director and mill operator for feed and farm supply store.  
Clerk for grocery and variety store.  
General director of service station, tractor and truck repair shop.  
Truck driver for dairy products, meat, and grocery company.

## #2. Service and Mechanical

Mechanic for automobile, tractor, and power unit repair company.  
Serviceman for furnace company.  
Mechanic for feed mill and farm and dairy supply company.  
Mechanic for farm machinery, farm equipment, automobile, and truck company.  
Head mechanic and salesman for farm machinery and equipment company.  
Plumber for plumbing company.  
General director for nursing home.  
Service station attendant and automobile mechanic.  
Weighman and general worker in tobacco warehouse company.  
Maintenance man for feed mill and grain elevator.  
Shop foreman for farm machinery sales and service company.  
Truck driver and yard worker for small farm building, farm equipment, lumber, and coal company.  
Bottling machine operator for dairy products company.  
Clerk in feed mill.  
Route serviceman for pest control company.  
Freezer inspection man for dairy products company.  
Electrician for plumbing company.  
Claims adjuster for insurance company.  
Weighman in livestock sales company.  
Plant foreman for stone and concrete block company.  
General director of florist and greenhouse business.  
Salesman in feed and farm supply store.

## #3. Sales and Processing

Conservation instructor in 4-H camp.  
Grader for livestock cooperative.  
Yardman for stockyard and feeder cattle business.  
Butcher for frozen food locker and meat processing company, including sausage making and boning.  
Millman for feed mill.  
Warehouse man for feed mill, farm supply, fertilizer, and lumber company.  
Meat cutter for supermarket.  
Salesman for feed mill and farm supply store.  
Seed cleaning and inspection foreman for seed company.

## #4. Service - Animal Science Oriented

Exercise boy and groom boy for horse rehabilitation farm and horse hospital.  
Foreman for horse rehabilitation farm and horse hospital.  
Contact man for livestock auction company.  
Produce man in supermarket grocery store.  
Field service worker for health department.  
Director, farm management company.  
General worker in farm supply and service company.  
Hatchery operator and breed selection man for poultry company.

#### #5. Grower-Processor - Plant Science Oriented

Worker for vegetable producing company.  
Worker in wholesale vegetable produce company.  
Custodian for public school system, state park, church, hotel, nursing home, and department store.  
Deliveryman for retail florist shop.  
Truck driver for livestock marketing and auction company.  
Cook for camp, school, restaurant or nursing home.  
Plant process man for poultry processing company.  
General director and mill operator for feed and farm supply store.  
Truck driver and helper for feed mill, grain elevator, farm implement, fertilizer, and livestock supply store.  
Route salesman for wholesale and retail dairy products, meat, and grocery company.  
Sales clerk and bookkeeper in retail meat store and meat processing company.

#### #6. Sales - Mechanics Oriented

Salesman for farm machinery, automobile and truck equipment sales and service, and feed company.

#### #7. Sales - Tobacco and Poultry Oriented

Office worker in tobacco warehouse company.  
Salesman for egg, poultry, and poultry processing company.  
Truck driver and pick-up man for wholesale-retail egg company.

#### #8. Service-Processor - Plant Science Oriented

Worker for landscaping and greenhouse business.  
Clerk in feed mill and farm supply store.  
Outside foreman for grain elevator, feed mill, farm supply, and farm machinery sales company.  
General director for fertilizer and limestone company.  
Produce and meats manager in grocery-supermarket.  
Produce man in supermarket-grocery store.

#### #9. Horticulture Oriented

Caretaker in show and riding academy, including horse trainer on horse farm.  
Maintenance man in State Park.

#### #10. Building and Construction Oriented

Shipping manager for hardware, building, plumbing, and electrical supply company.  
Sales manager for hardware, electrical, plumbing, and building-supply store.  
Carpenter for lumber and farm building construction company.

The job title clusters seemed to be identifiable based on general job function. There were many jobs that, based on inspection of the title, did not appear to belong in a particular cluster. However, it is likely that many workers held multi-functional job responsibilities, particularly in the smaller businesses.

The data for each of the ten job-title factors are included as Appendix I.

Determination of Principal Axis Factors  
for Activities and Knowledges Within  
Job Title Factors

Following the factor analysis using the varimax rotation technique to cluster the 126 different agriculturally-oriented job titles, the IBM cards containing the knowledge and activity data were sorted into each of the ten identified job cluster groups. A separate factor analysis procedure was then performed using the IBM 7040 Computer, to cluster the 92 knowledge and activity variables for the observations within a job-title cluster. From 3 to 15 activity and knowledge factors or "clusters" were identified for each job-title cluster. The factors or "clusters" which emerged, were groupings of competencies with high "factor loadings", and can be translated into specific content areas.

Fifteen activity and knowledge factors were identified for job title cluster 1:

#1. Management and Supervision - 56 titles

<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Maintaining	Feeds	Business principles
Adjusting	Livestock	Office procedures
Repairing	Animal nutrition	Taxes
Operating	Dairy	Insurance
Mixing	Poultry	Credit
Installing	Animal diseases	Accounting
Calibrating		Salesmanship
Selecting		
Inspecting, testing, trouble shooting		
<u>Factor 4</u>	<u>Factor 5</u>	<u>Factor 6</u>
Sound and light	Supervising others	Architecture
Electronics	Handling men(boss)	Carpentry
Metallurgy	Appraising work of others	Farm buildings
Mechanics	Training others	Sketching and drawing
Designing	Inducting new personnel	
Remodeling	Advising, consulting, and diagnosing	
Sketching and drawing	Inspecting	
Hydraulics		
Heat		

#1. Management and Supervision - 56 titles, continued

<u>Factor 7</u>	<u>Factor 8</u>	<u>Factor 9</u>
Writing articles, copy, etc. Making speeches Developing techniques	Policy-making Planning Decision-making Handling money Promoting Buying Planning production or service	Research procedures Conducting research Food processing
<u>Factor 10</u>	<u>Factor 11</u>	<u>Factor 12</u>
Salesmanship Meeting non-farm people Meeting farm people Estimating costs Selling	Advanced mathematics Physics	Insect and pest control Plant diseases Agricultural chemicals Soils Crops Floriculture Soil and water management Horticulture
<u>Factor 13</u>	<u>Factor 14</u>	<u>Factor 15</u>
Constructing equipment, tools(hand or power) supplies and instruments Designing Making and building Assembling Floriculture	Shop work Farm mechanization Farm conveniences Tractors and other power units Testing Agricultural economics Electricity	Filing Inventorying Rural recreation Planning production or service Keeping records and accounts

Fifteen activity and knowledge factors were identified for job title cluster 2:

#2. Service and Mechanical - 22 titles

<u>Factor 1</u>	<u>Factor 2</u>
Agricultural chemicals Business principles Credit Salesmanship Promoting Handling money Insect and pest control Meeting non-farm people General agriculture and rural life knowledge Keeping records and accounts	Farm conveniences Testing Tractors and other power units Shop work Installing Electricity Farm mechanization Assembling Agricultural economics

#2. Service and Mechanical - 22 titles, continued

<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
Making speeches	Supervising others	Feeds
Making technical reports	Appraising work of others	Animal nutrition
Constructing equipment, tools(hand or power) supplies and instruments	Handling men(boss)	Poultry
Designing	Training others	Crops
Making and building	Buying	Soil and water management
Sketching and drawing		Livestock
Selecting		Animal diseases
Plant diseases		Dairy
		Horticulture
<u>Factor 6</u>	<u>Factor 7</u>	<u>Factor 8</u>
Taxes	Electronics	Calibrating
Accounting	Metallurgy	Calculating costs
Filing	Mixing	Remodeling
Policy-making	Hydraulics	Heat
Floriculture	Mechanics	Assembling
Plant diseases		Inspecting, testing, trouble shooting
Buying		Mechanics
Horticulture		Adjusting
Inventorying		
Insurance		
<u>Factor 9</u>	<u>Factor 10</u>	<u>Factor 11</u>
Reading technical reports	Operating	Carpentry
Hydraulics	Maintaining	
	Repairing	
	Adjusting	
<u>Factor 12</u>	<u>Factor 13</u>	<u>Factor 14</u>
Food processing	Estimating costs	Inspecting
Dairy	Decision-making	
	<u>Factor 15</u>	
	Meeting farm people	

Fifteen activity and knowledge factors were identified for job title cluster 3:

#3. Sales and Processing - 9 titles

<u>Factor 1</u>		
Agricultural economics	Credit	Plant diseases
Agricultural chemicals	Farm mechanization	Promoting
Farm conveniences	Rural recreation	Salesmanship
Accounting	Office procedures	Accounting
Insect and pest control	Planning	Selling

#3. Sales and Processing - 9 titles, continued

<u>Factor 2</u> Training others Appraising work of others Inducting new personnel Handling men(boss) Supervising others Carpentry Shop work Inventorying Electricity	<u>Factor 3</u> Designing Food processing Developing techniques Calculating costs Assembling	<u>Factor 4</u> Making technical reports Reading technical reports Writing articles, copy, etc. Farm buildings Animal diseases Planning
<u>Factor 5</u> Taxes Insurance Accounting	<u>Factor 6</u> Handling money Floriculture Horticulture Salesmanship Selling Filing	<u>Factor 7</u> Remodeling Heat Installing Assembling Repairing
<u>Factor 8</u> Livestock Testing, Advising, consulting, and diagnosing	<u>Factor 9</u> Selecting Tractors and other power units Crops Shop work	<u>Factor 10</u> Planning production or service Keeping records and accounts Dairy Poultry Using technical and service manuals, parts lists General agriculture and rural life knowledge
<u>Factor 11</u> Buying Estimating costs Decision-making	<u>Factor 12</u> Making and building Calibrating	<u>Factor 13</u> Forestry Soil and water management Soils
<u>Factor 14</u> Selecting	<u>Factor 15</u> Filing	



Ten activity and knowledge factors were identified for job title cluster 4:

#4. Service - Animal Science Oriented - 8 titles

<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Credit	Conducting research	Repairing
Insurance	Developing techniques	Assembling
Taxes	Electricity	Calibrating
Soil and water management	Research procedures	Adjusting
Soils	Selecting	Maintaining
Carpentry	Training others	Installing
Forestry	Appraising work of others	Shop work
Inventorying	Supervising others	Tractors and other
Selling	Handling men(boss)	power units
Testing	Inspecting, testing, trouble shooting	Handling men(boss)
Plant diseases	Insect and pest control	Inspecting, testing, trouble shooting
Agricultural chemicals	Poultry	Training others
Business principles	Making technical reports	Selecting
Dairy	Reading technical reports	Appraising work of others
Agricultural economics	Planning production or service	Supervising others
Chemistry	Animal nutrition	
Writing articles, copy, etc.	Buying	
Salesmanship	Animal diseases	
Planning	Promoting	
Filing		
Insect and pest control		
Poultry		
Accounting		
Tractors and other power units		
Making technical reports		
Reading technical reports		
Farm conveniences		
Farm buildings		
 <u>Factor 4</u>	 <u>Factor 5</u>	 <u>Factor 6</u>
Rural recreation	Making speeches	Decision-making
Office procedures	Estimating costs	Crops
Operating	Farm mechanization	Horticulture
Keeping records and accounts	Advising, consulting, and diagnosing	
 <u>Factor 7</u>	 <u>Factor 8</u>	 <u>Factor 9</u>
Farm buildings	Meeting non-farm people	Mixing
Farm conveniences	Meeting farm people	Inspecting
		Using technical and service manuals, parts lists
	 <u>Factor 10</u>	
	Planning production or service	
	Accounting	

Fifteen activity and knowledge factors were identified for job title cluster 5:

#5. Grower-Processor - Plant Science Oriented - 11 titles

<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Hydraulics	Handling money	Handling men(boss)
Rural recreation	Selling	Inducting new personnel
Mechanics	Office procedures	Appraising work of others
Farm conveniences	Business principles	Supervising others
Assembling	Salesmanship	Training others
Farm mechanization	Meeting non-farm people	
Shop work	Promoting	
Carpentry	Inventorying	
Farm buildings	Meeting farm people	
Testing		
Electronics		
Installing		
Inspecting		
Plant diseases		
<u>Factor 4</u>	<u>Factor 5</u>	<u>Factor 6</u>
Agricultural chemicals	Adjusting	Calculating costs
Insect and pest control	Repairing	Agricultural economics
Accounting	Operating	Using technical and
Filing	Tractors and other	service manuals,
Calibrating	power units	parts lists
Mixing	Calibrating	Selecting
	Maintaining	Farm buildings
		General agriculture and
		rural life knowledge
<u>Factor 7</u>	<u>Factor 8</u>	<u>Factor 9</u>
Policy-making	Soils	Animal diseases
Buying	Crops	Animal nutrition
Taxes	Using technical and	
Estimating costs	service manuals,	
Insurance	parts lists	
Selecting	Horticulture	
Mixing	Feeds	
	Credit	
	Soil and water management	
	Livestock	
	Plant diseases	
	Decision-making	
	<u>Factor 10</u>	
Writing articles, copy, etc.	Keeping records and accounts	
Farm mechanization	Farm conveniences	

#5. Grower-Processor - Plant Science Oriented - 11 titles, continued

<u>Factor 11</u>	<u>Factor 12</u>	<u>Factor 13</u>
Electricity Food processing Poultry	Installing Inspecting, testing, trouble shooting Shop work Carpentry	Advising, consulting, and diagnosing Assembling
<u>Factor 14</u>	<u>Factor 15</u>	
Making and building	Architecture Heat Research procedures Sound and light Metallurgy	Foreign language Advanced mathematics Physics Chemistry Forestry

Three activity and knowledge factors were identified for job title cluster 6:

#6. Sales - Mechanics Oriented - 1 title

<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Calculating costs Using technical and service manuals, parts lists Developing techniques Inspecting, testing, trouble shooting Handling money Making technical reports Crops	Making speeches Selling Buying Meeting farm people	Meeting non-farm people Advising, consulting, and diagnosing Estimating costs Keeping records and accounts Reading technical reports Decision-making

Four activity and knowledge factors were identified for job title cluster 7:

#7. Sales - Tobacco and Poultry Oriented - 3 titles

<u>Factor 1</u>		
Filing Inventorying Selling Feeds Salesmanship Adjusting Handling men(boos) Calculating costs Making technical reports	Crops Using technical and service manuals, parts lists Repairing Promoting Animal nutrition Animal diseases Foultry	Taxes Insurance Food processing Maintaining Operating Handling money Meeting non-farm people Keeping records and accounts

#7. Sales - Tobacco and Poultry Oriented - 3 titles, continued

<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>
Testing	Heat	Buying
Assembling	Hydraulics	Advising, consulting, and diagnosing
Tractor and other power units	Architecture	Estimating costs
Farm mechanization	Metallurgy	Inducting new personnel
Shop work	Electronics	Training others
Carpentry	Sound and light	Appraising work of others
Farm conveniences	Research procedures	Supervising others
General agriculture and rural life knowledge	Foreign language	Making and building
Mechanics	Physics	Designing
Office procedures	Advanced mathematics	Sketching and drawing
Business principles	Chemistry	Mixing
Meeting farm people		
Credit		
Accounting		

Thirteen activity and knowledge factors were identified for job title cluster 8:

#8. Service-Processor - Plant Science Oriented - 6 titles

<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Agricultural economics	Handling men(boss)	Insect and pest control
Carpentry	Appraising work of others	Soil and water management
Electricity	Supervising others	Soils
Farm conveniences	Inspecting	Horticulture
Farm buildings	Operating	Floriculture
Tractors and other power units	Mixing	Calculating costs
Shop work	Training others	Agricultural chemicals
Business principles	Adjusting	Plant diseases
Insurance	Decision-making	Crops
Office procedures	Planning production or service	Buying
Taxes	Testing	Planning
General agriculture and rural life knowledge	Food processing	Developing techniques
Farm mechanization	Maintaining	Food processing
Credit	Making technical reports	
Salesmanship	Inspecting, testing, trouble shooting	
	Promoting	
	Calibrating	
<u>Factor 4</u>	<u>Factor 5</u>	<u>Factor 6</u>
Remodeling	Meeting non-farm people	Designing
Selecting	Meeting farm people	Making speeches
Calibrating	Filing	Repairing
Policy-making	Promoting	Policy-making
Shop work	Selling	Assembling
Inventorying	Developing techniques	Inspecting, testing, trouble shooting
	Reading technical reports	

#8. Service-Processor - Plant Science Oriented - 6 titles, continued

<u>Factor 7</u>	<u>Factor 8</u>	<u>Factor 9</u>
Conducting research	Advanced mathematics	Advising, consulting, and diagnosing
Making and building	Estimating costs	Inducting new personnel
Assembling	Accounting	Mechanics
Training others	Planning	Chemistry
	Taxes	Planning production <sup>4</sup> or service
		Inspecting, testing, trouble shooting
		Selecting
		Farm mechanization
<u>Factor 10</u>	<u>Factor 11</u>	<u>Factor 12</u>
Poultry	Forestry	Installing
Feeds		Maintaining
Livestock		
Animal nutrition		
Dairy	<u>Factor 13</u>	
Handling money	Plant diseases	
Animal diseases		

Four activity and knowledge factors were identified for job title cluster 9:

#9. Horticulture Oriented - 2 titles

<u>Factor 1</u>		
Carpentry	Repairing	Animal diseases
Meeting non-farm people	Operating	Tractors and other power units
Estimating costs	Keeping records and accounts	Electricity
Making and building	Making technical reports	Farm mechanization
Sketching and drawing	Reading technical reports	Shop work
Assembling	Soils	Meeting farm people
Testing	Soil and water management	Farm buildings
Using technical and service manuals, parts lists	Livestock	Farm conveniences
Developing techniques	Feeds	General agriculture and rural life knowledge
	Animal nutrition	Insect and pest control
<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>
Supervising others	Metallurgy	Assembling
Designing	Architecture	Constructing equipment, tools(hand or power)
Buying	Hydraulics	supplies and instruments
Appraising work of others	Mechanics	Crops
Advising, consulting, and diagnosing	Sound and light	Planning production: or service
Selecting	Heat	Conducting research
Mixing	Electronics	Filing
Inspecting, testing, trouble shooting .	Foreign language	Forestry
Installing	Research procedures	
	Advanced mathematics	
	Physics	
	Chemistry	

Three activity and knowledge factors were identified for job title cluster 10:

#10. Building and Construction Oriented - 3 titles

<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Advising, consulting, and diagnosing	Supervising others	Designing
Estimating costs	Making and building	Testing
Sketching and drawing	Operating	Calibrating
Inspecting	Credit	Remodeling
Using technical and service manuals, parts lists	Business principles	Adjusting
Planning production or service	Mechanics	Installing
Operating	Carpentry	Meeting non-farm people
Inspecting, testing, trouble shooting	Policy-making	Meeting farm people
Selecting	Office procedures	
Keeping records and accounts	Assembling	
Soils	Handling men(boss)	
Salesmanship	Training others	
Architecture	Appraising work of others	
Calculating costs	General agriculture and rural life knowledge	
	Farm buildings	
	Agricultural economics	
	Farm mechanization	
	Rural recreation	

The data for each of the activity and knowledge factors within each job title cluster are included in Appendix J.

## CHAPTER IV

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Restatement of the Problem

The purpose of the study was to determine the employment opportunities and agricultural competencies needed by workers in present and emerging non-farm agricultural occupations in a thirty-eight county area in Appalachia. Special emphasis was placed on determining the post-high school educational curriculums needed to prepare workers to enter or progress in agricultural technician level occupations.

The study involved six major tasks:

1. The development of a questionnaire in order to obtain information about: (1) the functions of each firm, the kinds and numbers of workers in present and anticipated job titles in the firm, (2) the specific activities in which workers engage, and (3) the knowledges workers use in their jobs.
2. The training of an interview team, and the interviewing of a selected sample of 284 business firms in the thirty-eight county region of study.
3. The mathematical projections of the data to determine:
  - a) the total number of workers currently employed in the types of businesses defined.
  - b) the total number of workers currently employed in agriculturally oriented jobs.
  - c) the total number of agricultural technicians currently employed.
  - d) the functions of businesses studied.
  - e) the additional number of agricultural technicians needed in the next 3 and 5 year period.
  - f) the educational requirements, work experience requirements, and age limitations for agricultural technician jobs on which data were gathered.
4. The determination of principal-axis factors for 92 activity and knowledge variables, using the data for 306 identified agriculturally oriented job positions.
5. The determination of principal-axis factors for 126 different agriculturally oriented job titles, based upon the worker's responses concerning activities and knowledges used in their jobs.

6. The determination of principal-axis factors for 92 activity and knowledge variables within each of ten identified job-title clusters, based upon the workers' responses concerning activities and knowledges used in their jobs.

### The Conclusions

- A. Estimates derived from the sample data obtained in Type 1 and Type 2 business firms in the 38 county region of study indicated that:
  1. Forty per cent of all workers employed in non-farm agricultural businesses (Type 1) need some knowledge and skills in agriculture.
  2. Sixteen per cent of all workers employed in non-agricultural businesses that may employ agricultural workers (Type 2) need some knowledges and skills in agriculture.
  3. It was possible to project the numbers of employment opportunities for the identified agricultural technical and agricultural vocational job titles. The job-titles were subdivided by level; i.e., technical job or vocational job within each job title cluster. The projections for job-title cluster 1 are shown in Table 20. The projections for job-title cluster 2 through 10 are shown in Tables 21 through 29 respectively.
  4. Of every 10 potential job opportunities for workers needing agricultural knowledge and skills, 6 were in the twenty-eight county Kentucky region studied and 4 were in the ten-county Ohio area studied.
    - a) Of every 10 potential job openings in Kentucky, 5 were in telephone exchange areas where the largest town had a population of 5,000 or more, 3 were in telephone exchange areas where the largest town had a population of 1,000-5,000, and 2 were in telephone exchange areas where the largest town had a population of less than 1,000.
    - b) Of every 10 potential job openings in Ohio, 6 were in telephone exchange areas where the largest town had a population of 5,000 or more, 2 were in telephone exchange areas where the largest town had a population of 1,000-5,000, and 2 were in telephone exchange areas where the largest town had a population less than 1,000.
  5. Two and one-half times more agricultural vocational workers than agricultural technicians will be needed to take entry-level positions in the next five years.
  6. Most of the business firms interviewed were multi-functional, and workers in job titles in the smaller firms tended to hold jobs that were multi-functional in nature. Purchasing, service, and retailing were the predominant functions among the businesses studied.



