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VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT IN THE AGRICULTURAL-CHEMICAL INDUSTRY IN MICHIGAN.

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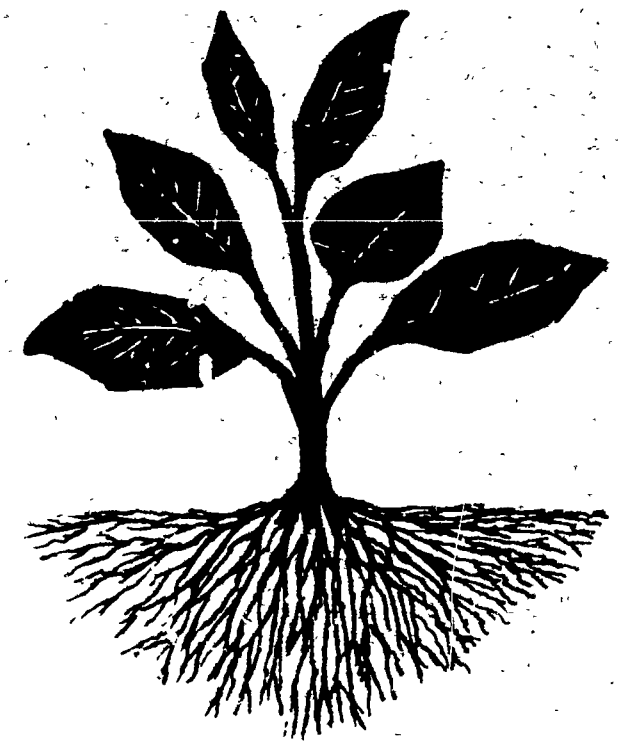
THIS STUDY WAS CONDUCTED TO DETERMINE THE VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT BELOW THE MANUFACTURING LEVEL IN THE AGRICULTURAL-CHEMICAL INDUSTRY IN MICHIGAN. NINE FUNCTIONS PERFORMED IN THE INDUSTRY WERE LISTED--RESEARCH, TRANSPORTATION, PROCESSING, PUBLIC RELATIONS, SALES, SERVICE, OFFICE RECORDS AND MANAGEMENT, MAINTENANCE, AND PURCHASING. COMPETENCIES NECESSARY FOR THE SUCCESSFUL PERFORMANCE OF EACH FUNCTION WERE COMPILED AND CHECKED BY AGRICULTURAL-CHEMICAL INDUSTRY REPRESENTATIVES AND MICHIGAN STATE UNIVERSITY STAFF MEMBERS CLOSELY ASSOCIATED WITH THE INDUSTRY. SELECTED REPRESENTATIVES OF THE AGRICULTURAL-CHEMICAL INDUSTRY RATED THE IMPORTANCE OF THESE COMPETENCIES ON A FOUR-POINT SCALE WITH FOUR BEING THE HIGHEST RATING. SOME COMPETENCIES GIVEN HIGH MEAN RATINGS WERE (1) USING MANY BASIC SKILLS REQUIRED FOR TESTING AGRICULTURAL-CHEMICAL MATERIALS, (2) RECOMMENDING PROCEDURES FOR REDUCING TRANSPORTATION COSTS AND INCREASING EFFICIENCY, (3) UNDERSTANDING AND INTERPRETING FEDERAL AND STATE HEALTH REGULATIONS REGARDING LABELING AND USING AGRICULTURAL CHEMICALS, (4) ASSISTING FARMERS IN PLANNING PROGRAMS FOR CONTROL OF INSECTS, PARASITES, AND WEEDS, AND (5) KEEPING ABREAST OF DEVELOPING TRENDS, NEW DEVELOPMENTS, AND NEW FARM TECHNOLOGY. IT WAS CONCLUDED THAT OCCUPATIONAL EXPERIENCE IS A NECESSARY PART OF ANY VOCATIONAL TRAINING PROGRAM AND THAT TRAINING PROGRAMS CAN BE DEVELOPED TO PREPARE WORKERS FOR EMPLOYMENT IN THE AGRICULTURAL-CHEMICAL INDUSTRY AT ANY LEVEL. (WB)

# VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT IN THE AGRICULTURAL-CHEMICAL INDUSTRY IN MICHIGAN



COLLEGE OF EDUCATION—MICHIGAN STATE UNIVERSITY

# VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT IN THE AGRICULTURAL-CHEMICAL INDUSTRY IN MICHIGAN

**Maynard Christensen and Raymond M. Clark**

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**COLLEGE OF EDUCATION – MICHIGAN STATE UNIVERSITY**
**Department of Secondary Education and Curriculum**
**Research and Development Program and Vocational-Technical Education**

# FOREWORD

*Vocational Competencies Needed for Employment in the Agricultural-Chemical Industry in Michigan* is the second in a series of studies dealing with competencies needed by employees in non-farm agricultural business and industry in Michigan.

The development of training programs, based on competencies needed by employees to enable them to contribute to the performance of a function, is basic in these studies. This approach makes it possible for the vocational-technical program of the school system to offer training geared to the abilities and interests of the students, yet broad enough to open avenues for contribution to the performance of functions at many different levels.

The cooperation of individuals and business corporations has been excellent. The individuals who were interviewed were enthusiastic about the project and anxious not only to assist in evaluation of the competencies, but also to provide appropriate assistance in providing instructional materials.

Raymond M. Clark
Maynard Christensen

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# VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT IN THE AGRICULTURAL-CHEMICAL INDUSTRY IN MICHIGAN

## PROBLEM

For many years the aim of vocational agriculture has been to train present and prospective farmers for proficiency in farming. To carry out this aim, programs of instruction and supervised farming have centered around production and farm management. The courses traditionally taught have been in the areas of crops, livestock, soils, and farm management.

Agriculture is more than farming. It involves persons who furnish supplies and services to farmers and those who market, transport, process and sell farm-produced goods throughout the world. Occupational opportunities for agriculturally trained persons extend throughout the total agricultural industry.

With the passage of the Vocational Education Act of 1963, educators were encouraged to broaden agricultural education to include all occupations in which the knowledge and skills of agriculture are needed.

Adequate vocational training for non-farm agricultural occupations is not now available to many young people. In many schools the only vocational programs being offered are agriculture and homemaking. The agricultural programs are still geared primarily to training for farming rather than to the broader area of farming together with the non-farm agricultural industry.

There now is, in vocational agriculture, the opportunity to serve a broader segment of the school population. The Vocational Act of 1963 makes it possible to provide education for non-farm agricultural occupations. It also makes possible the development of area schools for vocational education. For the first time since the passage of the Smith-Hughes Act, schools are encouraged to meet the needs of all who are interested in agriculture as a vocation, the men producing the food and the men who supply and service the farmer as well as those who handle and process farm produce.

A thorough study of non-farm agricultural business and industry must be made to determine the functions performed, and the competencies (knowledge, understanding, skills, and abilities) needed by workers to perform these functions. Following these determinations, instructional materials for programs to train students for these occupations may be developed.

## LITERATURE

Only recently has work been done on the identification of competencies. Clark[1] conducted a study to determine the competencies needed to prepare workers for employment or advancement in off-farm agricultural occupations. A survey of agricultural businesses was conducted by asking managers and workers to respond to a checklist indicating the kinds of activities they performed. Some of the ideas emerging from these studies were:

1. Sales, office, and service activities were rated as functions of the industry being studied.
2. New kinds of programs need to be developed to meet needs of various industries.
3. Some training programs may be offered in high school and others may be offered in a post-high school program.
4. Each kind of agricultural business should be analyzed for functions performed, and competencies needed, to provide a satisfactory basis for organizing a training program.

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[1] Clark, Raymond M., *Vocational Competencies Needed for Employment in the Feed Industry*, Educational Research Series 22. mimeo, East Lansing, Michigan: College of Education, Michigan State University, 1965.

Mabon[2] interviewed elevator managers to determine the competencies needed and possessed by their employees. The conclusion was that farm experience and high school vocational agriculture can provide the foundation for this area of off-farm agricultural occupations. On-the-job training could be provided during the junior or senior years. For more specialized training, short courses, or degree courses may be needed.

Hamilton[3] studied the competencies needed in the retail feed business. He found that of 41 important competencies identified, 25 were in crop or livestock production and farm management. The others were in the area of business.

In another study, VanLoh[4] found several significant facts in regard to the competencies needed by fertilizer retailers. High correlations were found between vocational-agricultural training and competence needed and possessed.