7. The rate of employee turnover was largest in businesses having the most part-time workers.
8. There appeared to be a high potential for job openings for agricultural-technical workers.
  - a) 3359 agricultural-technicians were currently employed.
  - b) 8 of every 10 businesses in the universe which employ workers needing agricultural knowledge and skills were businesses which appear non-agricultural (Type 2). See Appendix B4-B11 for a list of these business titles.
  - c) 3 of every 10 workers employed in agriculturally oriented jobs studied were performing jobs which required technical level proficiency, while 7 of every 10 workers employed in agriculturally oriented jobs studied were performing jobs requiring vocational level proficiency.
  - d) 9 of every 10 agricultural-technical position openings anticipated in the next five years will be full-time jobs.
  - e) At least 500 but not more than 2400 new agricultural technicians will be needed annually in the region of study. This range is evident when we note that 12,017 agricultural technicians were employed in the last five years in the region of study. This was approximately three times the number of new agricultural technicians anticipated in the next five years. It can be concluded there has been a high degree of turnover of agricultural-technical workers, probably due to the trend for these workers to move out of the area to better paying jobs. There was a higher degree of employee turnover in agricultural-technical jobs in the Kentucky counties studied than in the Ohio counties. More specifically, there was a higher degree of employee turnover in agricultural-technical jobs in the telephone exchanges in Kentucky where the population of the largest town was under 1,000 than for the same geographical areas studied in Ohio.
  - f) Employers expect a 40 per cent increase in the number of employees needing technical competencies in agriculture in the next five years. This is higher than the anticipated expansion of the total labor force.
  - g) Employers have been willing to hire untrained persons under 20 years of age and train these people in technical skills on-the-job because the employer had been unable to find trained people. Employers indicate they would rather hire and pay a higher wage to trained-technical workers rather than train a worker on-the-job if trained technical workers are available.

- B. It was possible to determine the general competency areas needed for entry and advancement by workers in jobs needing agricultural knowledges and skills, and to group these worker activities and knowledges into clusters so that general competency areas could be identified. See Appendix H.
- C. It was possible to determine "clusters" or "families" of agricultural-technical and agricultural-vocational job-titles based upon the workers' responses concerning activities and knowledges used in their jobs. See Appendix I.
- D. It was possible to determine more specific competency needs of workers in agricultural technical and vocational job titles identified. This reinforcing technique was designed to enable the investigators to better determine the level of competency needed by workers in job titles identified. See Appendix J.
- E. The job-titles within each job-title cluster could be defined as technical or vocational level jobs, as shown in Tables 20 through 29. Workers with vocational job titles probably perform the activities and use the knowledges identified at the vocational level, while those workers with technical job titles probably perform activities and use the knowledges identified at the technician level.

#### Limitations

The study did not include businesses defined as non-agricultural with no apparent possibilities for agricultural workers. (Type 3 businesses). However, other state studies have shown that employment opportunities do exist in these kinds of firms for persons who need training in plant and animal science, and agricultural mechanics. Therefore, there probably have been left out some of the agricultural job opportunities.

TABLE 20

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 1 OF IDENTIFIED AGRICULTURAL, VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected				Job Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
General director of small farm building, farm equipment, and lumber company.	0	6	0	6	0	6	0	6
General director of garage and service station.	0	6	0	6	0	6	0	6
General director for heating and plumbing company.	0	1	0	0	0	40	0	0
General director of show and riding academy, horse farm and hospital.	1	1	0	5	0	0	0	5
General director of retail florist shop.	0	11	0	8	0	0	0	8
General director for egg buying, grading and wholesale-retail company.	0	5	0	0	0	0	0	0
General director of large farm building construction, farm equipment sales, and lumber company.	0	10	0	0	0	0	0	0
Sales manager for insurance company.	0	3	0	0	0	0	0	0
General manager of public utilities and fuel distribution company.	0	1	0	80	0	0	0	80
General director of landscaping, florist, and greenhouse business.	1	14	0	0	0	0	0	0
Naturalist in a State Park.	1	0	56	0	66	0	66	0
Director of retail meat and grocery store.	0	2	0	0	0	0	0	0
General director for insurance company.	0	12	0	150	0	0	0	160

TABLE 20-continued

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Office manager for farm machinery sales and service company.	0	1	0	0	0	0	0	0
Products salesman and office manager for stone company.	0	2	0	0	0	0	0	0
Service supervisor for farm machinery company.	0	1	0	0	0	0	0	0
General director of slaughter and meat processing company.	1	3	0	0	0	0	0	0
Service director of pest control company.	2	5	0	0	6	0	0	6
General director of state police district station.	0	2	0	0	0	0	0	66
Sales manager for hardware, electrical, plumbing, and building-supply store.	2	11	0	0	0	0	0	0
Truck driver for dairy products, meat and grocery company.	0	4	0	0	10	0	0	10

Totals for Agricultural Technical Job Titles 8 101 66 281 106 347

Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
General director of rural grocery and variety store.	0	32	0	0	0	0	0	0
General director and distributor for wholesale and retail dairy products, meats and grocery company.	0	8	0	0	0	0	0	6



TABLE 20-continued

Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Agent for insurance company.	0	3	0	40	0	40	0	40
General director of hardware store and feed mill.	1	1	0	0	0	0	0	0
General director of motor company.	0	6	0	0	0	0	0	0
General director of hardware, electrical, and building supply, paint, and wallpaper company.	0	8	0	0	0	0	0	0
General director of farm machinery and equipment sales and service company, including auto and truck sales and service.	1	14	0	6	0	6	0	6
General director of pest control company.	0	6	0	0	0	0	0	0
General director and district distributor in petroleum bulk plant.	0	5	0	0	0	0	0	0
General director of feed mill, farm supply store, and farm machinery sales and service.	1	26	0	11	0	11	0	11
Bookkeeper in livestock sales company.	0	1	0	0	0	0	0	0
Office director or branch manager for wholesale and retail dairy products, meat, and grocery company.	0	1	0	0	0	0	0	0
General director of ice cream and dairy products company.	0	3	0	0	0	0	0	0
General director and manager of tobacco warehouse company.	0	14	0	47	0	47	0	77
General director of grocery store.	0	13	0	0	0	0	0	0

TABLE 20-continued

Agricultural Vocational Job Title	Number Currently Employed		Projected		Job Opportunities	
	Part Time	Full Time	3 Years		5 Years	
			Part Time	Full Time	Part Time	Full Time
General director of vegetable producing company.	0	4	0	0	0	0
Director of general farm supply and service company.	0	4	0	0	0	0
General director of grain elevator and farm supply store.	0	1	0	0	0	0
General director of restaurant and liquors store.	0	13	0	0	0	0
General manager of real estate company.	0	2	0	0	0	0
Director of aluminum siding company.	0	1	0	0	0	0
General director of wholesale vegetable produce and sales company.	1	4	0	0	0	0
General director of livestock auction company.	0	2	0	0	0	0
Shop foreman for farm building construction, farm equipment, lumber, and coal company.	0	2	0	0	0	0
General director of ready mix concrete and concrete block company.	0	3	0	0	0	0
Salesman in pest control company.	0	14	0	0	0	6
General director for livestock marketing cooperative.	0	1	0	0	0	0
Office director of livestock marketing cooperative.	0	1	0	0	0	0
Life insurance agent.	0	23	0	0	132	66

TABLE 20-continued

Agricultural Vocational Job Title	Number Currently Employed		Projected		Job Opportunities	
	Part Time	Full Time	3 Years		5 Years	
			Part Time	Full Time	Part Time	Full Time
General director and mill operator for feed and farm supply store.	0	3	0	0	0	0
Clerk for grocery and variety store.	21	15	0	1120	0	1920
General director of service station, tractor and truck repair shop.	0	5	0	0	0	0
<b>Totals for Agricultural Vocational Job Titles</b>	25	239	0	1362	0	2132
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES</b>	33	366	66	1643	106	2479



TABLE 21

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 2 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Mechanic for automobile, tractor, and power unit repair company.	0	2	0	0	0	0	0	0
Serviceman for furnace company.	0	2	0	0	0	0	0	0
Mechanic for feed mill and farm and dairy supply store.	0	5	0	0	5	0	0	5
Mechanic for farm machinery, farm equipment, automobile, and truck company.	1	17	0	0	43	0	0	80
Head mechanic and salesman for farm machinery and equipment company.	2	4	0	0	0	0	0	0
Plumber for plumbing company.	0	1	0	0	80	0	0	80
Service station attendant and automobile mechanic.	1	16	0	0	20	0	0	73
Weighman and general worker in tobacco warehouse company.	8	11	21	82	21	123	21	123
Maintenance man for feed mill and grain elevator.	0	1	0	0	0	0	0	0
Shop foreman for farm machinery sales and service company.	0	1	0	0	0	0	0	0
Clerk in feed mill.	0	1	0	0	0	0	0	0
Route serviceman for pest control company.	2	25	0	26	0	26	0	26
Freezer inspection man for dairy products company.	0	2	0	0	0	0	0	0



TABLE 21-continued

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Electrician for plumbing company.	0	1	0	80	0	80	0	80
Claims adjuster for insurance company.	0	11	0	132	0	66	0	66
Plant foreman for stone and concrete block company.	0	14	0	0	0	7	0	7
General director of florist and greenhouse business.	1	1	0	0	0	0	0	0
<b>Totals for Agricultural Technical Job Titles</b>	<b>15</b>	<b>115</b>	<b>21</b>	<b>468</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>540</b>
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
General director for nursing home.	0	3	0	0	0	0	0	0
Truck driver and yard worker for small farm building, farm equipment, lumber and coal company.	0	25	0	800	0	1056	0	1056
Bottling machine operator for dairy products company.	0	1	0	0	0	0	0	0
Weighman in livestock sales company.	4	0	43	0	74	0	74	0
Salesman in feed and farm supply store.	2	7	0	12	0	12	0	12
<b>Totals for Agricultural Vocational Job Titles</b>	<b>6</b>	<b>36</b>	<b>43</b>	<b>812</b>	<b>74</b>	<b>1068</b>	<b>74</b>	<b>1068</b>
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL</b>								
<b>JOB TITLES</b>								
	<b>21</b>	<b>161</b>	<b>64</b>	<b>1280</b>	<b>95</b>	<b>1608</b>		

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 3 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Time	Time	Time	Time		
Grader for a livestock cooperative.	2	2	0	0	0	0	0	0
Yardman for stockyard and feeder cattle business.	0	1	0	0	24	0	0	54
Millman for feed mill.	0	11	0	0	21	0	0	27
Meat cutter for supermarket.	0	5	0	0	60	0	0	120
Seed cleaning and inspection foreman for seed company.	0	1	0	0	0	0	0	0
Totals for Agricultural Technical Job Titles	2	20	0	0	105	0	0	201
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Time	Time	Time	Time		
Conservation instructor in 4-H camp.	3	0	8	0	0	16	0	0
Butcher for frozen food locker and meat processing company, including sausage making and boning.	0	14	0	0	160	0	0	160
Warehouse man for feed mill, farm supply fertilizer, and lumber company.	0	2	0	0	14	0	0	14
Salesman for feed mill and farm supply store.	2	7	0	0	12	0	0	12
Totals for Agricultural Vocational Job Titles	5	23	8	0	186	16	16	186
TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES								
	7	43	8	0	291	16	16	387

TABLE 23

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 4 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Director of farm management company.	0	1	0	0	7	0	0	7
Hatchery operator and breed selection man for poultry company.	0	1	0	0	0	0	0	0
<b>Totals for Agricultural Technical Job Titles</b>	0	2	0	0	7	0	0	7
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Exercise boy and groom boy for horse rehabilitation farm and horse hospital.	0	12	0	0	2800	0	0	4000
Foreman for horse rehabilitation farm and horse hospital.	0	1	0	0	0	0	0	0
Contact man for livestock auction company.	0	2	0	0	0	0	0	0
Produce man in supermarket-grocery store.	0	4	0	0	160	0	0	320
Field service worker for health department.	0	8	0	0	0	0	0	0
General worker in farm supply and service company.	3	0	56	0	0	93	0	0
<b>Totals for Agricultural Vocational Job Titles</b>	3	27	56	2960	93	4320		
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES</b>	3	29	56	2967	93	4327		

TABLE 24

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 5 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job Opportunities	
	Part Time	Full Time	3 Years		5 Years	
			Part Time	Full Time	Part Time	Full Time
Custodian for public school system, state park, church, hotel, nursing home, and department store.	8	26	0	198	0	0
<hr/>						
Totals for Agricultural Technical Job Title	8	26	0	198	0	0
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job Opportunities	
	Part Time	Full Time	3 Years		5 Years	
			Part Time	Full Time	Part Time	Full Time
Worker for vegetable producing company.	23	0	50	0	75	0
Worker in wholesale vegetable producing company.	5	0	12	0	24	0
Deliveryman for retail florist shop.	0	1	0	0	0	0
Truck driver for livestock marketing and auction company.	2	0	0	0	0	0
Cook for camp, school, restaurant or nursing home.	6	35	60	66	132	0
Plant process man for poultry processing company.	0	25	0	149	0	198
General director and mill operator for feed and farm supply store.	0	3	0	0	0	0

TABLE 24-continued

Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Truck driver and helper for feed mill, grain elevator, farm implement, fertilizer, and livestock supply store.	2	10	10	26	15	30		
Route salesman for wholesale and retail dairy products, meat, and grocery store.	0	15	0	20	0	25		
Sales clerk and bookkeeper in retail meat store and meat processing company.	4	22	0	10	0	10		
<hr/>								
Totals for Agricultural Vocational Job Titles	42	111	132	271	246	263		
<hr/>								
TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES	50	137	132	469	246	263		

TABLE 25

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 6 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job Opportunities	
	3 Years		5 Years			
	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time
Salesman for farm machinery, automobile and truck equipment sales and service, and feed company.	1	15	0	20	0	25
<b>Total for Agricultural Technical Job Title</b>	1	15	0	20	0	25
<b>Total for Agricultural Vocational Job Title</b>	0	0	0	0	0	0
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES</b>	1	15	0	20	0	25

TABLE 26

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 7 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Salesman for egg, poultry, and poultry processing company.	0	1	0	0	15	0	0	25
<b>Total for Agricultural Technical Job Title</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>25</b>
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Part Time	Full Time	Part Time	Full Time		
Office worker in tobacco warehouse company.	0	7	0	0	0	0	0	0
Truck driver, pick-up man for wholesale-retail egg company.	1	2	16	0	0	16	0	0
<b>Totals for Agricultural Vocational Job Titles</b>	<b>1</b>	<b>9</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES</b>	<b>1</b>	<b>10</b>	<b>16</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>25</b>

TABLE 27

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 8 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Time	Time	Time	Time		
Worker for landscaping and greenhouse business.	1	7	0	0	24	0	0	40
Outside foreman for grain elevator, feed mill, farm supply, and farm machinery sales company.	0	2	0	0	0	0	0	0
<hr/>								
<b>Totals for Agricultural Technical Job Titles</b>								
	1	9	0	0	24	0	0	40
<hr/>								
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job		Opportunities	
	Part Time	Full Time	3 Years		5 Years		Part Time	Full Time
			Time	Time	Time	Time		
Clerk in feed mill and farm supply store.	0	4	0	0	8	0	0	8
General director for fertilizer and limestone company.	0	1	0	0	0	0	0	0
<hr/>								
<b>Totals for Agricultural Vocational Job Titles</b>								
	0	5	0	0	8	0	0	8
<hr/>								
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES</b>								
	1	14	0	0	32	0	0	48



TABLE 28

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 9 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOE TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected 3 Years		Job Opportunities 5 Years	
	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time
Caretaker in show and riding academy, including horse trainer on horse farm.	0	1	0	5	0	5
<b>Totals for Agricultural Technical Job Title</b>	0	1	0	5	0	5
Agricultural Vocational Job Title	Number Currently Employed		Projected 3 Years		Job Opportunities 5 Years	
	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time
Maintenance man in state park.	0	2	0	0	0	0
<b>Totals for Agricultural Vocational Job Title</b>	0	2	0	0	0	0
<b>TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES</b>	0	3	0	5	0	5

TABLE 29

NUMBER OF PROJECTED JOB OPPORTUNITIES FOR JOB TITLE CLUSTER 10 OF IDENTIFIED AGRICULTURAL VOCATIONAL AND TECHNICAL JOB TITLES, IN THE THIRTY-EIGHT COUNTY REGION OF STUDY

Agricultural Technical Job Title	Number Currently Employed		Projected		Job Opportunities	
	Part Time	Full Time	3 Years		5 Years	
			Part Time	Full Time	Part Time	Full Time
Sales manager for hardware, electrical, plumbing, and building supply store.	0	4	0	0	0	0
Carpenter for lumber and farm building construction company.	1	32	15	99	15	191
<hr/>						
Totals for Agricultural Technical Job Titles	1	36	15	99	15	191
<hr/>						
Agricultural Vocational Job Title	Number Currently Employed		Projected		Job Opportunities	
	Part Time	Full Time	3 Years		5 Years	
			Part Time	Full Time	Part Time	Full Time
Shipping manager for hardware, building, plumbing, and electrical supply company.	0	1	0	0	0	0
<hr/>						
Totals for Agricultural Vocational Job Titles	0	1	0	0	0	0
<hr/>						
TOTAL AGRICULTURAL TECHNICAL AND VOCATIONAL JOB TITLES						
	1	37	15	99	15	191



### The Recommendations

Information has been presented concerning:

1. Identification of agriculturally-oriented jobs.
2. Employment opportunities in the jobs identified.
3. How the activities used and knowledges needed by workers cluster together in general courses which may be offered.
4. How the identified job titles cluster together for training.

### Who May Use the Results

The information presented in this report should be of interest to employment service counselors, personnel directors, employee counselors, school counselors, vocational and technical teachers, educational leaders, and laymen who are involved in the research, planning, and carrying-out of training programs at all experience and educational levels.

In a special effort to make the results more meaningful to user groups, the research staff carefully compared each of the agriculturally-oriented job titles identified with job descriptions in the Dictionary of Occupational Titles, Third Edition, 1965. The names and D.O.T. numbers are presented in Appendix K and L for the Dictionary of Occupational Title (s) most nearly corresponding to the job description as obtained by the interviewers. The reader may notice that many of the D.O.T. job-titles fall in the plant and animal science, or mechanics areas, and tend to be based upon worker functions.

### How the Results May be Used

1. The investigators believe the data have been scientifically obtained and systematically analyzed to this stage of curriculum development. The activity and knowledge factors identified tell the investigators what general areas of knowledge the workers need as they perform identified job activities. The identified job-title clusters tell the investigators what kinds of people can be trained together, based upon their responses on the activities and knowledges.

2. It is not practical to have a different curriculum for each different job title identified for which workers should be trained. For example, there are 56 job titles in job-title Cluster 1, listed on pages 3-15 and 3-16. According to the data in Table 20, these 56 job titles represent 2479 full-time job opportunities in the next five years; 347 jobs at the technical level and 2132 jobs at the vocational level. Persons with these job titles may be pursuing varying curriculums, but can be trained together in the

following general courses:

Course 1

Maintaining  
Adjusting  
Repairing  
Operating  
Mixing  
Installing  
Calibrating  
Selecting  
Inspecting, testing, trouble  
shooting

Course 2

Feeds  
Livestock  
Animal nutrition  
Dairy  
Poultry  
Animal diseases

Course 3

Business principles  
Office procedures  
Taxes  
Insurance  
Credit  
Accounting  
Salesmanship

Course 4

Sound and light  
Electronics  
Metallurgy  
Mechanics  
Designing  
Remodeling  
Sketching and drawing  
Hydraulics  
Heat

Course 5

Supervising others  
Handling men(boss)  
Appraising work of others  
Training others  
Inducting new personnel  
Advising, consulting and diagnosing  
Inspecting

Course 6

Architecture  
Carpentry  
Farm buildings  
Sketching and drawing

Course 7

Writing articles, copy, etc.  
Making speeches  
Developing techniques

Course 8

Policy-making  
Planning  
Decision-making  
Handling money  
Promoting  
Buying  
Planning production or service

Course 9

Research procedures  
Conducting research  
Food processing

Course 10

Salesmanship  
Meeting non-farm people  
Meeting farm people  
Estimating costs  
Selling

Course 11

Advanced mathematics  
Physics

Course 12

Insect and pest control  
Plant diseases  
Agricultural chemicals  
Soils  
Crops  
Floriculture  
Soil and water management  
Horticulture

### Course 13

Constructing equipment, tools  
(hand or power) supplies and  
instruments  
Designing  
Making and building  
Assembling  
Floriculture

### Course 14

Shop work  
Farm mechanization  
Farm conveniences  
Tractors and other power units  
Testing  
Agricultural economics  
Electricity

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### Course 15

Filing  
Inventorying  
Rural recreation

Planning production or service  
Keeping records and accounts

3. The study does not provide data which indicate the details needed within the general areas of knowledge. The narrative description obtained by the interviewers on each position interviewed should aid the curriculum planner in understanding how the knowledges are used in the jobs identified, but the curriculum planner must further refine the curriculum, and therefore will need to obtain more detailed information concerning the identified areas of knowledge and worker activities before units of instruction can be planned.

4. The level of need for activities and knowledges by workers in the job-titles indentified should have basic implications for the methodology of training programs. The instructional programs planned for the agricultural vocational jobs in the cluster should be more basic and general in nature than for courses which would train for agricultural-technical jobs in the same cluster. Persons preparing for all those agricultural technical jobs having a high factor loading should have courses which contain those activities and knowledges taught in a way that would be used on the job.

5. The in-school instructional programs at the vocational and technical levels should provide the broad theoretical base for the learning of applied principles and details in an on-the-job experience program as a part of the course of study. These on-the-job experience programs should be conducted at:

- a) The high school level.
- b) The university associate-degree level.
- c) The multi-level area vocational and technical school level.

6. Advisory groups made up of educators and business representatives should evaluate these research findings, and advise the curriculum planner concerning the experience programs.

7. New vocational and technical programs should be designed to train persons to enter and advance in positions they now hold in Appalachia. Vocational agriculture programs at the high school level will need to be

redesigned in order to adequately train people to take entry positions in vocational jobs identified. These specialized courses in agriculture at the high school and post-high school level may be supported by other technical subjects taught in the comprehensive high school and post-high school institutions.

8. Since there is a high mobility of workers, and since the entry job may not be in the same geographical area where the second or third job may be located, there is justification for training for a "family" or cluster of jobs as is being recommended in the curriculum planning approach in this study.

9. This curriculum planning approach should have implications for guidance purposes, in that curriculums will provide basic education for all the job-titles included in a particular cluster or "family" of jobs.

10. New educational and guidance programs must re-orient the prospective employee to the idea that he need not seek employment in a readily identifiable agricultural business to find a job. As the study shows, persons with agricultural knowledge and skills are rather widely marketable in businesses that appear non-agricultural but employ people needing these knowledges and skills.

11. Financial support should be sought for well-planned pilot programs at the university associate-degree level, multi-level area vocational and technical school level, and high school vocational level in order to further refine and evaluate more detailed curriculums.

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APPENDIX A

RANDOM SAMPLE OF TELEPHONE EXCHANGES IN STRATA 1  
 IN 38 COUNTY AREA IN EASTERN KENTUCKY  
 AND SOUTHERN OHIO

<u>Telephone Exchange No. In Sample</u>	<u>Telephone Exchange No. In Strata 1</u>	<u>Prefix</u>	<u>Exchange Name</u>	<u>State</u>
1	58	PR 8	South Webster	Ohio
2	31	738	Sandy Hook	Kentucky
3	04	874	Allen	Kentucky
4	89	795	Aberdeen	Ohio
5	86	386	Seaman	Ohio
6	53	456	Freeburn	Kentucky
7	61	CH 7	Letart Falls	Ohio
8	51	353	Stone	Kentucky
9	64	WI 9	Racine	Ohio
10	65	MO 9	Wilkesville	Ohio
11	57	DR 2	Otway	Ohio
12	25	882	Dover	Kentucky
13	63	583	Leo	Ohio
14	94	245 & CH 5	Rio Grande	Ohio
15	78	876	Felicity	Ohio
16	41	672	Chapman	Kentucky
17	54	NONE	Sadieville	Kentucky
18	28	668	Campton	Kentucky
19	75	379	Hammersville	Ohio
20	76	442	Mowrytown	Ohio
21	56	493	Idaho	Ohio
22	90	643	Arabia	Ohio
23	01	398	Buckhorn	Kentucky

Page 2 continued

<u>Telephone Exchange No. In Sample</u>	<u>Telephone Exchange No. In Strata 1</u>	<u>Prefix</u>	<u>Exchange Name</u>	<u>State</u>
24	47	447	Topmost	Kentucky
25	93	256 or A16	Guyal	Ohio
26	2	295	Canoe	Kentucky
27	73	375	Higginsport	Ohio
28	29	725	Ezel	Kentucky
29	40	686	Fallsburg	Kentucky
30	36	835	Feds creek	Kentucky

RANDOM SAMPLE OF TELEPHONE EXCHANGES IN STRATA 2  
 IN THE 38 COUNTY AREA IN EASTERN KENTUCKY  
 AND SOUTHERN OHIO

Column 647, Row 12  
 Page 193, (Statistical  
 analysis)

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<u>Exchange No. In Sample</u>	<u>Exchange No. in Strata</u>	<u>Prefix</u>	<u>Exchange Name</u>	<u>State</u>
1	46	544	West Union	Ohio
2	15	473	Greenup	Kentucky
3	16	836	Flatwoods	Kentucky
4	4	886	Prestonsburg	Kentucky
5	27	237	South Williamson	Kentucky
6	23	638	Louisa	Kentucky
7	44	444	Mt. Orab	Ohio
8	24	349	Salyersville	Kentucky
9	39	763	Bethel	Ohio
10	26	654	Falmouth	Kentucky
11	22	9	Wheelright	Kentucky
12	25	824	Williamstown	Kentucky
13	18	YE 2	South Shore	Kentucky
14	37	894	Burlington	Ohio
15	41	752 & 794	Tobasco	Ohio

RANDOM SAMPLE OF TELEPHONE EXCHANGES IN STRATA 3  
 IN 38 COUNTY AREA OF EASTERN KENTUCKY  
 AND SOUTHERN OHIO

<u>Telephone Exchange In the Sample</u>	<u>Telephone Exchange In Strate 3</u>	<u>Prefix</u>	<u>Exchange Name</u>	<u>State</u>
1	12	393	Hillsboro	Ohio
2	03	987	Paris	Kentucky
3	14	532	Iron on	Ohio
4	07	EL 4 or EL 3	Portsmouth	Ohio
5	02	234	Cynthiana	Kentucky
6	05	324	Ashland	Kentucky

APPENDIX B

TYPES OF NON-FARM AGRICULTURAL BUSINESSES IN THE  
38 COUNTY REGION OF STUDY IN EASTERN KENTUCKY  
AND SOUTHERN OHIO

Code 1 Column 6 on Card

Yellow Page Headings

Acetylene	Cats-Boarding
Agricultural Implements	Cattle
Animal Boarding	Chicken Hatcheries
Animal Breeders Supplies	Creameries
Animal Dealers - Pets	Dairy Equipment
Animal Food	Dairy Products
Animal Hospitals	Dairy Supplies
Ant Exterminating	Dirt
Acquariums & Supplies	Dog & Cat Hospitals
Architects-Landscape	Dog Kennels
Artificial Insemination Service	Dog Training
Baby Chicks	Dogs - Grooming
Bait	Eggs-Retail
Bird Barriers, Repellents & Controls	Eggs-Wholesale
Bird Proofing	Engines
Birds, Animals, Etc.	Evergreens
Black Earth	Exterminating & Fumigating
Blacksmiths	Farm Equipment
Building Materials	Farm Lands
Buildings-Pre-Cut & Prefabricated	Farm Management Service
Bulbs-Flowering	Farms

Types of Non-Farm Agricultural Businesses, Code 1  
Page 2 -continued

Butcher	Farms Rent or Sale
Butter	Feed Dealers
Camps-Tourist	Feed Water Heaters
Canaries	Fence
Cat Hospitals	Fertilizers
Fishing Bait-Live	Manure
Fishing Lakes	Meat Packers
Florists-Retail	Moth Exterminators
Florists-Wholesale	Milk
Foresters	Nurseries-Grower
Fountains-Garden, Display	Nurserymen
Fuel Oil	Oils-Fuels
Fumigation	Oils-Petroleum
Garden Furnishings	Pest Control Service
Garden Stores	Pet Foods
Garden Tractors	Pet Hospitals
Goat's Milk	Pet Shops
Flour Mills	Petroleum Products
Gold Fish	Ponies
Grass Seeds	Poultry
Grass Sod	Poultry Food
Greenhouses	Produce
Hatcheries	Rat Exterminators
Horse Dealers	Riding Saddles
Horseshoes	Roach Exterminating

Types of Non-Farm Agricultural Businesses , Code 1  
Page 3 continued

Insecticides & Pest Control Products	Sod
Insect Exterminators	Soil
Insemination Service-Artificial	Spraying Equipment
Irrigation Systems & Equipment	Squabs
Kennels	Stables
Landscape Service	Stock Farms
Lawn Construction	Stock Yards
Lime	Termite Control
Livestock Foods	Tobacco Products
Rock Gardens	Tobacco Rehandlers
Sales Stables	Tobacco Warehouses
Sawmills	Top Soil
Seeds & Bulbs-Retail	Tractors
Seeds & Bulbs-Wholesale	Tree Service
Shrubbery	Trees
Silverfish Exterminating	Tropical Fish, Gold Fish
Slaughtering Service	Vermin Exterminating
	Veterinarians



TYPES OF NON-AGRICULTURAL BUSINESSES WITH POSSIBILITIES OF  
HAVING WORKERS USING AGRICULTURAL KNOWLEDGE IN THE  
38 COUNTY REGION OF STUDY IN EASTERN KENTUCKY  
AND SOUTHERN OHIO

Code 2 Column 6 on Card

Yellow Page Headings

Accountants-Certified Public	Aluminum Fabricators
Accountants-Public	Aluminum Welding
Accounting & Bookkeeping Form	Amusement Parks
Accounting & Bookkeeping Systems	Analytical Laboratories
Accounting Machines	Angle Iron
Accounting Schools	Appraisers
Accounting Systems-Pegboard	Arbor Presses
Acids	Archery Equipment & Supplies
Acoustic Instruments	Architects
Acoustical Contractors	Argon
Adjusters	Artesian Well Contractors
Advertising Agencies & Counselors	Ash Removal
Advertising Copy Writers	Asphalt Applying Contractors
Advertising-Directory	Associations
Advertising Specialties	Asylums
Air Compressors	Auctioneers
Air Compressors-Rental	Automobile Filling Stations
Air Conditioning Contractors	Automobile Garages
Air Conditioning Equipment-Cleaning and Repairing	Automobile Graveyards
Air Purifying Equipment	Automobile Repair Service

Workers Using Agricultural Knowledge, Code 2  
Page 2 continued

Alkalies	Automobile Repairing & Service Equipment
Backhoes	Automobile Service Station
Bacteriological Laboratories	Camping Equipment & Supplies
Banks	Camping Trailers
Basement Contractors	Camps-Trailer
Black Top	Camps-Vacation
Boat Harbors	Canoes
Bookkeeping Service	Carpenters
Bottled Gas	Catch Basin Cleaning
Boxes-Paper	Cement Blocks
Brazing Equipment & Supplies	Cement Contractors
Brick-Common, Face, Etc.	Cement Mixes-Dry
Bridges-Builders	Cement-Portland
Brokers	Cemeteries
Builders' Hardware	Certified Public Accountants
Builders-Home	Cheese
Building Maintenance-Cleaning	Chemicals-Manufacturers & Distributors
Building Maintenance-Repairing	Chemists Analytical & Consulting Chlorinators
Building Movers	Churches
Bulldozers	Cinder Blocks
Bulletin & Directory Boards	Cinders
Bureaus	Cisterns
Burial Vaults	City Government Offices
Butchers' Equipment & Supplies	Clubs
Butter Substitutes	Coal Analysis

Workers Using Agricultural Knowledge, Code 2  
Page 3 continued

Butter-Wholesale	Cold Storage
Cabins-Pre-Cut & Prefabricated	Concrete & Cement Contractors
Cafes	Concrete & Cement Spraying Equipment
Cafeterias	Concrete & Cement Spraying Materials
Calcimine	Concrete Construction Materials
Calcimining Contractors	Concrete Forms & Ties
Concrete Precast	Concrete Mixes-Dry
Concrete Ready Mixed	Dump Truck Hauling
Concrete Weatherproofing	Dynamotors
Condiments & Sauces	Electric Contractors
Confectionery-Whol. & Mfrs.	Electric Light & Power Companies
Construction Companies	Electric Motors-Dealers & Repairers
Contractors, Elevators	Electric Welding
Contractors' Equipment & Supplies	Electric Wiring
Contractors-General	Electricians
Convalescent Homes	Engines-Gasoline
Convents	Engines-Diesel
Cooperage	Excavating Contractors
Core Drilling Contractors	Exterminating & Fumigating Supplies
County Offices	Factory Sites
Crawler Track Machines	Federal Government
Cruises	Filling Stations-Automobile
Cylinder Grinding	Films-Motion Pictures
Damp-Proofing Contractors	Firewood
Dead Animal Removers	Fish-Retail
Department Stores	Flour Analysis

Workers Using Agricultural Knowledge, Code 2  
Page 4 continued

Diesel Fuel	Fly Spray
Distilleries	Food Analysts
Ditch Digging Machinery	Food Brokers
Dog & Cat Foods	Food Lockers-Refrigerated
Dog & Cat Furnishings	Food Marts
Dog Houses	Food Products Mfrs.
Drilling Contractors	Food Service Equipment
Driveways	Food Supplements
Druggists-Retail	Foods-Frozen
Druggists' Sundries-Wholesale	Foods-Gourmet
Freezers-Food	Foods Ready to Serve
Freezers Food Locker Service	Foundation Contractors
Frozen Foods	Foundation Soundings
Fruit Juices	Hitches-Trailer
Fruits & Vegetables-Retail	HomeImprovements
Furniture Fumigating	Homes
Garage Builders	Homes-Pre-Cut & Prefabricated
Garages-Pre-Cut- & Prefabricated	Horse Transportation
Garages-Private-Ready Cut	Horse Trailers
Gas-Bottled	Hospitals
Gas Companies	Houses-Pre-Cut & Prefabricated
Gas-Liquified Petroleum	Hunting-Birds, Game, Etc.
Gasoline Filling Stations	Ice Cream
Gasoline-Wholesale	Ice Cream Mixes
General Contractors	Insect Powder
General Stores	Insurance
Golf Courses-Public	

Workers Using Agricultural Knowledge, Code 2  
Page 5 continued

Government-U.S. Offices	Insurance Adjusters
Grading Contractors	Insurance Consultants
Grate Wood	Insurance Inspection
Grocers-Retail	Insurance Surety & Fidelity
Grocers-Wholesale	Insurance Title
Hangars-Steel	Kerosene
Hardware-Retail	Kindling
Hardware-Whol.& Mfrs.	Laboratories-Analytical
Hardwoods	Laboratories-Biological
Harness & Saddlery	Lawn Furniture
Headstones	Lawn Mowers
Hitches	Lawn Movers-Sharpening & Repairing
Lunch Rooms	Leather Goods-Whol.& Mfrs.
Lumber-Wholesale	Light and Power Companies
Mail-order House	Lightning Rods
Mason Contractors	Loans
Meat Dealers-Retail	Loans-Real Estate
Meat Dealers-Wholesale	Lumber-Retail
Meat-Frozen	Pharmacists
Meat Saws	Pigeon Proofing
Memorial Parks	Pipe
Metal Buildings	Pipe-Sewer
Milk Analysis	Plumbers
Mixes-Ice Cream	Plumbing Contractors
Motels	Portable Buildings
Mortgages	Potato Chips

Workers Using Agricultural Knowledge , Code 2  
Page 6 continued

Motor Courts	Poultry-Frozen
Mowers-Lawn	Pre-Cut Buildings
Notaries	Precast Concrete
Nursing Homes	Prefabricated Buildings
Oil	Prescription Laboratories
Oil Analysis	Process Piping
Oil Distributors	Property Management
Oil Exploration	Proprietary Medicines
Oiling-Road	Public Accountants
Oil Well Drilling	Race Tracks
Oleomargarine	Railroads
Paint	Rat Poison
Paint Spraying	Ready Cut Buildings
Paints-Retail-Whol.& Mfrs .	Real Estate
Paper Mfrs .	Real Estate Appraisers
Paper Products	Real Estate Auctioneers
Pest Control Service	Real Estate Loans
Pet Show Supplies	Real Estate Management
Road Material	Real Estate Records
Rubbish Removal	Refuse Removal
Rust Preventives	Restaurants
Saddlery	Rest Homes
Saddles	Retirement Systems
Salv	Retreading & Recapping-Tires
Sand & Gravel	Riding Academies
Sanitariums	Roach Powder

Workers Using Agricultural Knowledge  
Page 7 continued

Sausages

Service Stations-Automobile

Sewer Construction Contractors

Sheds

Shopping Centers

Shrimp

Sightseeing Trips

Spumoni

State Offices

Steel Buildings

Steps-Concrete

Stone-Crushed

Stone-Natural

Stone-Cut

Survey Stakes

Surveyors

Sweepers-Electric

Swimming Pools-Private

Swimming Pools-Public

Tax Matters

Tax Return Preparation

Telegraph Companies

Telegraph Flower Delivery Services

Test Borings

Road Builders

Road Oiling

Testing Laboratories

Tires-Dealers

Tires-Repairing-Recapping

Title Companies

Tourists' Agencies

Tours

Travel Bureaus

Truck Dealers

Trucking

Trust Companies

United States Government

Variety & Sundries Stores

Vegetable Stores

Vegetables-Fresh-Frozen

Water Analysis

Water Dealers

Water Companies

Water Hauling

Water Heaters

Water Supply Systems

Welding

Welding Equipment & Supplies

Well Contractors

Well Drilling

Workers Using Agricultural Knowledge  
Page 8

Wheelwrights

Wood Dealers

Wood Work

Yard Goods



APPENDIX C

Interviewer Identification Code 1-D 2-4TE 5-PS 6-TB 7-AC 8-10F

Date \_\_\_\_\_

EMPLOYMENT OPPORTUNITIES AND AGRICULTURAL COMPETENCIES STUDY  
STAFF STUDY IN AGRICULTURAL TECHNOLOGY  
Morehead State College

FORM 1

I Name of Company of Firm \_\_\_\_\_

II Address of Firm \_\_\_\_\_

Name of Person Contacted \_\_\_\_\_ Tele. \_\_\_\_\_

III-IV Position in Company of Person Interviewed 1. Owner 2. Owner- Manager  
3. Manager-hired 4. Personnel director 5. Sales Manager 6. Office  
Manager 7. Other (specify) \_\_\_\_\_

V Functions of Company

- \_\_\_\_\_ 12 Manufacturing
- \_\_\_\_\_ 13 Purchasing
- \_\_\_\_\_ 14 Service
- \_\_\_\_\_ 15 Constructing
- \_\_\_\_\_ 16 Retailing
- \_\_\_\_\_ 17 Warehouse
- \_\_\_\_\_ 18 Processing
- \_\_\_\_\_ 19 Wholesaling
- \_\_\_\_\_ 20 Contractor
- \_\_\_\_\_ 21 Other (specify) \_\_\_\_\_

VII Type of Business

- \_\_\_ \_ 22-24 Percentage of business agricultural oriented
- \_\_\_ \_ 25-27 Percentage of business non-agricultural

VI Products, Services or Functions of Company

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- VIII
- \_\_\_ \_ 28-30 Total number of workers (owners and employees)



IX Present and Anticipated job titles, and number of workers in each.

			Number Normally Employed Last Calendar Year		Number of New Workers Likely To Be Employed In:			
			Full Time	Part Time	Next 3 Year Period		Next 5 Year Period (1970)	
31-34	35-37	Job	38-40	41-43	Full Time	Part Time	Full Time	Part Time
JT	Code	Title			44-46	47-49	50-52	53-55
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Identification Code

1-D 2-4TE 5-PS 6-TB 7-AC 8-10F 11-14JT 15-17BJT

\_\_\_\_ Interviewer

EMPLOYMENT OPPORTUNITIES AND AGRICULTURAL COMPETENCIES STUDY  
STAFF STUDY IN AGRICULTURAL TECHNOLOGY  
Morehead State College

Form 2

I Name and Address of Firm \_\_\_\_\_  
\_\_\_\_\_

II Job Title \_\_\_\_\_

III Alternative Titles \_\_\_\_\_

IV Source and Location of Job in Company Dept., etc. \_\_\_\_\_

\_\_\_\_ 18-19 V \_\_\_\_\_  
\_\_\_\_ 20-21 VI Number of Workers with title

VII Activities and Duties of Persons with this Job Title

VIIA Working with People Outside Firm

- \_\_\_\_ 22 Meeting Farm people
- \_\_\_\_ 23 Meeting non-farm people
- \_\_\_\_ 24 Selling
- \_\_\_\_ 25 Advising, consulting and diagnosing
- \_\_\_\_ 26 Estimating costs
- \_\_\_\_ 27 Buying
- \_\_\_\_ 28 Other (specify) \_\_\_\_\_

Clarification Comments  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

VIIIB Working with Personnel in Firm

- \_\_\_\_ 29 Handling men (boss)
- \_\_\_\_ 30 Inducting new personnel
- \_\_\_\_ 31 Training others
- \_\_\_\_ 32 Appraising work of others
- \_\_\_\_ 33 Supervising others
- \_\_\_\_ 34 Other (specify) \_\_\_\_\_

VIIC Working with Production, Products, Materials, or Service

- \_\_\_\_ 35 Designing
- \_\_\_\_ 36 Making and building
- \_\_\_\_ 37 Sketching and drawing
- \_\_\_\_ 38 Mixing
- \_\_\_\_ 39 Assembling
- \_\_\_\_ 40 Inspecting
- \_\_\_\_ 41 Testing
- \_\_\_\_ 42 Calculating costs
- \_\_\_\_ 43 Conducting research
- \_\_\_\_ 44 Using technical and service manuals, parts lists
- \_\_\_\_ 45 Developing techniques
- \_\_\_\_ 46 Planning production or service
- \_\_\_\_ 47 Other (specify)

Clarification Comments  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

VIID Working with Firm's or Customers; Equipment, Tools (hand or power) Supplies and Instruments

- 48 Constructing above
49 Designing
50 Repairing
51 Operating
52 Assembling
53 Calibrating
54 Remodeling
55 Adjusting
56 Maintaining
57 Inspecting, Testing, Trouble Shooting
58 Installing
59 Selecting
60 Other (specify)

Clarification Comments

Blank lines for clarification comments under VIID.

VIIE Working with Business Problems

- 61 Policy-making
62 Planning
63 Promoting
64 Handling money
65 Keeping records and accounts
66 Writing articles, copy, etc.
67 Making speeches
68 Filing
69 Inventorying
70 Making tech. reports
71 Reading tech. reports
72 Decision making
73 Other (specify)

Clarification Comments

Blank lines for clarification comments under VIIE.

DECK 3:

VIII Areas with which Worker MUST Be Familiar to do Job

- 18 Soils
19 Soil and water management
20 Crops
21 Horticulture
22 Floriculture
23 Livestock
24 Poultry
25 Dairy
26 Feeds
27 Animal nutrition
28 Animal diseases
29 Plant diseases
30 Tractors and other power units
31 Electricity
32 Farm mechanization
33 Shop work
34 Carpentry
35 Farm buildings
36 Farm conveniences
37 Agricultural Economics
38 General Agriculture and rural life knowledge
39 Agricultural chemicals
40 Insect and pest control
41 Forestry
42 Food processing
43 Rural recreation
44 Credit
45 Insurance
46 Taxes
47 Accounting
48 Business principles
49 Office procedures
50 Salesmanship

- 51 Chemistry
52 Physics
53 Advanced Mathematics
54 Foreign Language
55 Research procedures
56 Electronics
57 Mechanics
58 Sound and light
59 Hydraulics
60 Metallurgy
61 Heat
62 Architecture
63 Other (specify)



FORM 2

5-PS 6-TB 7-AC 8-10F 11-14JT 15-17BJT

Clarification Comments

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DECK 4:

IX Prerequisites of Job

- \_\_\_\_ 18 Work experience required
- \_\_\_\_ 19 Prior to acceptance of job
- \_\_\_\_ 20 On-Job-Training

Clarification Comments

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- \_\_\_\_ 21 Are there specific policy limitations on ages for employment? If so, what:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- \_\_\_\_ 22 Education - minimum formal schooling required

- 1. Less than 4 years
- 2. Less than 8 years
- 3. Less than 12 years
- 4. High school graduate
- 5. Less than 16 years
- 6. College graduate or more

X Employment Opportunities

- \_\_\_ 23-25 Total number of different persons with this job title employed in the past five years
- \_\_\_ 26-27 Anticipated additional persons with job-title needed in the next 3 year (1968) period due to growth and turnover.
- \_\_\_ 28-29 Anticipated additional persons with job-title needed in five years (1970) due to growth and turnover. (Includes those in 26-27 above).
- \_\_\_ 30-32 Percentage of employees with this job-title obtained nearby (within 25 miles).
- \_\_\_ 33-35 Percentages of employees with this job-title obtained from a distance (beyond 25 miles).

Clarification Comments

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



FORM 3

\_\_\_\_\_ Interviewer

Code 1-D 2-4TE 5-PS 6-TB 7-AC 8-10F 11-14JT 15-17BJT

XI SUMMARY DESCRIPTION OF JOB

Job Title \_\_\_\_\_

Description of activities and duties:

Description of level of job, interesting characteristics, and miscellaneous comments:

\_\_\_\_\_ 36 Is this a technician level job: Explain why, if not explained above.

\_\_\_\_\_ 37 Is this an agricultural oriented job: Explain why, if not explained above.

THE 92 ACTIVITY AND KNOWLEDGE VARIABLES  
ON WHICH DATA WERE GATHERED

STAFF STUDY IN AGRICULTURE TECHNOLOGY

MOREHEAD STATE UNIVERSITY  
MOREHEAD, KENTUCKY

Working with People Outside Firm

- 1 Meeting farm people
- 2 Meeting non-farm people
- 3 Selling
- 4 Advising, consulting and diagnosing
- 5 Estimating costs
- 6 Buying

Working with Personnel in Firm

- 7 Handling men (boss)
- 8 Inducting new personnel
- 9 Training others
- 10 Appraising work of others
- 11 Supervising others

Working with Production, Products, Materials or Service

- 12 Designing
- 13 Making and building
- 14 Sketching and drawing
- 15 Mixing
- 16 Assembling
- 17 Inspecting
- 18 Testing
- 19 Calculating costs
- 20 Conducting research
- 21 Using technical and service manuals, parts lists
- 22 Developing techniques
- 23 Planning production or service

Working with Firm's or Customers; Equipment, Tools (hand or power) Supplies and Instruments

- 24 Constructing above
- 25 Designing
- 26 Repairing
- 27 Operating
- 28 Assembling
- 29 Calibrating
- 30 Remodeling
- 31 Adjusting
- 32 Maintaining
- 33 Inspecting, Testing, Trouble Shooting
- 34 Installing
- 35 Selecting

Working with Business Problems

- 36 Policy-making
- 37 Planning
- 38 Promoting
- 39 Handling money
- 40 Keeping records and accounts
- 41 Writing articles, copy, etc.
- 42 Making speeches
- 43 Filing
- 44 Inventorying
- 45 Making tech. reports
- 46 Reading Tech. reports
- 47 Decision making

THE 92 ACTIVITY AND KNOWLEDGE VARIABLES  
ON WHICH DATA WERE GATHERED- continued

STAFF STUDY IN AGRICULTURE TECHNOLOGY

MOREHEAD STATE UNIVERSITY  
MOREHEAD, KENTUCKY

Areas with Which Worker MUST Be Familiar to Do Job

<u>48</u>	Soils	<u>71</u>	Forestry
<u>49</u>	Soil and water management	<u>72</u>	Food processing
<u>50</u>	Crops	<u>73</u>	Rural recreation
<u>51</u>	Horticulture	<u>74</u>	Credit
<u>52</u>	Floriculture	<u>75</u>	Insurance
<u>53</u>	Livestock	<u>76</u>	Taxes
<u>54</u>	Poultry	<u>77</u>	Accounting
<u>55</u>	Dairy	<u>78</u>	Business principles
<u>56</u>	Feeds	<u>79</u>	Office procedures
<u>57</u>	Animal nutrition	<u>80</u>	Salesmanship
<u>58</u>	Animal diseases	<u>81</u>	Chemistry
<u>59</u>	Plant diseases	<u>82</u>	Physics
<u>60</u>	Tractors and other power units	<u>83</u>	Advanced Mathematics
<u>61</u>	Electricity	<u>84</u>	Foreign Language
<u>62</u>	Farm mechanization	<u>85</u>	Research procedures
<u>63</u>	Shop work	<u>86</u>	Electronics
<u>64</u>	Carpentry	<u>87</u>	Mechanics
<u>65</u>	Farm Buildings	<u>88</u>	Sound and Light
<u>66</u>	Farm Conveniences	<u>89</u>	Hydraulics
<u>67</u>	Agricultural Economics	<u>90</u>	Metallurgy
<u>68</u>	General Agriculture and rural life knowledge	<u>91</u>	Heat
<u>69</u>	Agricultural chemicals	<u>92</u>	Architecture
<u>70</u>	Insect and pest control		



APPENDIX D

CODING INSTRUCTIONS

Staff Study in Agricultural Technology  
Morehead State University

<u>Column Number for DECKS 1; 2; 3; 4:</u>	<u>Description</u>	<u>Code</u>
1	Deck Number	<ol style="list-style-type: none"> <li>1. Form 1</li> <li>2. Form 2 (worker activities)</li> <li>3. Form 2 (worker knowledge)</li> <li>4. Form 2 &amp; 3 worker employment opportunities and skill level)</li> </ol>
2-3-4:	Telephone Exchange	Number of telephone exchanges in the sample of exchanges.
5	Population Stratum	<ol style="list-style-type: none"> <li>1. Exchange with largest town 1,000 or less people.</li> <li>2. Exchange with largest town 1,000-5,000 people.</li> <li>3. Exchange with largest town over 5,000 people.</li> </ol>
6	Type of Business	<ol style="list-style-type: none"> <li>1. Off-farm agricultural business</li> <li>2. Non-agricultural business with possibilities for agriculturally oriented jobs.</li> </ol>
7	Agricultural-Business Category:	<ol style="list-style-type: none"> <li>1. Horticulture</li> <li>2. Livestock</li> <li>3. Crops and Soils</li> <li>4. Agricultural Education</li> <li>5. Agricultural Economics</li> <li>6. Agricultural Engineering</li> <li>7. Poultry</li> </ol>

<u>Column Number</u>	<u>Description</u>	<u>Code</u>
8 - 9 - 10	Firm Number	Actual firm number in the final random sample of businesses
<u>DECK 2 :</u>		
1 - 10	Job Identification	Same as for DECK 1
11 - 12	Job Title Code	Code actual number from coding sheet
13 - 14	Business Code	Code actual number from coding sheet
15 - 17	Best Job Title	Code actual number from coding list of new titles (See Appendix E)
18 - 19	Blank	
21 - 21	Number of workers with title	Code actual number
22 - 73	Activities and duties of persons with this job title	<u>Code each column:</u> 0=does not perform the activity 1=performs the activity "some", "little" 2=performs the activity "much", "often".
<u>DECK 3:</u>		
1 - 17	Job Identification	Same as for DECKS 2 and 3
18 - 63	Areas of knowledge with which worker must be familiar to do job.	<u>Code each column:</u> 0=does not use the knowledge in his job 1=Uses the knowledge "some" or "little" in job 2=Uses knowledge "much" or "often" in his job.
<u>DECK 4:</u>		
1 - 17	Job Identification	Same as for DECKS 2 and 3

<u>Column Number</u>	<u>Description</u>	<u>Code</u>
18	<u>Pre-requisites of Job: Work experience required.</u>	0=none required 1=required
19	Work experience required prior to acceptance of job.	0=No 1=Yes
20	On-job training required.	0=NO 1=Yes
21	Specific policy on limitations on ages for employment.	0=No 1=Yes
22	Education-minimum formal schooling required.	1=Less than 4 yrs. 2=Less than 8 yrs. 3= Less than 12 yrs. 4=High School graduate 5=Less than 16 yrs. 6=College Graduate or more
23 - 25	Total number of different persons with this job.	Code Actual Number
26- 27	Anticipated additional persons with job title needed in next three years. (1968) due to <u>growth and turnover</u> .	Code actual number
28 -29	Number of additional persons with job title needed in next five yrs. (1970) due to <u>growth and turnover</u> . Includes those in 26-27 above.	Code actual number
30 -32	Percentage of employees with this job title obtained nearby (within 25 miles).	Code actual percentage
33 - 35	Percentage of employess with this job title obtained from a distance (beyond 25 miles).	Code actual percentage
36	Technician level job.	0=No 1=Yes
37	Agriculturally Oriented Job.	0=No 1=Yes

CODING INFORMATION FOR COLUMNS 11-12

JOB

01 Adjuster	44 Nurseryman
02 Advertising manager	45 Office manager
03 Agent	46 Operator
04 Agronomist	47 Order clerk
05 Applier	48 Owner
06 Assistant	49 Owner-manager
07 Baker	50 Packer
08 Biological aide	51 Parts man
09 Boiler repairman	52 Plant breeder
10 Broker	53 Plant manager - Production manager
11 Butcher	54 Plumber
12 Buyer	55 Purchasing agent
13 Candler	56 Poultry dresser
14 Caretaker	57 Quality control supervisor
15 Carpenter	58 Repairman
16 Clerk	59 Salesman
17 Custodian	60 Sales manager
18 Demonstrator	61 Sales research
19 Designer	62 Secretary - Bookkeeper
20 Director	63 Seed cleaner
21 Distributor	64 Seed grader
22 Draftsman	65 Seed processor
23 Elevator man	66 Serviceman
24 Electrician	67 Service supervisor
25 Engineer	68 Set-up-man
26 Farm credit adviser	69 Sheet metal fabricator
27 Field Agent	70 Shop foreman
28 Field director	71 Superintendent
29 Fieldman	72 Supervisor
30 Fire chief	73 Trainer
31 Foreman	74 Truck driver
32 Inseminator	75 Welder
33 Lab technician	76 Worker
34 Line man	77 Yard manager
35 Machinist	78 Professional
36 Maintenance helper	79 Cook
38 Mechanic	80 Instructor - teacher
39 Metal works man	81 Livestock grader - selector
40 Manager hired	82 Chasier
41 Mill foreman	83 Surveyor
42 Millman	84 Weighman-Selector
43 Mill manager	85 Collector agents
86 Ranger - Parks - Forests	

CODING INFORMATION FOR COLUMNS 13-14

BUSINESSES

- 01 Aerial Spraying Company
- 02 Agriculture Market Service, USDA
- 03 Artificial Insemination
- 04 Auto Repair Company
- 05 Cement Company, Manufacturing and Sales
- 06 Chemical Company
- 07 Cob Company
- 08 Corn Products Company
- 09 Crushed Stone Company
- 10 Dairy Sales Company
- 11 Egg Company
- 12 Electrical Appliance Company
- 13 Electronic Repair Company
- 14 Elevator Company
- 15 Excavating Company
- 16 Engineering Company
- 17 Farm Machinery Repair Company
- 18 Finance Company
- 19 Hatchery
- 20 Feed Mill and Feed Company
- 21 Feed Manufacturing Company (Wholesale)
- 22 Fertilizer Applicator Company
- 23 Farm Supply Company
- 24 Fertilizer Company
- 25 Florists Company
- 26 Fire Department
- 27 Gladiolus Co-op
- 28 Fuel Distributing (Service Station or Wholesale)
- 29 Greenhouse
- 30 Grocery Company
- 31 Hardware Company
- 32 Highway Division
- 33 Implement Company
- 34 Insurance Company
- 35 Investment Company
- 36 Landscaping and Tree Service Company
- 37 Legal Company
- 38 Light Company
- 39 Linotype
- 40 Livestock Commission Company - Market Sales
- 41 Locker Company
- 42 Lumber Company
- 43 Machine Shop
- 44 Metal Works Company (Sheet-metal)
- 45 Newspaper
- 46 Packing Company
- 47 Painting Contractor
- 48 Pest Control Company
- 49 Plumbing Company
- 50 Printing Company

CCODING INFORMATION FOR COLUMNS 13-14 continued

- 51 Poultry Company
- 52 Produce Company (green vegetable, etc.)
- 53 Purchasing Agent
- 54 Railroad Company
- 55 Ready-Mix Concrete Company
- 56 Real Estate Company
- 57 Restaurant
- 58 Riding Stables
- 59 Road Construction
- 60 Roofing and Siding Company
- 61 School
- 62 Seed Company
- 63 Silo Manufacturing Company
- 64 Soil Testing
- 65 Sod Company
- 66 Telephone Company
- 67 Tool Company
- 68 Trucking Company
- 69 Vegetable Producing Company
- 70 Paper Products Company
- 71 Veterinarian Service
- 72 Water Works Company
- 73 Welding Company
- 74 Construction Company
- 75 Government Offices
- 76 Building Supplies
- 77 Auto dealers
- 78 Recreation
- 79 Variety Store - general
- 80 Tire Service
- 81 Fruit market
- 82 Sporting Goods & Bait
- 83 Nursing Home
- 84 Hotel and Motel
- 85 Church
- 86 Meat Markets
- 87 Horse Farm
- 88 Laundry and Cleaning
- 89 Warehouse
- 90 Managerial Companies
- 91 Clothing Store
- 92 Supermarket
- 93 Drug Company Store
- 94 Appliance Store
- 95 Auto Parts and Accessories
- 96 Bank
- 97 Electric Light and Power Company
- 98 Department Store
- 99 Club - social, service, lodges, etc.

Summary of Descriptive Job Titles  
for the study  
entitled

EMPLOYMENT OPPORTUNITIES AND USABLE AGRICULTURAL SKILLS IN  
NON-FARM AGRICULTURAL OCCUPATIONS IN APPALACHA

Staff Study in Agricultural Technology  
Morehead State University  
Morehead, Kentucky

The job titles were first recorded as given to the interviewers. These job titles constitute a list of some 736 titles. The following list of "descriptive" job titles was compiled on the basis of the job description summations for each job as written by the interviewers.

In preparing this summary, the "descriptive" job titles were first divided into the following nine categories:

- I. Agricultural machinery and construction jobs
- II. Feed mill and elevator jobs
- III. General agricultural sales and service jobs
- IV. Horticultural jobs
- V. Livestock marketing jobs
- VI. Poultry marketing and service jobs
- VII. Seed and fertilizer jobs
- VIII. Miscellaneous agricultural jobs
- IX. Non-agricultural jobs

Within each type of job category, the titles were then subclassified according to the following kinds of jobs:

- A. Directors of development, production, control and sales
- B. Machine and equipment operators
- C. Inspection, Testing, and Construction-Mechanics and repair man
- D. Salesmen
- E. Secretaries and clerks
- F. Supervisors
- G. Miscellaneous

The Summary

I. Agricultural Machinery and Construction Jobs

A. Directors

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Titles</u>
1	001	General Director and large farm building construction, farm equipment, sales, and lumber company.
2	003	General Director of farm equipment repair and manufacturing company.
3	004	General Director of small farm building, farm equipment, and lumber company.
4	006	General Director of garage and farm equipment repair company.
5	007	General Director of excavation company for farm construction.
6	012	General Director of farm machinery and equipment sales and service co., including automobile and truck sales and service.
7	014	Director of Aluminum siding company.
8	015	Director of building and road construction company.

B. Machine and Equipment Operators

9	021	Truck driver and yard worker for small farm building farm equipment, lumber, and coal company.
---	-----	--

C. Inspection, Testing, and Construction-Mechanics and Repairmen

10	027	Carpenter for lumber and farm building construction company.
11	033	Head mechanic and salesman for farm, machinery, and equipment company



<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
12	034	Mechanic for farm machinery, farm equipment, automobile, and truck company.
13	035	Mechanic for automobile, tractor, and power unit repair company.
14	036	Welder for machine and welding company including farm equipment repair.
D. <u>Salesmen</u>		
15	043	Salesman for farm silo construction, lumber, and farm building company.
16	044	Salesman for farm machinery, automobile and truck, equipment sales and service, and feed company.
17	045	Parts salesman for farm machinery, automobile, and truck sales company.
E. <u>Secretaries and Clerks</u>		
18	052	Clerk and bookkeeper for small farm building, farm equipment, and lumber company.
19	053	Clerk for road construction.
F. <u>Supervisors</u>		
20	058	Shop foreman for farm building construction, farm equipment, lumber and coal company.
21	059	Yard supervisor for small farm building, farm equipment, and lumber company.
22	060	Service supervisor for farm machinery company.
23	062	Shop foreman for farm machinery sales and service company.
24	063	Mill foreman for large farm building and lumber company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
25	064	Office manager for farm machinery sales and service company.
<b>II. Feed Mill and Elevator Jobs</b>		
<b>A. <u>Directors</u></b>		
26	081	General Director of feed and livestock supply company.
27	083	General Director of feed mill, farm supply store, and farm machinery sales and service.
28	084	General Director of grain elevator, and farm supply store.
29	086	General Director and mill operator for feed and farm supply store.
30	087	General Director for feed and coal distribution company.
<b>B. <u>Machine and Equipment Operators</u></b>		
31	092	Millman for feed mill.
32	095	Truck driver and helper for feed mill, grain elevator, farm implement, fertilizer, and livestock supply store.
<b>C. <u>Inspection, Testing, and Construction-Mechanics and Repairmen</u></b>		
33	101	Maintenance man for feed mill and grain elevator.
34	102	Mechanic for feed mill and farm and dairy supply company.
35	103	Seed Cleaning and inspection foreman for seed company.
<b>D. <u>Salesmen</u></b>		
36	109	Salesman for feed mill and farm supply store.
<b>E. <u>Secretaries and Clerks</u></b>		
37	114	Clerk in feed mill and farm supply store.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
<b>F. <u>Supervisors</u></b>		
38	120	Outside foreman for grain elevator, feedmill, farm supply, and farm machinery sales company.
<b>G. <u>Miscellaneous</u></b>		
39	127	Warehouse man for feed mill, farm supply, fertilizer, and lumber company.
<b>III. General Agricultural Sales and Service Jobs</b>		
<b>A. <u>Directors</u></b>		
40	137	Director of general farm supply and service company.
41	141	General Director of distributing company for farm fuels, petroleum products, tires and batteries.
42	146	General Director of hardware store, and feed mill.
43	147	General Director and manager of tobacco warehouse company.
44	148	General manager for coal, fuel, limestone, and ceptic tank installation company.
45	149	General manager real estate company.
<b>B. <u>Machine and Equipment Operators</u></b>		
46	154	Truck driver for distributor of farm fuel, petroleum, limestone, ceptic tanks, tires, and batteries.
<b>D. <u>Salesmen</u></b>		
47	169	Farm salesman and deliveryman for farms petroleum products and chemicals company.
48	170	Salesman in feed and farm supply store.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
<b>E. <u>Secretaries and Clerks</u></b>		
49	180	Office worker in tobacco warehouse company.
50	181	Secretary in real estate office.
<b>F. <u>Supervisors</u></b>		
51	186	Foreman in tobacco warehouse company.
<b>G. <u>Miscellaneous</u></b>		
52	195	General worker in farm supply and service company.
53	196	Weighman and general worker in tobacco warehouse company.
<b>IV. <u>Horticultural Jobs</u></b>		
<b>A. <u>Directors</u></b>		
54	206	General Director of vegetable producing company.
55	207	General Director of wholesale vegetable produce and sales company.
56	208	General Director of retail florist shop.
57	209	General Director of landscaping, florist, and greenhouse business.
58	210	General Director of florist and greenhouse business.
<b>B. <u>Salesman</u></b>		
59	237	Clerk and bookkeeper for nursery and florist shop.
<b>F. <u>Miscellaneous</u></b>		
60	263	Floral designer.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
61	264	Deliveryman for retail florist shop.
62	265	Worker in wholesale vegetable produce company.
63	266	Worker for vegetable producing company.
64	267	Worker for landscaping and greenhouse business.
<b>V. Livestock Marketing Jobs</b>		
<b>A. <u>Directors</u></b>		
65	276	Office director or branch manager for wholesale and retail dairy products, meat, and grocery company.
66	278	General Director for livestock marketing cooperative.
67	279	General Director of livestock auction company.
68	282	General Director and distributor for wholesale and retail dairy products, meat, and grocery company.
69	283	General Director of ice-cream and dairy products company.
70	284	Office director of livestock marketing cooperative.
<b>P. <u>Machine and Equipment Operators</u></b>		
71	291	Truck driver for livestock marketing and auction company.
72	292	Truck driver for dairy products, meat, and grocery company.
73	293	Bottling machine operator for dairy products company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
<b>C. <u>Inspection, Testing and Construction-Mechanics and repairmen</u></b>		
74	301	Freezer inspection man for dairy products company.
75	302	General maintenance man for wholesale and retail meat and grocery company.
<b>D. <u>Salesmen</u></b>		
76	311	Route salesman for wholesale and retail dairy products, meats, and grocery company.
77	312	Waitress of Ice-cream and dairy bar.
<b>E. <u>Secretaries and Clerks</u></b>		
78	321	Sales clerk for dairy products company.
79	322	Bookkeeper in livestock sales company.
<b>F. <u>Supervisors</u></b>		
80	329	Salesman-supervisor of dairy products, meat, and grocery company.
<b>G. <u>Miscellaneous</u></b>		
81	342	Contact man for livestock auction company.
82	343	Yardman for stockyard and feeder cattle business.
83	344	Grader for livestock cooperative.
84	345	Weighman in livestock sales company.

## VI. Poultry Marketing and Service Jobs

### A. Directors

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
85	359	General Director for egg buying, grading, and wholesale and retail company.
<b>B. <u>Machine and Equipment Operators</u></b>		
86	366	Plant process man for poultry processing company.
<b>C. <u>Salesmen</u></b>		
87	380	Salesman for egg, poultry, and poultry processing company.
<b>E. <u>Secretaries and Clerks</u></b>		
88	<del>407</del> 396	Secretary and clerk for egg, poultry, and poultry processing company.
<b>F. <u>Miscellaneous</u></b>		
89	407	Hatchery operator and breed selection man-poultry company.
90	408	Candler for egg company.
91	409	Packer for egg company.
92	410	Truck driver and pick-up man for wholesale and retail egg company.
93	411	General worker in egg and poultry processing company.
<b>VII. Seed and Fertilizer Jobs</b>		
<b>A. <u>Directors</u></b>		
94	423	General Director for fertilizer and limestone company.
<b>VIII. Miscellaneous Agricultural Jobs</b>		
<b>A. <u>Directors</u></b>		
95	511	General Director of fuel distribution and service company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
96	512	General Director for Insurance Company.
97	513	General Director of hardware, electrical and building supply, paint, and wallpaper company.
98	514	General Director of restaurant and liquors store.
99	516	General Director of pest control company.
100	517	Service Director of pest control company.
101	519	General Director of show and riding academy, horse farm, and hospital.
102	521	General Director of rural grocery and variety store.
103	522	General Director of rural grocery store.
104	523	General Director of slaughter and meat processing company.
105	524	General Director of food locker company.
106	526	General Director of farm painting company.
107	527	General Director roofing and sheet metal company.
108	528	General Director of service station, tractor and truck repair shop.
109	530	Director, farm management company.
110	531	Director of 4-H camp.
111	532	Director of live bait store.
112	533	Director retail meat and grocery store.



<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
113	534	Director of restaurant and bus depot.
114	535	Director of service station, oil, and gas drilling company.
115	536	Sales manager for hardware, electrical, plumbing, and building supply store.
116	537	General Director of washing machine sales and service company.
117	538	Owner and manager of bar.
118	539	General manager of public utilities and fuel distribution company.
119	540	General Director of state police district station.
<b>B. <u>Machine and Equipment Operators</u></b>		
120	562	Mechanic in washing machine sales and service company.
121	563	Service man and mechanic in hardware store.
122	564	Maintenance man in state park.
<b>C. <u>Inspection, Testing and Construction Mechanics and Repairman</u></b>		
123	581	Station attendant and automobile and truck tractor repairman.
124	584	Shipping manager for hardware, building, plumbing, and electrical supply company.
<b>D. <u>Salesmen</u></b>		
125	596	Life insurance agent.
126	597	Salesman in pest control company.
127	598	Salesman in live bait store.
128	599	Salesman in hardware, building, plumbing, and electrical supply company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
129	600	Salesman in washing machine sales and service company.
130	601	Sales manager for insurance company.
131	602	Sales manager for painting and decorating company.
<b>E. <u>Secretaries and Clerks</u></b>		
132	611	Clerk in electrical, building-supply, hardware-supply, paint, and wallpaper company.
133	612	Clerk for grocery and variety store.
134	613	Sales clerk and bookkeeper in retail meat store and meat processing company.
135	614	Clerk in feedmill.
136	615	Secretary for service station, gas and oil drilling company.
137	616	Cashier in grocery store and bank.
<b>F. <u>Supervisors</u></b>		
138	623	Job supervisor for painting and decorating company.
139	624	Produce and meats manager in grocery supermarket.
<b>G. <u>Miscellaneous</u></b>		
140	631	Route serviceman for pest control company.
141	632	Meat cutter for supermarket.
142	633	Butcher for frozen food locker and meat processing company, including sausage making and boning.
143	634	Caretaker in show and riding academy, including horse trainer on horse farm.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
144	636	Claims adjuster for insurance company.
145	637	Foreman for horse rehabilitation farm and horse hospital.
146	638	Attendant-service station, oil and gas drilling, and bulk plant company.
147	639	Conservation instructor in 4-H camp.
148	640	Crew foreman in pest control company.
149	641	Exercise boy and groomboy for horse rehabilitation farm and horse hospital.
150	642	Laborer and deliveryman in washing machine sales and service company.
151	643	Carryout, deliveryman, and general worker in supermarket-grocery store.
152	644	Produce man in supermarket-grocery store.
153	645	Painter in painting and decorating company.
154	646	Ranger in State Park.
155	647	Naturalist in State Park.

#### IX. Non-Agricultural Jobs

##### A. Directors

156	661	General Director for heating and plumbing company.
157	663	General Director for welding company.
158	665	General Director for auto parts, sales and service company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
159	666	General Director of limestone and crushed stone company.
160	667	General Director of printing and photography company.
161	672	Superintendent of water department treatment plant.
162	676	Contractor in construction and machine-rental company.
163	677	General Director of construction, truck repair service, sales, and gasoline company.
164	678	General Director of automobile sales and service company.
165	679	General Director of ready mix concrete and concrete block company.
166	680	General Director of grease equipment, tire sales, and service company.
167	681	General Director of garage and service station.
168	682	General Director and district distributor in petroleum bulk plant.
169	683	General Director of motor company.
170	684	General Director of musical-amusement company.
171	685	General Director of drug company.
172	686	Manager of petroleum developing company.
173	687	General Director of laundry and dry cleaning company.
174	688	Agent for insurance company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
175	689	County treasurer.
176	690	Grade school principal.
177	691	Executive Vice-President of Bank.
178	692	Distribution agent in feed testing company.
179	693	General Director of bank and finance company.
180	694	General director of hotel.
181	695	General Director of refrigeration equipment company.
182	696	General Director of paper products company.
183	697	Postmaster.
184	698	General Director for nursing home.
185	699	General Director of clothing store.
<u>B. Machine and Equipment Operators</u>		
186	721	Truck driver and engineer for building-materials, and motor freight company.
187	723	Heavy machinery operator for county engineer construction company.
188	724	Truck driver for L.P. Gas and petroleum distribution company.
189	727	Steam shovel and heavy machinery operator for stone and cement company.
190	728	General Director for furniture company.
191	729	Delivery and maintenance man for petroleum products company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
192	730	Truck driver and set-up-man for musical amusement company.
193	731	Welder for welding company.
194	732	Machine operator-clerk for laundry and dry cleaning company.
195	733	Truck driver for laundry and dry cleaning company.
196	734	Machine operator for concrete company.
197	735	Mechanic for county engineer, car and truck garage.
198	737	Machine operator in paper products company.

C. Inspection, Testing and Construction-Mechanics and Repairman

199	769	Mechanic for auto sales and service company.
200	770	Service station attendant and automobile mechanic.
201	773	Mechanic for stone company.
202	774	Welder for stone company.
203	775	Bodyman for automobile-truck, and farm machinery company.
204	777	Serviceman for furnaces company.
205	778	Independent brick layer.
206	779	Plumber for plumbing company.
207	780	Electrician for plumbing company.
208	781	Personnel director.
209	782	Maintenance man in hotel.
210	783	Serviceman for clothing department store.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
211	791	Automobile salesman.
212	792	Salesman and deliveryman for tire sales and service company.
213	793	Salesman for car-truck sales and service company.
214	794	Credit collection representative for loan company.
215	795	Salesman for paper products company.
216	796	Salesman-clerk for clothing department store.
E. <u>Secretaries and Clerks</u>		
217	811	Clerk for public utilities company.
218	812	Legal Secretary and receptionist for legal company.
219	813	Clerk for state forester and county engineer's office.
220	814	Clerk for drug store.
221	815	Clerk for laundry and dry cleaning company.
222	816	Secretary for probation and parole office.
223	817	Clerk-teller-cashier in bank, post office, and savings and loan company.
224	818	Clerk in railroad station.
225	819	Secretary in Government Food Inspection Office.
226	820	Clerk in automobile and truck parts store.
227	821	Order and inventory clerk in paper products company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
228	822	Secretary and treasurer in construction and machinery rental company.
229	823	Clerk for cement company.
F. <u>Supervisors</u>		
230	826	Shop foreman for construction and machinery rental company.
231	827	Project supervisor, construction, pipeline, and power line company.
232	830	Foreman of highway maintenance for state department of highways.
233	831	Plant foreman for stone and concrete block company.
234	832	Product Salesman and Office Manager for stone company.
235	833	Foreman for freight company.
236	834	Sales manager for concrete block company.
237	835	Garage superintendent for county engineer.
238	836	Road and bridge superintendent for county engineer.
239	837	Time keeper for county engineer.
240	838	Plant superintendent in paper products company.
241	839	Trustee for masonic foundation.
242	840	Paymaster in post office.
G. <u>Miscellaneous</u>		
243	853	Meter-serviceman for public utilities company.
244	857	Custodian for public school system, state park, church, hotel, nursing home, and department store.



<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
245	861	Oiler for stone company.
246	862	Trucker for stone company.
247	863	Dynamite driller for stone company.
248	864	Bellboy and lifeguard in vacation resort.
249	865	Cook for camp, school, restaurant or nursing home.
250	866	Boiler operator for meat packing business.
251	867	Waitress, carhop or waiter, in restaurant.
252	868	Pipeline crew man for oil company.
253	869	Truck driver for hardware, plumbing, electrical and builders supply company.
254	870	Station agent for railroad.
255	871	Church mission worker.
256	872	Probation parole officer.
257	873	Survey crew man for county engineer.
258	874	Bartender.
259	875	Desk clerk in hotel.
260	876	Laborer in construction and machinery rental company.
261	877	Mailman in post office.
262	878	Nurse in nursing home.
263	879	Clerk and bookkeeper for legal firm.
264	880	Kiln attendant in cement company.

Consecutive  
Number

BJT

Job Title

265

881

Time keeper in cement company.

266

882

Field service worker for health department.

267

883

Controller in Department store.

**AGRICULTURAL JOB TITLES REPRESENTED BY  
305 AGRICULTURALLY-ORIENTED JOB POSITIONS**

Staff Study in Agricultural Technology  
Morehead State University  
Morehead, Kentucky

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
1	001	General Director of large farm building construction, farm equipment, sales, and lumber company.
2	004	General Director of small farm building, farm equipment, and lumber company.
3	012	General Director of farm machinery and equipment sales, and service company, including automobile and truck sales, and service.
4	014	Director of Aluminum siding company.
5	021	Truck driver and yard worker for small farm building, farm equipment, lumber and coal company.
6	027	Carpenter for lumber and farm building construction company.
7	033	Head mechanic and salesman for farm machinery and equipment company.
8	034	Mechanic for farm machinery, automobile and truck company.
9	035	Mechanic for automobile, tractor, and power unit repair company.
10	043	Salesman for farm silo construction, lumber, and farm building company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
11	044	Salesman for farm machinery, automobile and truck, equipment sales and service, and feed company.
12	045	Parts salesman for farm machinery, automobile and truck sales company.
13	052	Clerk and bookkeeper for small farm building, farm equipment, and lumber company.
14	058	Shop foreman for farm building construction farm equipment, lumber, and coal company.
15	060	Service supervisor for farm machinery company.
16	062	Shop foreman for farm machinery sales and service company.
17	064	Office manager for farm machinery sales and service company.
18	081	General Director of feed and livestock supply company.
19	083	General Director of feed mill, farm supply store, and farm machinery sales and service.
20	084	General Director of grain elevator and farm supply store.
21	086	General Director and mill operator for feed and farm supply store.
22	087	General Director for feed and coal distribution company.
23	092	Millman for feed mill.
24	095	Truck driver and helper for feed mill, grain elevator, farm implement, fertilizer, and livestock supply store.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
25	101	Maintenance man for feed mill and grain elevator.
26	102	Mechanic for feed mill, farm and dairy supply company.
27	103	Seed cleaning and inspection foreman for seed company.
28	109	Salesman for feed mill and farm supply store.
29	114	Clerk in feed mill and farm supply store.
30	120	Outside foreman for grain elevator, feedmill, farm supply, and farm machinery sales company.
31	127	Warehouse man for feed mill, farm supply, fertilizer, and lumber company.
32	137	Director of general farm supply and service company.
33	146	General Director of hardware store and feed mill.
34	147	General Director and manager of tobacco warehouse company.
35	149	General manager real estate company.
36	170	Salesman in feed and farm supply store.
37	180	Office worker in tobacco warehouse company.
38	195	General worker in farm supply and service company.
39	196	Weightman and general worker in tobacco warehouse company.
40	206	General Director of vegetable producing company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
41	207	General Director of wholesale vegetable produce and sales co.
42	208	General Director of retail florist shop.
43	209	General Director of landscaping, florist, and greenhouse business.
44	210	General Director of florist and greenhouse business.
45	237	Clerk and bookkeeper for nursery and florist shop.
46	263	Floral designer.
47	264	Deliveryman for retail florist shop.
48	265	Worker in wholesale vegetable produce company.
49	266	Worker for vegetable producing company.
50	267	Worker for landscaping and greenhouse business.
51	276	Office director or branch manager for wholesale and retail dairy products, meat, and grocery company.
52	278	General Director for livestock marketing cooperative.
53	279	General Director of livestock auction company.
54	282	General Director and distributor for wholesale and retail dairy products, meat, and grocery company.
55	283	General Director of ice-cream and dairy product company.
56	284	Office director of livestock marketing cooperative.

Consecutive  
Number

BJT

Job Title

57	291	Truck driver for livestock marketing and auction company.
58	292	Truck driver for dairy products, meat, and grocery company.
59	293	Bottling machine operator for dairy products company.
60	301	Freezer inspection man for dairy products company.
61	311	Route salesman for wholesale and retail dairy products, meat, and grocery company.
62	312	Waitress of Ice-cream dairy bar.
63	322	Bookkeeper in livestock sales company.
64	342	Contact man for livestock auction company.
65	343	Yardman for stockyard and feeder cattle business.
66	344	Grader for livestock cooperative.
67	345	Weighman in livestock sales company.
68	359	General Director for egg buying, grading, and wholesale-retail company.
69	366	Plant process man for poultry, processing company.
70	380	Salesman for egg, poultry, poultry processing company.
71	407	Hatchery operator and breed selection man for poultry company.
72	410	Truck driver and pick-up man for wholesale-retail egg company.

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BJT

Job Title

73	411	General worker in egg and poultry processing company.
74	423	General Director for fertilizer, and lime stone company.
75	511	General Director of fuel distribution and service company.
76	512	General director for Insurance company.
77	513	General Director of hardware, electrical and building supply, paint, and wallpaper company.
78	514	General Director of restaurant and liquors store.
79	516	General Director of pest control company.
80	517	Service director of pest control company.
81	519	General Director of show and riding academy, horse farm and hospital.
82	521	General Director of rural grocery and variety store.
83	522	General Director of grocery store.
84	523	General Director of slaughter and meat processing company.
85	528	General Director of service station, tractor and truck repair shop.
86	530	Director, farm management company.
87	533	Director retail meat and grocery store.



<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
88	536	Sales manager for hardware, electrical, plumbing and building supply store.
89	539	General manager of public utilities and fuel distribution company.
90	540	General Director of state police district station.
91	564	Maintenance man in state park.
92	584	Shipping manager for hardware, building, plumbing, and electrical supply company.
93	596	Life insurance agent.
94	597	Salesman in pest control company.
95	601	Sales manager for insurance company.
96	612	Clerk for grocery and variety store.
97	613	Sales clerk and bookkeeper in retail meat store and meat processing company.
98	614	Clerk in feedmill.
99	616	Cashier in grocery store and bank.
100	624	Produce and meat manager in grocery-supermarket.
101	631	Route serviceman for pest control company.
102	632	Meat cutter for supermarket.
103	633	Butcher for frozen food locker and meat processing company, including sausage making boning.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
104	634	Caretaker in show and riding academy, including horse trainer on horse farm.
105	636	Claims adjuster for insurance company.
106	637	Foreman for horse rehabilitation farm and horse hospital.
107	639	Conservation instructor in 4-H camp.
108	641	Exercise boy and groom boy for horse rehabilitation farm and horse hospital.
109	644	Produce man. in supermarket-grocery store.
110	647	Naturalist in State Park.
111	661	General Director for heating and plumbing company.
112	679	General Director of ready mix concrete and concrete block company.
113	681	General Director of garage and service station.
114	682	General Director and district distributor in petroleum bulk plant.
115	683	General Director of motor company.
116	688	Agent for insurance company.
117	698	General Director for nursing home.
118	770	Service station attendant and automobile mechanic.
119	777	Serviceman for furnace company.
120	779	Plumber for plumbing company.

<u>Consecutive Number</u>	<u>BJT</u>	<u>Job Title</u>
121	780	Electrician for plumbing company.
122	831	Plant foreman for stone and concrete block company.
123	832	Product salesman and office manager for stone company.
124	857	Custodian for public school system, state park, church, hotel, nursing home, and department store.
125	865	Cook for camp, school, restaurant, or nursing home.
126	882	Field service worker for health department.

## APPENDIX G

AGRICULTURAL-TECHNICIAN JOB TITLES  
 REPRESENTED BY 122 AGRICULTURALLY  
 ORIENTED TECHNICAL JOB POSITIONS

Staff Study in Agricultural Technology  
 Morehead State University  
 Morehead, Kentucky

Consecutive Number	BJT Code No. (15, 16, 17)	Job Title
1	001	General director of large farm building construction, farm equipment, sales, and lumber company.
2	004	General director of small farm building construction, farm equipment, sales, and lumber company.
3	012	General director of farm machinery and equipment sales and service company, automobile and truck sales and service.
4	021	Truck driver and yard worker for small farm building equipment, lumber and coal company.
5	027	Carpenter for lumber and farm building construction company.
6	033	Head mechanic and salesman for farm machinery, and equipment company.
7	034	Mechanic for farm machinery, farm equipment, automobile, and truck company.
8	035	Mechanic for automobile, tractor, and power unit repair company.
9	044	Salesman for farm machinery, automobile and truck, equipment sales and service, and feed company.
10	060	Service supervisor for farm machinery company.
11	062	Shop foreman for farm machinery sales and service company.
12	064	Office manager for farm machinery sales and service company.
13	083	General director of feed mill, farm supply store, and farm machinery sales and service.
14	086	General director and mill operator for feed and farm supply store.
15	092	Millman for feed mill.
16	095	Truck driver and helper for feed mill.
17	101	Maintenance man for feed mill and grain elevator.
18	102	Mechanic for feed mill and farm and dairy supply company.
19	103	Seed cleaning and inspection foreman for seed company.
20	109	Salesman for feed mill and farm supply store.
21	120	Outside foreman for grain elevator, feedmill, farm supply, and farm machinery sales company.

Consecutive Number	BJT Code No. (15, 16, 17)	Job Title
22	137	Director of general farm supply and service company.
23	196	Weighman and general worker in tobacco warehouse company.
24	208	General director of retail florist shop.
25	209	General director of landscaping, florist, and greenhouse business.
26	210	General director of florist and greenhouse business.
27	237	Clerk and bookkeeper for nursery and florist shop.
28	263	Floral designer.
29	267	Worker for landscaping and greenhouse business.
30	282	General director and distributor for wholesale and retail dairy products, meat, and grocery company.
31	292	Truck driver for dairy products, meat, and grocery company.
32	301	Freezer inspection man for dairy products company.
33	343	Yardman for stockyard and feeder cattle business.
34	344	Grader for livestock cooperative.
35	359	General director of wholesale and retail egg-buying and grading company.
36	380	Salesman for egg, poultry, and poultry processing company.
37	407	Hatchery operator and breed selection man in a poultry company.
38	512	General director for insurance company.
39	513	General director of hardware, electrical and building supply, paint, and wall-paper company.
40	516	General director of pest control company.
41	517	Service director for pest control company.
42	519	General director of show and riding academy, horse farm, and hospital.
43	522	General director of grocery store.
44	523	General director of slaughter and meat processing company.
45	530	General director of a service station and farm management company.
46	533	Director of a retail meat and grocery store.
47	536	Sales manager for hardware, electrical, plumbing, and building supply store.
48	539	General manager of public utilities and fuel distribution company.
49	540	General director of state police district station.
50	614	Clerk in feed mill.

Consecutive Number	BJT Code No. (15, 16, 17)	Job Title
51	616	Cashier in grocery store and bank.
52	624	Produce and meats manager in grocery super-market.
53	631	Route serviceman for pest control company.
54	632	Meat cutter for supermarket.
55	633	Butcher for frozen food locker and meat processing company, including sausage making and boning.
56	634	Caretaker in show and riding academy, including horse trainer on horse farm.
57	636	Claims adjuster for insurance company.
58	647	Naturalist in State Park.
59	661	General director for heating and plumbing company.
60	681	General director of garage and service station.
61	770	Service station attendant and automobile mechanic.
62	777	Serviceman for furnaces company.
63	779	Plumber for plumbing company.
64	780	Electrician for plumbing company.
65	831	Plant foreman for stone and concrete block company.
66	832	Product salesman and office manager for stone company.
67	857	Custodian for public school system, state park, church, hotel, nursing home, and department store.

APPENDIX H

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED FOR  
306 AGRICULTURALLY-ORIENTED JOB TITLES

Varimax Factor #1--Personnel Supervision and Business Management

Consecutive Number	Variable Number	Factor Loading	Activity or Knowledge
1	10	.919	Appraising work of others
2	11	.911	Supervising others
3	7	.907	Handling men
4	8	.875	Inducting new personnel
5	9	.841	Training others
6	37	.749	Policy-making
7	48	.739	Decision-making
8	38	.710	Planning
9	6	.706	Buying
10	77	.622	Taxes
11	36	.528	Selecting
12	24	.499	Planning prod. or service
13	20	.475	Calculating costs
14	45	.422	Inventorying

Varimax Factor #2--Mechanical Science and Technology

1	32	.826	Adjusting
2	27	.776	Repairing
3	33	.755	Maintaining
4	34	.699	Inspecting, Testing, Trouble
5	28	.641	Operating shooting
6	30	.634	Calibrating
7	29	.615	Assembling
8	35	.573	Installing
9	31	.496	Remodeling
10	19	.432	Testing
11	16	.406	Mixing
12	18	.370	Inspecting
13	22	.260	Using technical & Service manuals, parts lists

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**Varimax Factor #3--Animal Science**

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Consecutive Number	Variable Number	Factor Loading	Activity or Knowledge
1	57	.880	Feeds
2	58	.864	Animal Nutrition
3	54	.842	Livestock
4	56	.805	Dairy
5	55	.768	Poultry
6	59	.723	Animal Diseases
7	74	.459	Rural recreation

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**Varimax Factor #4--Sales and Business Skills**

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1	3	.694	Selling
2	2	.680	Meeting Non-farm people
3	40	.667	Handling money
4	39	.636	Promoting
5	81	.617	Salesmanship
6	1	.585	Meeting farm people
7	41	.509	Keeping records and accounts
8	69	.461	Gen. Agr. and rural life knowledge
9	5	.430	Estimating costs

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**Varimax Factor #5--Plant and Soil Science**

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1	49	.808	Soils
2	60	.767	Plant Diseases
3	50	.765	Soil & water management
4	52	.768	Hort/culture
5	70	.758	Agricultural chemicals
6	71	.706	Insect and pest control
7	51	.696	Crops
8	53	.688	Floriculture

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**Varimax Factor #6--Physical Science Technology**

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Consecutive Number	Variable Number	Factor Loading	Activity or Knowledge
1	91	.786	Metallurgy
2	87	.713	Electronics
3	89	.708	Sound & Light
4	88	.645	Mechanics
5	90	.596	Hydraulics

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**Varimax Factor #7--Technical and Business Communications**

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1	43	.757	Making speeches
2	42	.726	Writing articles, copy, etc.
3	46	.669	Making technical reports
4	23	.563	Developing techniques
5	47	.386	Reading technical reports

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**Varimax Factor #8--Agricultural Mechanics**

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1	63	.799	Farm mechanization
2	67	.726	Farm conveniences
3	61	.645	Tractors, other power units
4	68	.641	Agricultural economics
5	64	.615	Shop work

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**Varimax Factor #9--Building Design and Construction Technology**

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1	14	.705	Making and building
2	13	.693	Designing
3	25	.654	Constructing
4	17	.596	Assembling

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**Varimax Factor #10--Business Operation**

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Consecutive Number	Variable Number	Factor Loading	Activity or Knowledge
1	79	.672	Business principles
2	80	.660	Office procedures
3	78	.619	Accounting
4	75	.525	Credit
5	76	.514	Insurance

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**Varimax Factor #11--Farm Building Technology**

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1	66	.642	Farm building
2	62	.510	Electricity

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**Varimax Factor #12--Food Processing**

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1	73	.600	Food processing
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**Varimax Factor #13--Architectural Technology**

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1	93	.762	Architecture
2	15	.608	Sketching and drawing
3	65	.524	Carpentry
4	32	.422	Forestry

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**Varimax Factor #14--Physical Science Research**

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1	86	.780	Research procedures
2	83	.668	Physics
3	21	.598	Conducting research
4	82	.592	Chemistry

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**Varimax Factor #15--Mathematics**

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1	84	.627	Advanced mathematics
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APPENDIX I

VARIMAX FACTOR COMPONENTS IN  
12 JOB TITLE FACTORS

N = 126 Agricultural Job Titles

Staff Study in Agricultural Technology  
Morehead State University  
Morehead, Kentucky

Management and Supervision Varimax Factor 1			
Rank	Variable Number	Factor Loading	Job Title
1	82	.909	General director of rural grocery and variety store.
2	54	.886	General director and distributor for whole-sale and retail dairy products, meat, and grocery company.
3	2	.886	General director of small farm building, farm equipment, and lumber company.
4	116	.840	Agent for insurance company.
5	33	.820	General director of hardware store and feed mill.
6	115	.797	General director of motor company.
7	77	.793	General director of hardware, electrical and building supply, paint, and wallpaper company.
8	113	.781	General director of garage and service station.
9	3	.765	General director of farm machinery and equipment sales and service company, including auto and truck sales and service.
10	79	.755	General director of pest control company.
11	114	.748	General director and district distributor in petroleum bulk plant.
12	111	.739	General director for heating and plumbing company.
13	19	.735	General director of feed mill, farm supply store, and farm machinery sales and service.
14	63	.731	Bookkeeper in livestock sales company.
15	51	.729	Office director or branch manager for whole-sale and retail dairy products, meat, and grocery company.
16	81	.721	General director of show and riding academy, horse farm and hospital.
17	55	.720	General director of ice cream and dairy products company.
18	75	.720	General director of fuel distribution and service company.
19	34	.715	General director and manager of tobacco warehouse company.
20	42	.714	General director of retail florist shop.

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Varimax Factor 1-continued:

Rank	Variable Number	Factor Loading	Job Title
21	68	.711	General director for egg-buying, grading and wholesale-retail company.
22	1	.703	General director of large farm building construction, farm equipment sales, and lumber company.
23	83	.702	General director of grocery store.
24	95	.698	Sales manager for insurance company.
25	40	.668	General director of vegetable producing company.
26	32	.658	Director of general farm supply and service company.
27	89	.653	General manager of public utilities and fuel distribution company.
28	43	.645	General director of landscaping, florist, and greenhouse business.
29	110	.640	Naturalist in State Park.
30	20	.634	General director of grain elevator and farm supply store.
31	78	.579	General director of restaurant and liquors store.
32	87	.566	Director of retail meat and grocery store.
33	22	.554	General director for feed and coal distribution company.
34	35	.552	General manager of real estate company.
35	76	.551	General director for insurance company.
36	17	.550	Office manager for farm machinery sales and service company.
37	4	.549	Director of aluminum siding company.
38	41	.546	General director of wholesale vegetable produce and sales company.
39	123	.520	Product salesman and office manager for stone company.
40	15	.518	Service supervisor for farm machinery company.
41	53	.516	General director of livestock auction company.
42	14	.482	Shop foreman for farm building construction, farm equipment, lumber and coal company.
43	112	.470	General director of ready mix concrete and concrete block company.
44	84	.469	General director of slaughter and meat processing company.
45	18	.453	General director of feed and livestock supply company.
46	94	.423	Salesman in pest control company.
47	52	.405	General director for livestock marketing cooperative.
48	80	.402	Service director of pest control company.
49	90	.401	General director of state police district station.

Varimax Factor 1-continued:

Rank	Variable Number	Factor Loading	Job Title
50	56	.386	Office director of livestock marketing cooperative.
51	93	.385	Life insurance agent.
52	88	.372	Sales manager for hardware, electrical, plumbing, and building supply store.
53	10	.360	General director and mill operator for feed and farm supply store.
54	96	.331	Clerk for grocery and variety store.
55	85	.322	General director of service station, tractor and truck repair shop.
56	58	.312	Truck driver for dairy products, meat, and grocery company.

Service and Mechanical  
Varimax Factor 2

1	9	.811	Mechanic for automobile, tractor, and power unit repair company.
2	119	.805	Serviceman for furnace company.
3	26	.801	Mechanic for feed mill and farm and dairy supply company.
4	8	.787	Mechanic for farm machinery, farm equipment, automobile, and truck company.
5	7	.757	Head mechanic and salesman for farm machinery and equipment company.
6	120	.752	Plumber for plumbing company.
7	117	.728	General director for nursing home.
8	118	.678	Service station attendant and automobile mechanic.
9	39	.631	Weighman and general worker in tobacco warehouse company.
10	25	.617	Maintenance man for feed mill and grain elevator.
11	16	.603	Shop foreman for farm machinery sales and service company.
12	5	.558	Truck driver and yard worker for small farm building, farm equipment, lumber and coal company.
13	59	.534	Bottling machine operator for dairy products company.
14	98	.512	Clerk in feed mill.
15	101	.451	Route serviceman for pest control company.
16	60	.449	Freezer inspection man for dairy products company.
17	121	.434	Electrician for plumbing company.
18	105	.432	Claims adjuster for insurance company.

Varimax Factor 2-continued:

Rank	Variable Number	Factor Loading	Job Title
19	67	.431	Weighman in livestock sales company.
20	122	.350	Plant foreman for stone and concrete block company.
21	44	.327	General director of florist and greenhouse business.
22	36	.260	Salesman in feed and farm supply store.

Sales and Processing  
Varimax Factor 3

1	107	.819	Conservation instructor in 4-H camp.
2	66	.778	Grader for livestock cooperative.
3	65	.740	Yardman for stockyard and feeder cattle business.
4	103	.705	Butcher for frozen food locker and meat processing company, including sausage making and boning.
5	23	.542	Millman for feed mill.
6	31	.513	Warehouse man for feed mill, farm supply, fertilizer, and lumber company.
7	102	.512	Meat cutter for supermarket.
8	28	.466	Salesman for feed mill and farm supply store.
9	27	.360	Seed cleaning and inspection foreman for seed company.

Service - Animal Science Oriented  
Varimax Factor 4

1	108	.603	Exercise boy and groom boy for horse rehabilitation farm and horse hospital.
2	106	.580	Foreman for horse rehabilitation farm and horse hospital.
3	64	.548	Contact man for livestock auction company.
4	109	.537	Produce man in supermarket grocery store.
5	126	.524	Field service worker for health department.
6	86	.520	Director of farm management company.
7	38	.519	General worker in farm supply and service company.
8	71	.304	Hatchery operator and breed selection man for poultry company.

Grower-Processor - Plant Science Oriented  
Varimax Factor 5

Rank	Variable Number	Factor Loading	Job Title
1	49	.776	Worker for vegetable producing company.
2	48	.662	Worker in wholesale vegetable produce company.
3	124	.597	Custodian for public school system, state park, church, hotel, nursing home, and department store.
4	47	.595	Deliveryman for retail florist shop.
5	57	.541	Truck driver for livestock marketing and auction company.
6	125	.536	Cook for camp, school, restaurant or nursing home.
7	69	.516	Plant process man for poultry processing company.
8	21	.439	General director and mill operator for feed and farm supply store.
9	24	.364	Truck driver and helper for feed mill, grain elevator, farm implement, fertilizer, and livestock supply store.
10	61	.288	Route salesman for wholesale and retail dairy products, meat, and grocery company.
11	97	.257	Sales clerk and bookkeeper in retail meat store and meat processing company.

Sales - Mechanics Oriented  
Varimax Factor 6

1	11	.541	Salesman for farm machinery, automobile and truck equipment sales and service, and feed company.
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Sales - Tobacco and Poultry Oriented  
Varimax Factor 7

1	37	.566	Office worker in tobacco warehouse company.
2	70	.323	Salesman for egg, poultry, and poultry processing company.
3	72	.322	Truck driver and pick-up man for wholesale-retail egg company.

Service-Processor - Plant Science Oriented  
Varimax Factor 8

Rank	Variable Number	Factor Loading	Job Title
1	50	.680	Worker for landscaping and greenhouse business.
2	29	.488	Clerk in feed mill and farm supply store.
3	30	.475	Outside foreman for grain elevator, feed mill, farm supply, and farm machinery sales company.
4	74	.416	General director for fertilizer and limestone company.
5	100	.382	Produce and meats manager in grocery supermarket.
6	109	.342	Produce man in supermarket grocery store.

Horticulture Oriented  
Varimax Factor 9

1	104	.452	Caretaker in show and riding academy, including horse trainer on horse farm.
2	91	.359	Maintenance man in State Park.

Building and Construction Oriented  
Varimax Factor 10

1	92	.671	Shipping manager for hardware, building, plumbing, and electrical supply company.
2	88	.388	Sales manager for hardware, electrical, plumbing, and building supp'y store.
3	6	.320	Carpenter for lumber and farm building construction company.



APPENDIX J

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS

Staff Study in Agricultural Technology  
Morehead State University  
Morehead, Kentucky

Job Title Cluster 1.  
Management and Supervision - 56 titles

<u>Factor 1</u>				<u>Factor 4</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loadings	Activity or Knowledge
1	33	.832	Maintaining	1	89	.836	Sound and light
2	32	.785	Adjusting	2	87	.815	Electronics
3	27	.715	Repairing	3	91	.777	Metallurgy
4	28	.668	Operating	4	88	.703	Mechanics
5	16	.563	Mixing	5	26	.647	Designing
6	35	.519	Installing	6	31	.598	Remodeling
7	30	.513	Calibrating	7	15	.586	Sketching and drawing
8	36	.466	Selecting	8	90	.576	Hydraulics
9	34	.453	Inspecting, testing, trouble shooting	9	92	.566	Heat
<u>Factor 2</u>				<u>Factor 5</u>			
1	57	.884	Feeds	1	11	.913	Supervising others
2	54	.880	Livestock	2	7	.912	Handling men(boss)
3	58	.853	Animal nutrition	3	10	.909	Appraising work of others
4	56	.818	Dairy	4	9	.837	Training others
5	55	.817	Poultry	5	8	.825	Inducting new personnel
6	59	.769	Animal diseases	6	4	.393	Advising, consulting, and diagnosing
7				7	18	.319	Inspecting
<u>Factor 3</u>				<u>Factor 6</u>			
1	79	.859	Business principles	1	93	.759	Architecture
2	80	.819	Office procedures	2	65	.718	Carpentry
3	77	.793	Taxes	3	66	.665	Farm buildings
4	76	.726	Insurance	4	15	.581	Sketching and drawing
5	75	.686	Credit				
6	78	.639	Accounting				
7	81	.546	Salesmanship				

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Management and Supervision - 56 titles, continued

<u>Factor 7</u>				<u>Factor 12</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	42	.762	Writing articles, copy, etc.	1	71	.760	Insect and pest control
2	43	.687	Making speeches	2	60	.739	Plant diseases
3	23	.670	Developing techniques	3	70	.706	Agricultural chemicals
				4	49	.664	Soils
				5	51	.654	Crops
				6	53	.526	Floriculture
				7	50	.524	Soil and water management
				8	52	.445	Horticulture
<u>Factor 8</u>				<u>Factor 13</u>			
1	37	.795	Policy-making	1	25	.760	Constructing equipment, tools(hand or power)supplies and instruments
2	38	.767	Planning	2	13	.647	Designing
3	48	.740	Decision-making	3	14	.585	Making and building
4	40	.646	Handling money	4	17	.487	Assembling
5	39	.622	Promoting	5	53	.484	Floriculture
6	6	.363	Buying				
7	24	.311	Planning production or service				
<u>Factor 9</u>				<u>Factor 14</u>			
1	86	.801	Research procedures	1	64	.814	Shop work
2	21	.770	Conducting research	2	63	.756	Farm mechanization
3	73	.432	Food processing	3	67	.726	Farm conveniences
				4	61	.715	Tractors and other power units
				5	19	.665	Testing
				6	68	.580	Agricultural economics
				7	62	.551	Electricity
<u>Factor 10</u>				<u>Factor 15</u>			
1	81	.571	Salesmanship	1	44	.772	Filing
2	2	.553	Meeting non-farm people	2	45	.727	Inventorying
3	1	.469	Meeting farm people	3	74	.401	Rural recreation
4	5	.447	Estimating costs				
5	3	.436	Selling				
<u>Factor 11</u>							
1	84	.780	Advanced mathematics	4	24	.361	Planning production or service
2	83	.755	Physics	5	41	.335	Keeping records and accounts

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Job Title Cluster 2.  
Service and Mechanical - 22 titles

<u>Factor 1</u>				<u>Factor 3, continued</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	70	.767	Agricultural chemicals	5	14	.745	Making and building
2	79	.766	Business principles	6	15	.724	Sketching and drawing
3	75	.748	Credit	7	36	.608	Selecting
4	81	.738	Salesmanship	8	60	.587	Plant diseases
5	39	.728	Promoting	<u>Factor 4</u>			
6	40	.701	Handling money	1	11	.946	Supervising others
7	71	.694	Insect and pest control	2	10	.921	Appraising work of others
8	2	.659	Meeting non-farm people	3	7	.858	Handling men(boss)
9	69	.624	General agriculture and rural life knowledge	4	9	.743	Training others
10	41	.511	Keeping records and accounts	5	6	.545	Buying
<u>Factor 2</u>				<u>Factor 5</u>			
1	67	.797	Farm conveniences	1	57	.915	Feeds
2	19	.788	Testing	2	58	.832	Animal nutrition
3	61	.740	Tractors and other power units	3	55	.816	Poultry
4	64	.740	Shop work	4	51	.777	Crops
5	35	.703	Installing	5	50	.721	Soil and water management
6	62	.691	Electricity	6	34	.717	Livestock
7	63	.682	Farm mechanization	7	59	.618	Animal diseases
8	17	.654	Assembling	8	56	.606	Dairy
9	68	.640	Agricultural economics	9	52	.565	Horticulture
<u>Factor 3</u>				<u>Factor 6</u>			
1	43	.932	Making speeches	1	77	.920	Taxes
2	46	.932	Making technical reports	2	78	.900	Accounting
3	25	.795	Constructing equipment, tools(hand or power) supplies and instruments	3	44	.831	Filing
4	13	.786	Designing	4	37	.807	Policy-making
				5	53	.789	Floriculture
				6	60	.682	Plant diseases
				7	6	.638	Buying
				8	52	.587	Horticulture
				9	45	.567	Inventorying
				10	76	.564	Insurance

**ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued**

**Service and Mechanical - 22 titles, continued**

<u>Factor 7</u>				<u>Factor 10</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	87	.808	Electronics	1	28	.843	Operating
2	91	.650	Metallurgy	2	23	.711	Maintaining
3	16	.612	Mixing	3	27	.704	Repairing
4	90	.545	Hydraulics	4	32	.508	Adjusting
5	88	.427	Mechanics				
				<u>Factor 11</u>			
				1	65	.671	Carpentry
<u>Factor 8</u>				<u>Factor 12</u>			
1	30	.812	Calibrating	1	73	.897	Food processing
2	20	.747	Calculating costs	2	56	.714	Dairy
3	31	.736	Remodeling				
4	92	.626	Heat	<u>Factor 13</u>			
5	29	.551	Assembling	1	5	.672	Estimating costs
6	34	.508	Inspecting, testing, trouble shooting	2	48	.571	Decision-making
7	88	.493	Mechanics				
8	32	.435	Adjusting	<u>Factor 14</u>			
<u>Factor 9</u>				1	18	.620	Inspecting
1	47	.887	Reading technical reports	<u>Factor 15</u>			
2	90	.525	Hydraulics	1	1	.534	Meeting farm people

**Job Title Cluster 3.  
Sales and Processing - 9 titles**

<u>Factor 1</u>							
1	68	.907	Agricultural economics	7	63	.760	Farm mechanization
2	70	.839	Agricultural chemicals	8	74	.758	Rural recreation
3	67	.814	Farm conveniences	9	80	.742	Office procedures
4	79	.799	Accounting	10	38	.732	Planning
5	71	.790	Insect and pest control	11	60	.724	Plant diseases
6	75	.788	Credit	12	39	.694	Promoting
				13	81	.660	Salesmanship
				14	78	.636	Accounting
				15	3	.602	Selling

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Sales and Processing - 9 titles, continued

<u>Factor 2</u>				<u>Factor 6</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	9	.964	Training others	1	40	.843	Handling money
2	10	.964	Appraising work of others	2	53	.818	Floriculture
3	8	.948	Inducting new personnel	3	52	.732	Horticulture
4	7	.921	Handling men(boss)	4	81	.590	Salesmanship
5	11	.892	Supervising others	5	3	.573	Selling
6	65	.630	Carpentry	6	49	.509	Filing
7	64	.628	Shop work	<u>Factor 7</u>			
8	45	.605	Inventorying	1	31	.971	Remodeling
9	62	.564	Electricity	2	92	.971	Heat
<u>Factor 3</u>				3	35	.720	Installing
1	13	.947	Designing	4	29	.681	Assembling
2	73	.916	Food processing	5	27	.520	Repairing
3	23	.756	Developing techniques	<u>Factor 8</u>			
4	20	.742	Calculating costs	1	54	.737	Livestock
5	29	.667	Assembling	2	19	.608	Testing
<u>Factor 4</u>				3	4	.607	Advising, consulting and diagnosing
1	26	.878	Making technical reports	<u>Factor 9</u>			
2	47	.878	Reading technical reports	1	36	.852	Selecting
3	42	.853	Writing articles, copy, etc.	2	61	.706	Tractors and other power units
4	66	.753	Farm buildings	3	51	.651	Crops
5	59	.606	Animal diseases	4	64	.624	Shop work
6	38	.573	Planning	<u>Factor 10</u>			
<u>Factor 5</u>				1	24	.781	Planning production or service
1	77	.938	Taxes	2	41	.668	Keeping records and accounts
2	76	.938	Insurance	3	56	.650	Dairy
3	78	.663	Accounting	4	55	.639	Poultry
				5	22	.556	Using technical and service manuals parts lists
				6	69	.499	General agriculture and rural life knowledge

**ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued**

**Sales and Processing - 9 titles, continued**

<u>Factor 11</u>				<u>Factor 13</u>			
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
1	6	.931	Buying	1	72	.841	Forestry
2	5	.903	Estimating costs	2	50	.754	Soil and water management
3	48	.627	Decision-making	3	49	.555	Soils
<u>Factor 12</u>				<u>Factor 14</u>			
1	14	.867	Making and building	1	36	.406	Selecting
2	30	.642	Calibrating				
<u>Factor 15</u>							
1	44	.568	Filing				

**Job Title Cluster 4.  
Service - Animal Science Oriented - 8 titles**

<u>Factor 1</u>							
1	75	.969	Credit	18	81	.828	Salesmanship
2	76	.969	Insurance	19	38	.816	Planning
3	77	.969	Taxes	20	44	.763	Filing
4	50	.969	Soil and water management	21	71	.680	Insect and pest control
5	49	.969	Soils	22	55	.680	Poultry
6	65	.962	Carpentry	23	78	.666	Accounting
7	72	.962	Forestry	24	61	.648	Tractors and other power units
8	45	.962	Inventorying				
9	3	.962	Selling	25	46	.625	Making technical reports
10	19	.962	Testing				
11	60	.899	Plant diseases	26	47	.625	Reading technical reports
12	70	.878	Agricultural chemicals	27	67	.606	Farm conveniences
13	79	.865	Business principles	28	66	.606	Farm buildings
14	56	.863	Dairy				
15	68	.863	Agricultural economics				
16	82	.844	Chemistry				
17	42	.832	Writing articles, copy, etc.				



ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOE-TITLE CLUSTERS, continued

Job Title Cluster 5.

Grower-Processor - Plant Science Oriented - 11 titles

<u>Factor 1</u>				<u>Factor 4</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	90	.975	Hydraulics	1	70	.895	Agricultural chemicals
2	74	.975	Rural recreation	2	71	.895	Insect and pest control
3	88	.932	Mechanics	3	78	.845	Accounting
4	67	.868	Farm conveniences	4	44	.736	Filing
5	17	.867	Assembling	5	30	.685	Calibrating
6	63	.815	Farm mechanization	6	16	.424	Mixing
7	64	.807	Shop work				
8	65	.807	Carpentry				
9	66	.766	Farm buildings				
10	19	.702	Testing				
11	87	.702	Electronics				
12	35	.679	Installing				
13	18	.555	Inspecting				
14	60	.552	Plant diseases				
<u>Factor 2</u>				<u>Factor 5</u>			
1	40	.875	Handling money	1	32	.820	Adjusting
2	3	.875	Selling	2	27	.712	Repairing
3	80	.852	Office procedures	3	28	.636	Operating
4	79	.837	Business principles	4	61	.601	Tractors and other power units
5	81	.836	Salesmanship	5	30	.478	Calibrating
6	2	.820	Meeting non-farm people	6	33	.452	Maintaining
7	39	.744	Promoting				
8	45	.667	Inventorying				
9	1	.646	Meeting farm people				
<u>Factor 3</u>				<u>Factor 6</u>			
1	7	.982	Handling men(boss)	1	20	.931	Calculating costs
2	8	.982	Inducting new personnel	2	68	.792	Agricultural economics
3	10	.982	Appraising work of others	3	22	.630	Using technical and service manuals, parts lists
4	11	.982	Supervising others	4	35	.602	Selecting
5	9	.830	Training others	5	66	.585	Farm buildings
				6	69	.461	General agriculture and rural life knowledge
				<u>Factor 7</u>			
				1	37	.923	Policy-making



**ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued**

Grower-Processor - Plant Science Oriented - 11 titles, continued

<u>Factor 7, continued</u>				<u>Factor 11</u>			
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
2	6	.887	Buying	1	62	.742	Electricity
3	77	.792	Taxes	2	73	.641	Food processing
4	5	.772	Estimating costs	3	55	.624	Poultry
5	76	.710	Insurance				
6	36	.660	Selecting				
7	16	.609	Mixing				
				<u>Factor 12</u>			
				1	35	.621	Installing
				2	34	.542	Inspecting, testing, trouble shooting
				3	64	.535	Shop work
				4	65	.535	Carpentry
				<u>Factor 13</u>			
				1	4	.707	Advising, consulting and diagnosing
				2	29	.572	Assembling
				<u>Factor 14</u>			
				1	14	.834	Making and building
				<u>Factor 15</u>			
				1	93	.218	Architecture
				2	92	.218	Heat
				3	86	.218	Research procedures
				4	89	.218	Sound and light
				5	91	.218	Metallurgy
				6	85	.218	Foreign language
				7	84	.218	Advanced mathematics
				8	83	.218	Physics
				9	82	.218	Chemistry
				10	72	.218	Forestry
<u>Factor 8</u>							
1	49	.891	Soils				
2	51	.784	Crops				
3	22	.680	Using technical and service manuals, parts lists				
4	52	.647	Horticulture				
5	57	.596	Feeds				
6	75	.586	Credit				
7	50	.584	Soil and water management				
8	54	.537	Livestock				
9	60	.509	Plant diseases				
10	48	.500	Decision-making				
<u>Factor 9</u>							
1	59	.540	Animal diseases				
2	58	.418	Animal nutrition				
<u>Factor 10</u>							
1	42	.935	Writing articles, copy, etc.				
2	63	.540	Farm mechanization				
3	41	.420	Keeping records and accounts				
4	67	.404	Farm conveniences				

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Job Title Cluster 6.  
Sales - Mechanics Oriented - 1 title

<u>Factor 1</u>				<u>Factor 2, continued</u>			
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
1	20	.967	Calculating costs	3	6	.945	Buying
2	22	.967	Using technical and service manuals, parts lists	4	1	.945	Meeting farm people
3	23	.967	Developing tech- niques	<u>Factor 3</u>			
4	34	.967	Inspecting, testing, trouble shooting	1	2	.391	Meeting non-farm people
5	40	.967	Handling money	2	4	.891	Advising, consult- ing and diagnosing
6	46	.967	Making technical reports	3	5	.891	Estimating costs
7	51	.642	Crops	4	41	.891	Keeping records and accounts
<u>Factor 2</u>				5	47	.891	Reading technical reports
1	43	.945	Making speeches	6	48	.758	Decision-making
2	3	.945	Selling				

Job Title Cluster 7.  
Sales - Tobacco and Poultry Oriented - 3 titles

<u>Factor 1</u>							
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
1	44	.985	Filing	12	27	.939	Repairing
2	45	.985	Inventorying	13	39	.939	Promoting
3	3	.985	Selling	14	58	.939	Animal nutrition
4	57	.985	Feeds	15	59	.939	Animal diseases
5	81	.985	Salesmanship	16	55	.939	Poultry
6	32	.939	Adjusting	17	77	.939	Taxes
7	7	.939	Handling men(boss)	18	76	.939	Insurance
8	20	.939	Calculating costs	19	73	.767	Food processing
9	46	.939	Making technical reports	20	33	.767	Maintaining
10	51	.939	Crops	21	28	.767	Operating
11	22	.939	Using technical and service manuals, parts lists	22	40	.767	Handling money
				23	2	.767	Meeting non-farm people
				24	41	.767	Keeping records and accounts

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Sales - Tobacco and Poultry Oriented - 3 titles, continued

<u>Factor 2</u>				<u>Factor 3</u>			
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
1	19	.985	Testing	1	92	.235	Heat
2	29	.985	Assembling	2	90	.235	Hydraulics
3	61	.985	Tractors and other power units	3	93	.233	Architecture
4	63	.985	Farm mechanization	4	91	.232	Metallurgy
5	64	.985	Shop work	5	87	.228	Electronics
6	65	.985	Carpentry	6	89	.227	Sound and light
7	67	.985	Farm conveniences	7	86	.226	Research procedures
8	69	.985	General agriculture and rural life knowledge	8	85	.222	Foreign language
9	88	.985	Mechanics	9	83	.215	Physics
10	80	.985	Office procedures	10	84	.213	Advanced mathematics
11	79	.985	Business principles				
12	1	.985	Meeting farm people	11	82	.213	Chemistry
13	75	.985	Credit				
14	78	.938	Accounting				

Factor 4

1	6	.258	Buying	6	10	.234	Appraising work of others
2	4	.257	Advising, consulting, and diagnosing	7	11	.226	Supervising others
3	5	.255	Estimating costs	8	14	.213	Making and building
4	8	.250	Inducting new personnel	9	13	.213	Designing
5	9	.241	Training others	10	15	.205	Sketching and drawing
				11	16	.201	Mixing

Job Title Cluster 8.

Service-Processor - Plant Science Oriented - 6 titles

<u>Factor 1</u>							
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
1	68	.896	Agricultural economics	9	76	.691	Insurance
2	65	.889	Carpentry	10	80	.628	Office procedures
3	62	.889	Electricity	11	77	.627	Taxes
4	67	.841	Farm conveniences	12	69	.623	General agriculture and rural life knowledge
5	66	.841	Farm buildings				
6	61	.826	Tractors and other power units	13	63	.611	Farm mechanization
7	64	.762	Shop work	14	75	.586	Credit
8	79	.699	Business principles	15	81	.498	Salesmanship

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Service-Processor - Plant Science Oriented - 6 titles, continued

<u>Factor 2</u>				<u>Factor 4</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	7	.964	Handling men(boss)	1	31	.953	Remodeling
2	10	.960	Appraising work of others	2	36	.731	Selecting
3	11	.942	Supervising others	3	30	.637	Calibrating
4	18	.902	Inspecting	4	37	.578	Policy-making
5	28	.879	Operating	5	64	.548	Shop work
6	16	.807	Mixing	6	45	.490	Inventorying
7	9	.780	Training others	<u>Factor 5</u>			
8	32	.758	Adjusting	1	2	.912	Meeting non-farm people
9	48	.725	Decision-making	2	1	.857	Meeting farm people
10	24	.690	Planning product- ion or service	3	44	.705	Filing
11	19	.647	Testing	4	39	.624	Promoting
12	73	.565	Food processing	5	3	.594	Selling
13	33	.560	Maintaining	6	23	.576	Developing techniques
14	46	.539	Making technical reports	7	47	.524	Reading technical reports
15	34	.534	Inspecting,testing, trouble shooting	<u>Factor 6</u>			
16	39	.527	Promoting	1	13	.900	Designing
17	30	.500	Calibrating	2	43	.900	Making speeches
<u>Factor 3</u>				3	27	.807	Repairing
1	71	.963	Insect and pest control	4	37	.741	Policy-making
2	50	.962	Soil and water management	5	29	.671	Assembling
3	49	.917	Soils	6	34	.493	Inspecting,testing, trouble shooting
4	52	.872	Horticulture	<u>Factor 7</u>			
5	53	.867	Floriculture	1	21	.848	Conducting research
6	20	.831	Calculating costs	2	14	.578	Making and building
7	70	.826	Agricultural chemicals	3	17	.515	Assembling
8	60	.770	Plant diseases	4	9	.502	Training others
9	51	.690	Crops				
10	6	.624	Buying				
11	38	.611	Planning				
12	23	.578	Developing techniques				
13	73	.540	Food processing				

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Service-Processor - Plant Science Oriented - 6 titles, continued

<u>Factor 8</u>				<u>Factor 10</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
1	84	.820	Advanced mathematics	1	55	.869	Poultry
2	5	.810	Estimating costs	2	57	.850	Feeds
3	78	.733	Accounting	3	54	.844	Livestock
4	38	.641	Planning	4	58	.797	Animal nutrition
5	77	.627	Taxes	5	56	.707	Dairy
				6	40	.703	Handling money
				7	59	.619	Animal diseases
<u>Factor 9</u>				<u>Factor 11</u>			
1	4	.833	Advising, consulting, and diagnosing				
2	8	.779	Inducting new personnel	1	72	.813	Forestry
3	88	.779	Mechanics	<u>Factor 12</u>			
4	82	.705	Chemistry				
5	24	.616	Planning production or service	1	35	.836	Installing
6	34	.553	Inspecting, testing, trouble shooting	2	33	.679	Maintaining
7	36	.551	Selecting	<u>Factor 13</u>			
8	63	.545	Farm mechanization	1	60	.422	Plant diseases

Job Title Cluster 9.  
Horticulture Oriented - 2 titles

<u>Factor 1</u>							
1	65	.999	Carpentry	14	46	.999	Making technical reports
2	2	.999	Meeting non-farm people	15	47	.999	Reading technical reports
3	5	.999	Estimating costs	16	49	.999	Soils
4	14	.999	Making and building	17	50	.999	Soil and water management
5	15	.999	Sketching and drawing	18	54	.999	Livestock
6	17	.999	Assembling	19	57	.999	Feeds
7	19	.999	Testing	20	58	.999	Animal nutrition
8	22	.999	Using technical and service manuals, parts lists.	21	59	.999	Animal diseases
9	23	.999	Developing techniques	22	61	.999	Tractors and other power units
10	27	.999	Repairing	23	62	.999	Electricity
11	28	.999	Operating	24	63	.999	Farm mechanization
12	33	.999	Keeping records and accounts	25	64	.999	Shop work

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Horticulture Oriented - 2 titles, continued

<u>Factor 1, continued</u>				<u>Factor 3</u>			
Rank	Row No.	Factor Loading	Activity or Knowledge	Rank	Row No.	Factor Loading	Activity or Knowledge
26	1	.999	Meeting farm people	1	91	.275	Metallurgy
27	66	.999	Farm buildings	2	93	.272	Architecture
28	67	.999	Farm conveniences	3	90	.260	Hydraulics
29	69	.999	General agriculture and rural life knowledge	4	88	.254	Mechanics
				5	89	.253	Sound and light
				6	92	.250	Heat
30	71	.999	Insect and pest control	7	87	.247	Electronics
				8	85	.245	Foreign language
				9	86	.218	Research procedures
				10	84	.216	Advanced mathematics
							Physics
							Chemistry
<u>Factor 2</u>				<u>Factor 4</u>			
1	11	.350	Supervising others	11	83	.215	Physics
2	13	.286	Designing	12	82	.200	Chemistry
3	6	.251	Buying				
4	10	.241	Appraising work of others				
5	4	.240	Advising, consulting, and diagnosing	1	29	.314	Assembling
6	36	.237	Selecting	2	25	.300	Constructing equipment tools (hand or power) supplies and instruments
7	16	.230	Mixing				
8	34	.213	Inspecting, testing trouble shooting	3	51	.239	Crops
9	35	.211	Installing	4	24	.238	Planning production or service
				5	21	.224	Conducting research
				6	44	.211	Filing
				7	72	.205	Forestry

Job Title Cluster 10.  
Building and Construction Oriented - 3 titles

<u>Factor 1</u>							
1	4	.982	Advising, consulting, and diagnosing	6	24	.930	Planning production or service
2	5	.982	Estimating costs	7	28	.930	Operating
3	15	.982	Sketching and drawing	8	34	.930	Inspecting, testing, trouble shooting
4	18	.982	Inspecting				
5	22	.982	Using technical and service manuals, parts lists	9	36	.930	Selecting
				10	41	.930	Keeping records and accounts

ACTIVITY AND KNOWLEDGE FACTORS IDENTIFIED  
FOR EACH OF THE TEN JOB-TITLE CLUSTERS, continued

Building and Construction Oriented - 3 titles, continued

<u>Factor 1, continued</u>				<u>Factor 2, continued</u>			
<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>	<u>Rank</u>	<u>Row No.</u>	<u>Factor Loading</u>	<u>Activity or Knowledge</u>
11	49	.930	Soils	14	69	.776	General agricul- ture and rural life knowledge
12	81	.930	Salesmanship				
13	93	.930	Architecture	15	66	.770	Farm buildings
14	20	.918	Calculating costs	16	68	.770	Agricultural economics
				17	63	.770	Farm mechanization
				18	74	.770	Rural recreation
<u>Factor 2</u>				<u>Factor 3</u>			
1	11	.911	Supervising others	1	13	.999	Designing
2	14	.911	Making and building	2	19	.999	Testing
3	28	.911	Operating	3	30	.999	Calibrating
4	75	.850	Credit	4	31	.999	Remodeling
5	79	.850	Business principles	5	32	.999	Adjusting
6	88	.850	Mechanics	6	35	.999	Installing
7	65	.850	Carpentry	7	2	.893	Meeting non-farm people
8	37	.850	Policy-making	8	1	.823	Meeting farm people
9	80	.822	Office procedures				
10	17	.780	Assembling				
11	7	.776	Handling men(boss)				
12	9	.776	Training others				
13	10	.776	Appraising work of others				

APPENDIX K

DICTIONARY OF OCCUPATIONAL TITLES FOR  
126 AGRICULTURALLY-ORIENTED JOB TITLES  
IDENTIFIED IN THE MOREHEAD STATE UNIVERSITY STUDY

Staff Study in Agricultural Technology  
Morehead State University  
Morehead, Kentucky

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
001	General Director of large farm building construction, farm equipment, sales, and lumber company.	Store Manager(ret. trade) (185.168)
004	General Director of small farm building, farm equipment, and lumber company.	Store Manager(ret. trade) (185.168)
012	General Director of farm machinery and equipment sales, and service company, including automobile and truck sales, and service.	Store Manager(ret. trade) (185.168)
014	Director of Aluminum siding company.	Store Manager(ret. trade) (185.168)
021	Truck driver and yard worker for small farm building, farm equipment, lumber and coal company.	Truck driver, Heavy (any ind)(905.883)
027	Carpenter for lumber and farm building construction company.	Carpenter, construction (860.381)
033	Head mechanic and salesman for farm machinery and equipment company.	Salesman, tractor and farm implements(ret. trade; whlse. trade)(277.358)  Farm equipment mechanic (agric.)(624.281)
034	Mechanic for farm machinery automobile and truck company.	Farm equipment mechanic (agric.)(624.281)
035	Mechanic for automobile, tractor, and power unit repair company.	Auto-Tractor mechanic (620.281)
043	Salesman for farm silo construction, lumber, and farm building company.	Salesman, farm and garden supplies(whlse. trade) (277.358)



BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
044	Salesman for farm machinery, automobile and truck, equipment sales and service, and feed company.	Salesman, tractor and farm implements (ret. & whlse. trade) (277.358)  Salesman, grain and feed products (whlse. trade) (262.358)
045	Parts salesman for farm machinery, automobile and truck sales company.	Sales clerk (ret. trade) (290.478)  Salesman, tractor and farm implements (ret. & whlse. trade) (277.358)
052	Clerk and bookkeeper for small farm building, farm equipment, and lumber company.	Bookkeeper (clerical) (210.388)
058	Shop foreman for farm building construction, farm equipment, lumber and coal company.	Production foreman (any ind) (699.138)  Service Manager (187.168)
060	Service supervisor for farm machinery company.	Manager, Service Dept. (whlse. trade) (187.168)
062	Shop foreman for farm machinery sales and service company.	Manager, Service Dept. (whlse. trade) (187.168)
064	Office manager for farm machinery sales and service company.	Manager, Office (any ind) (169.168)
081	General Director of feed and livestock supply company.	Manager, Store (ret. trade) (185.168)
083	General Director of feed mill, farm supply store, and farm machinery sales and service.	Superintendent, grain elevator (grain & feed mill) (529.138)  Manager, Store (ret. trade) (185.168)
084	General Director of grain elevator and farm supply store.	Superintendent, grain elevator (grain & feed mill) (529.138)  Manager, Store (ret. trade) (185.168)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
086	General Director and mill operator for feed and farm supply store.	Superintendent, grain elevator (grain & feed mill) (529.138)  Manager, Store (ret. trade) (185.168)
087	General Director for feed and coal distribution company.	Manager, Store (ret. trade) (185.168)
092	Millman for feed mill.	Miller, Foreman (grain & feed mill) (521.782)
095	Truck driver and helper for feed mill, grain elevator, farm imple- ment, fertilizer, and livestock supply store.	Truck driver, Heavy (any ind) (905.883)
101	Maintenance man for feed mill and grain elevator.	Millwright (any ind) (638.281)
102	Mechanic for feed mill, farm and dairy supply company.	Maintenance man (any ind) (899.381)
103	Seed cleaning and inspection foreman for seed company.	Foreman, feed mill (grain & feed mill) (529.132)
109	Salesman for feed mill and farm supply store.	Salesman, grain & feed pro- ducts (whlse. tr.) (262.358)  Salesman, tractor and farm implements (ret. tr.) (277.358)
114	Clerk in feed mill and farm supply store.	Sales clerk (ret. tr.) (290.478)
120	Outside foreman for grain elevator, feed mill, farm supply and farm machinery sales company.	Fieldman, (any ind) (180.118)  Superintendent, production (agric.) (180.168)
127	Warehouseman for feed mill, farm supply, fertilizer, and lumber company.	Stores laborer, (any ind) (922.887)
137	Director of general farm supply and service company.	Manager, Store (ret. trade) (185.168)

BJT Code	Occupational Title Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
146	General Director of hardware store and feed mill.	Manager, Store (ret. trade) (185.168) Superintendent, grain elevator (grain & feed mill) (529.138)
147	General Director and manager of tobacco warehouse company.	Manager, Tobacco warehouse whlse. tr.) (185.168)
149	General manager real estate company.	Manager, property (real estate) (186.168)
170	Salesman in feed and farm supply store.	Salesman, grain and feed products (whlse. tr.) (262.358) Salesman, farm and garden supplies (whlse. tr.) (277.358)
180	Office worker in tobacco warehouse company.	Clerk, General (clerical) (209.588)
195	General worker in farm supply and service company.	Laborer, Stores (any ind) (922.887)
196	Weightman and general worker in a tobacco warehouse company.	Laborer, Stores (any ind) (922.887) Hogshead weigher (tobacco) (224.487)
206	General Director of vegetable producing company.	Wholesaler (whlse. trade) (185.168)
207	General Director of wholesale vegetable produce and sales company.	Wholesaler (whlse. trade) (185.168)
208	General Director of retail florist shop.	Manager, retail florist (ret. trade) (185.168)
209	General Director of landscaping, florist, and greenhouse business.	Manager, retail florist (ret. trade) (185.168) Nurseryman (agric.) (406.168)
210	General Director of florist and greenhouse business.	Manager, retail florist (ret. trade) (185.168) Nurseryman (agric.) (406.168)

<u>BJT Code</u>	<u>Occupational Titles Defined In Morehead State University Study</u>	<u>Dictionary of Occupational Titles, Third Edition, 1965</u>
237	Clerk and bookkeeper for nursery and florist shop.	Bookkeeper (clerical) (210.388)  Sales clerk (ret. trade) (290.478)
263	Floral designer.	Floral designer (ret. trade) (142.081)
264	Deliveryman for retail florist shop.	Deliveryman (any ind) (919.883)
265	Worker in wholesale vegetable produce company.	Production helper (food prep., NEC) (529.886)
266	Worker for vegetable producing company.	Production helper (food prep., NEC) (529.886)
267	Worker for landscaping and greenhouse business.	Nursery worker (agric.) (406.887)
276	Office director or branch manager for wholesale and retail dairy products, meat, and grocery company.	Manager, Office (any ind) (169.168)  Manager, branch (any ind) (183.118)
278	General Director for livestock marketing cooperative.	Supervisor of Sales (bus. ser.) (185.158)
279	General Director of livestock auction company.	Auctioneer (ret. & whise. trade) (294.258)  Supervisor of Sales (bus. ser.) (185.158)
282	General Director and distributor for wholesale and retail dairy products, meat and grocery company.	Production Superintendent (any ind) (183.118)  Manager, Store (185.168)
283	General Director of ice-cream and dairy products company.	Manager, Store (ret. trade) (185.168)
284	Office director of livestock marketing cooperative.	Manager, Office (any ind) (169.168)

<u>PIT Code</u>	<u>Occupational Titles Defined In Morehead State University Study</u>	<u>Dictionary of Occupational Titles, Third Edition, 1965</u>
291	Truck driver for livestock marketing and auction company.	Truck driver, Light (any ind) (906.883)  Truck driver, Heavy (any ind) (905.883)
292	Truck driver for dairy products, meat, and grocery company.	Truck driver, Heavy (any ind) (905.883)
293	Bottling machine operator for dairy products company.	Dairy processing equipment operator (dairy prod.) (529.782)
301	Freezer inspection man for dairy products company.	Dairy tester (agric.) (469.381)
311	Route salesman for wholesale and retail dairy products, meat, and grocery company.	Salesman, foodstuffs (whlse. trade) (262.358)
312	Waitress of ice-cream dairy bar.	Car hop (Hotel and Rest.) (311.878)
322	Bookkeeper in livestock sales company.	Bookkeeper (clerical) (210.388)
342	Contact man for livestock auction company.	Salesman, livestock (whlse. tr.) (261.258)
343	Yardman for stockyard and feeder cattle business.	Livestock, caretaker, yard-or-in transit (any ind) (466.887)
344	Grader for livestock cooperative.	Grader, meat (slaught. and meat packing) (525.387)
345	Weighman in livestock sales company.	Weighman (any ind) (525.387)
359	General Director for wholesale and retail egg buying, and grading company.	Production superintendent (any ind) (183.118)
366	Plant process man for poultry processing company.	Poultry dresser (agric., slaugh. and meat pack.) (525.887)
380	Salesman for egg, poultry, poultry processing company.	Salesman, foodstuffs (whlse. tr.) (292.358)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
407	Hatchery operator and breed selection man for poultry company.	Poultry breeder (agric.) (412.181)  Manager, hatchery (agric.) (412.168)
410	Truck driver and pick-up man for wholesale-retail egg company.	Truck driver, Light (any ind) (906.883)
411	General worker in egg and poultry processing company.	Farm hand, poultry (agric.) (412.884)
423	General Director for fertilizer, and lime stone company.	Manager, Store (ret. trade) (185.168)
511	General Director of fuel distrib- ution and service company.	Superintendent, pipe lines (184.168)
512	General Director for insurance company.	Manager, Insurance (any ind) (186.118)
513	General Director of hardware, electrical and building supply, paint, and wallpaper company.	Manager, Store (ret. trade) (185.168)
514	General Director or restaurant and liquors store.	Manager, retail liquor (ret. trade) (185.168)
516	General Director of pest control company.	Exterminator supervisor (bus. ser.) (389.138)
517	Service director of pest control company.	Manager, Service Dept. (whlse. tr.) (187.168)
519	General Director of show and riding academy, horse farm and hospital.	General manager, farm (agric.; whlse. trade) (180.168)  Superintendent, hospital (med. service) (187.118)
521	General Director of rural grocery and variety store.	Manager, Store (ret. trade) (185.168)
522	General Director of grocery store.	Manager, Store (ret. trade) (185.168)
523	General Director of slaughter and meat processing company.	Production superintendent (any ind) (183.118)

<u>BJT Code</u>	<u>Occupational Titles Defined in Morehead State University Study</u>	<u>Dictionary of Occupational Titles, Third Edition, 1965</u>
528	General Director of service station, tractor and truck repair shop.	Garage foreman (auto.ser.) (620.131) Manager, Service(auto.ser.) (185.168)
530	Director, farm management store.	Manager, farm(agric.) (180.168) Manager, Service(auto.ser.) (185.168)
533	Director retail meat and grocery store.	Manager, Store(ret.trade) (185.168)
536	Sales manager for hardware, electrical, plumbing and building supply store.	Manager, Sales(ret.trade & whlse. trade) (185.168)
539	General manager of public utilities and fuel distribution company.	Dispatcher chief(patrol, production,petrol.,refin., pipelines) I (184.168)
540	General Director of state police district station.	Commanding officer auto. section(gov.ser.) (375.168)
564	Maintenance man in state park.	Park worker(gov..ser.) (407.887)
584	Shipping manager for hardware, building, plumbing, and electrical supply company.	Receiving & shipping foreman(any ind) (223.138)
596	Life insurance agent.	Life underwriter (ins.) (250.258)
597	Salesman in pest control company.	Salesman, pest control company(service) (252.358)
601	Sales manager for insurance company.	Manager, Insurance(any ind) (186.118)
612	Clerk for grocery and variety store.	Stores clerk (223.387)
613	Sales clerk and bookkeeper in retail meat store and meat processing company.	Sales, clerk (ret.trade) (290.478) Bookkeeper(clerical) (210.388)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
614	Clerk in feed mill.	Salesman, grain & feed products(whlse.tr.)(262.358)
616	Cashier in grocery store and bank.	Bank cashier in bank. (186.168)  Cashier and wrapper (ret.trade)(211.468)
624	Produce and meat manager in grocery-supermarket.	Supervisor of stock (clerical)(223.138)
631	Route serviceman for pest control company.	Salesman, pest control service(bus.ser.)(252.358)
632	Meat cutter for supermarket.	Meat cutter(ret. & whlse. trade)(316.884)
633	Butcher for frozen food locker and meat processing company, including sausage making and boning.	Butcher(all around-slaugh. and meat pack.)(525.381)  Laborer(slaugh. & meat pack.)(522.887)
634	Caretaker in show and riding academy, including horse trainer on horse farm.	Caretaker, farm(agric.)(421.884)  Horse trainer(amus.&rec.) II (159.228)
636	Claims adjuster for insurance company.	Claims adjuster(insurance)(241.168)
637	Foreman for horse rehabilitation farm and horse hospital.	Director, hospital (med.ser.)(187.118)  Horse trainer(amus.&rec.) I (153.228)
639	Conservation instructor in 4-H camp.	Four-H club agent(education)(096.128)
641	Exercise boy and groom boy for horse rehabilitation farm and horse hospital.	Stableman(any ind)(356.874)
644	Produce man in supermarket-grocery store.	Salesman, food products (ret.trade)(262.358)



BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
647	Naturalist in State Park.	Park naturalist(gov.ser.) (099.228)
661	General Director for heating and plumbing company.	Manager, Store(ret.trade) I(185.168)
679	General Director or ready mix concrete and concrete block company.	Manager, retail lumber & building supplies(185.168)
681	General Director of garage and service station.	Service manager(auto.ser.) (185.168)
		Garage foreman( auto.ser.) (620.131)
682	General Director and district distributor in petroleum bulk plant.	Industrial distributor (whise.tr.)(185.168)
683	General Director of motor company.	Superintendent,transporta- tion(any ind)(184.168)
		Manager, retail automotive (ret.trade)(185.168)
688	Agent for insurance company.	Agent(insurance)(250.258)
698	General Director for nursing home.	Superintendent, home-for- aged(any ind)(187.118)
770	Service station attendant and automobile mechanic.	Automobile-service mechanic (auto.ser.) I (620.381)
777	Serviceman for furnace company.	Oil burner-installation- and serviceman(any ind) (862.281)
779	Plumber for plumbing company.	Plumber, maintenance (any ind)(862.381)
780	Electrician for plumbing company.	Electrician(any ind) (824.281)
831	Plant foreman for stone and concrete block company.	Concrete batching and mix- ing plant foreman(constr.) (570.132)
832	Product salesman and office manager for stone company.	Manager, office(any ind) (169.168)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
857	Custodian for public school system, state park, church, hotel, nursing home, and department store.	Janitor(any ind) I (382.884)
865	Cook for camp, school, restaurant, or nursing home.	Cook, head, school cafeteria (hotel and rest.)(313.138)  Cook(hotel and rest.) (313.381)
882	Field service worker for health department.	Health officer, field (gov.ser.)(168.168)

## APPENDIX L

DICTIONARY OF OCCUPATIONAL TITLES FOR  
67 AGRICULTURAL-TECHNICAL JOB TITLES  
IDENTIFIED IN THE MOREHEAD STATE UNIVERSITY STUDY

Staff Study in Agricultural Technology  
Morehead State University  
Morehead, Kentucky

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
001	General Director of large farm building construction, farm equipment, sales, and lumber company.	Store manager(ret.trade) (185.168)
004	General Director of small farm building, farm equipment, sales and lumber company.	Store manager(ret.trade) (185.168)
012	General Director of farm machinery and equipment sales and service company, including automobile and truck sales and service.	Store manager(ret.trade) (185.168)
021	Truck driver and yard worker for small farm building, farm equipment, lumber and coal company.	Truck driver,Heavy(any ind) (905.883)
027	Carpenter for lumber and farm building construction company.	Carpenter,constr.(860.381)
033	Head mechanic and salesman for farm machine and equipment company.	Salesman, tractor and farm implements(ret.&whlse.tr.) (277.358)
		Farm equipment mechanic (agric.)(624.281)
034	Mechanic for farm machinery, automobile and truck company.	Farm equipment mechanic (agric.)(624.281)
035	Mechanic for automobile,tractor and power unit repair company.	Auto-tractor mechanic (620.281)
044	Salesman for farm machinery, automobile and truck,equipment sales and service, and feed company.	Salesman, tractor & farm implements(ret.&whlse.tr.) (277.358)
		Salesman, grain & feed products(whlse.tr.)(262.358)

<u>BJT Code</u>	<u>Occupational Titles Defined In Morehead State University Study</u>	<u>Dictionary of Occupational Titles, Third Edition, 1965</u>
060	Service supervisor for farm machinery company.	Manager, Service Dept. (whlsc.tr.) (187.168)
062	Shop foreman for farm machinery sales and service company.	Manager, Service Dept. (whlse.tr.) (187.168)
064	Office manager for farm machinery sales and service company.	Manager, Office(any ind) (169.168)
083	General Director of feed mill, farm supply store, and farm machinery sales and service.	Superintendent, grain elevator(grain&feed mill) (529.138)
		Manager, Store(ret.trade) (185.168)
086	General Director and mill operator for feed and farm supply store.	Superintendent, grain elevator(grain&feed mill) (529.138)
		Manager, Store(ret.trade) (185.168)
092	Millman for feed mill.	Miller, foreman(grain and feed mill) (521.782)
095	Truck driver and helper for feed mill, grain elevator, farm implements, fertilizer and live-stock supply store.	Truck driver, Heavy(any ind) (905.883)
101	Maintenance man for feed mill and grain elevator.	Millwright(any ind) (638.281)
102	Mechanic for feed mill, farm and dairy supply company.	Maintenance man (any ind) (899.381)
103	Seed cleaning and inspection foreman for seed company.	Foreman, feed mill(grain and feed mill) (529.132)
109	Salesman for a feed mill and farm supply store.	Salesman, grain & feed products(whlse.tr.) (262.358)
		Salesman, tractor & farm implements(ret.&whlse.tr.) (277.358)
120	Outside foreman for grain elevator, feed mill, farm supply, and farm machine sales company.	Fieldman(any ind) (180.118)
		Superintendent, production (agric.) (180.168)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
137	Director of general farm supply and service company.	Manager, Store(ret.trade) (185.168)
196	Weighman and general worker in a tobacco warehouse company.	Laborer, stores(any ind) (922.887)  Hogshead weigher(tobacco) (224.487)
208	General Director of retail florist shop.	Manager, retail florist (ret. trade)(185.168)
209	General Director of landscaping, florist, and greenhouse business.	Manager, retail florist (ret.trade)(185.168)  Nurseryman(agric.)(406.168)
210	General Director of florist and greenhouse business.	Manager, retail florist (ret. trade)(185.168)  Nurseryman(agric.)(406.168)
237	Clerk and bookkeeper for nursery and florist shop.	Bookkeeper(clerical)(210.388)  Sales clerk(ret.tr.)(290.478)
263	Floral designer.	Floral designer(ret.trade) (142.081)
267	Worker for landscaping green- house business.	Nursery worker(agric.) (406.887)
282	General Director and distrib- utor for wholesale and retail dairy products, meat, and grocery company.	Production, superintendent (any ind)(183.118)  Manager,Store(185.168)
292	Truck driver for dairy products, meat, and grocery company.	Truck driver,Heavy(any ind) (905.883)
301	Freezer inspection man for dairy products company.	Dairy tester(agric.)(469.381)
343	Yardman for stor and feeder cattle business.	Livestock caretaker, yard- or-in transit(any ind) (466.887)
344	Grader for livestock cooperative.	Grader, meat(slaugh.&meat pack.)(525.387)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
359	General Director for wholesale-retail egg-buying and grading company.	Production, superintendent (any ind) (183.118)
380	Salesman for egg, poultry, and poultry processing company.	Salesman, foodstuffs (whlse.tr.) (292.358)
407	Hatchery operator and breed selection man for poultry company.	Poultry breeder (agric.) (412.181) Manager, hatchery (agric.) (412.168)
512	General Director for insurance company.	Manager, insurance (any ind) (186.118)
513	General Director of hardware, electrical and building supply, paint, and wallpaper company.	Manager, Store (ret. trade) (185.168)
516	General Director of pest control company.	Exterminator supervisor (bus.ser.) (389.138)
517	Service director for pest control company.	Manager, Service Dept. (whlse.tr.) (187.168)
519	General Director of show and riding academy, horse farm and hospital.	General manager, farm (agric.; whlse.tr.) (180.168) Superintendent, hospital (med.ser.) (187.168)
522	General Director of grocery store.	Manager, store (ret. trade) (185.168)
523	General Director of slaughter and meat processing company.	Production superintendent (any ind) (183.118)
530	Director, farm management company.	Manager, farm (agric.) (180.168) Manager, service (auto.ser.) (185.168)
533	Director of retail meat and grocery store.	Manager, Store (ret. trade) (185.168)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
536	Sales manager for hardware, electrical, plumbing and building supply store.	Manager, sales(ret.&whlse. trade)(185.168)
539	General manager of public utilities and fuel distrib- ution company.	Dispatcher, chief(petroleum production, petrol. refin., pipe lines) I (185.168)
540	General Director of state police district station.	Commanding officer, auto. ser.(gov.ser.)(375.168)
614	Clerk in feed mill.	Salesman, grain & feed products(whlse.trade) (262.358)
616	Cashier in grocery store and bank.	Bank cashiers in bank (186.168)
		Cashier and wrapper (ret.trade)(211.468)
624	Produce and meat manager in grocery-supermarket.	Supervisor of stock (clerical)(223.138)
631	Route serviceman for pest control company.	Salesman, pest control serv.(bus.ser.)(252.358)
632	Meat cutter for a supermarket.	Meat cutter(ret. & whlse. trade)(316.884)
633	Butcher for frozen food locker and meat processing company, including sausage making and boning.	Butcher(all-around, slaugh. and meat pack.)(525.381)
		Laborer(slaugh. & meat pack.)(529.887)
634	Caretaker in show and riding academy, including horse trainer on horse farm.	Caretaker, farm(agric.) (421.884)
		Horse trainer(amus.&rec.) (II 159.228)
636	Claims adjuster for insurance company.	Claims adjuster(insurance) (241.168)
647	Naturalist in State Park.	Park naturalist(gov.ser.) (099.228)

BJT Code	Occupational Titles Defined In Morehead State University Study	Dictionary of Occupational Titles, Third Edition, 1965
661	General Director for heating and plumbing company.	Manager, Store(ret. trade) I(185.168)
681	General Director of garage and service station.	Service manager(auto.ser.) (185.168)
770	Service station attendart and automobile mechanic.	Automobile service mechanic (auto.ser.)I (620.381)
777	Serviceman for furnace company.	Oil burner-installation- and serviceman(any ind) (862.281)
779	Plumber for plumbing company.	Plumber, maintenance (any ind)(862.281)
780	Electrician for plumbing company.	Electrician(any ind) (824.281)
831	Plant foreman for stone and concrete block company.	Concrete batching and mix- ing plant foreman(constr.) (570.132)
832	Product salesman and office manager for stone company.	Manager, office(any ind) (169.168)
857	Custodian for public school system,state park,church,hotel, nursing home,and department store.	Janitor(any ind) I(382.884)



APPENDIX M

EMPLOYMENT OPPORTUNITIES AND USABLE AGRICULTURAL SKILLS  
IN NON-FARM AGRICULTURAL OCCUPATIONS IN APPALACHIA

STAFF STUDY

MOREHEAD STATE UNIVERSITY  
MOREHEAD, KENTUCKY

Total Population in the 38 County Region of Study\*

<u>COUNTY</u>	<u>POPULATION</u>	<u>COUNTY</u>	<u>POPULATION</u>
Bath	9,114	Perry	34,961
Bourbon	18,178	Pike	68,264
Boyd	52,163	Robertson	2,443
Braken	7,422	Rowan	12,808
Breathitt	15,490	Wolfe	6,534
Carter	20,817		
Elliott	6,330	<u>Total Population of the 28 Kentucky Counties-----</u>	
Fleming	10,890		<u>505,502</u>
Floyd	41,642	Adams	19,982
Greenup	29,238	Brown	25,178
Harrison	13,704	Clermont	80,530
Johnson	19,748	Gallia	26,120
Knott	25,258	Highland	29,716
Lawrence	12,134	Jackson	29,372
Lewis	13,115	Lawrence	55,438
Magoffin	11,156	Meigs	22,159
Martin	10,201	Pike	19,380
Mason	18,454	Scioto	84,216
Menifee	4,276		
Montgomery	13,461	<u>Total Population of the 10 Ohio Counties-----</u>	
Morgan	11,056		<u>392,091</u>
Nicholas	6,677		
Pendleton	9,968	<u>Total Population in the Geographical Region</u>	
			<u>897,593</u>

\* Reference, 1960 U.S. Census of Population