A summary[5] has been made of the findings of predominantly interview-type surveys of employment needs in off-farm agricultural businesses in 26 states. Some generalizations that may be drawn from the findings are:

1. Almost half of the people employed in off-farm agricultural businesses need education or training in agriculture.
2. Employers expect about a twenty percent increase in the number of employees needing agricultural competencies in the next five years. This parallels the anticipated expansion in the total labor force.
3. Need for greatest number of agriculturally-trained employees will be in agricultural supplies, sales and services, agricultural machinery sales and services, ornamental horticulture, and marketing and distribution of livestock and food crop products.
4. Agricultural competencies needed are closely identified with the products handled by the business.
5. Many of the agricultural subjects taught to students preparing for production farming will be needed by students who enter off-farm agricultural occupations.
6. There are many instances in which vocational agriculture may support, or be supported by, other vocational subjects taught.
7. Salesmanship, human relations, and business management are competencies needed by all employees, but in varying degrees.
8. Vocational-Technical education programs beyond the twelfth grade are appropriate for many persons.
9. Trainees with a farm background or farm experience have an advantage when seeking employment in off-farm agricultural business.

In a Michigan study conducted to determine future needs in vocational education, Langdon[6] found that thirteen firms expect to need 31 percent more workers within the next five years.

It should be noted that some of the studies described above identified competencies closely associated with agriculture. Others included competencies related to trades and to distributive activities. Responses to these items indicate a need for an integration of subject matter from many of the traditional areas of vocational education and emerging areas of education that could reasonably be called vocational education.

## DESIGN

From a list of common and important non-farm agricultural businesses including feed, farm machinery, farm equipment, nursery, greenhouse, farm credit, and farm chemicals, the last was chosen for this study. The pattern followed was similar to the study which was done to identify competencies needed for employment in the feed industry.[7]

1. Identify the functions performed in the entire industry.

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[2] Mabon, Elwood Jackson, "Competencies in Agriculture Needed in Country Elevator Grain Marketing", mimeo, Ames, Iowa: Department of Education, 1964.

[3] Hamilton, William, "Competencies in Agriculture Needed by Males Employed in the Feed Industry", mimeo, Ames, Iowa: Department of Education, 1964.

[4] VanLoh, Frederick Alvin, "Competencies in Agriculture Needed by Males Employed in Retail Fertilizer Distribution," mimeo, Ames, Iowa: Department of Education, 1964.

[5] Taylor, Robert E., "Summary of Research Findings in Off-Farm Agricultural Occupations", The Center for Research and Leadership Development in Vocational and Technical Education, the Ohio State University, Columbus, Ohio.

[6] Langdon, C. L., *A Survey of Agricultural Occupations in Michigan*, Vocational Agriculture Service, Michigan Department of Education, Lansing, and the Michigan Agricultural Conference, 1965.

[7] Clark, Raymond M., *Vocational Competencies Needed for Employment in the Feed Industry*, Educational Research Series 22, mimeo. East Lansing, Michigan: College of Education, Michigan State University, 1965

2. Validate the functions by means of conferences with individuals who are well acquainted with the agricultural-chemical industry.
3. List the competencies required for performance of the functions.
4. Validate the competencies through interviews with men who are engaged in the agricultural-chemical industry or who are recognized authorities in the field.
5. After validation of these competencies, ask individuals in the industry in Michigan to rate them for their importance.
6. Analyze the competencies in terms of understandings, skills, and abilities required for successful performance in the industry. Group the understandings, skills, and abilities into instructional units.

## PROCEDURE

### Determining the Functions

The first step in determining the competencies needed for employment in the industry consisted of preparing a list of the functions which are performed. For purposes of this study *function* is defined as "something that is done at one or more points in the total industry and that is essential for the successful operation and performance of the industry". (It should be recognized that some aspects of many functions are performed at different levels and by different individuals. For example, some firms have public relations departments to help create an image of the firm. However the salesman on the farm, the person who answers the telephone, the delivery man and others are also important contributors to the image.) The following nine functions were used:

1. Research
2. Transportation
3. Processing
4. Public Relations
5. Sales
6. Service
7. Office Records and Management
8. Maintenance
9. Purchasing

The list of functions was checked with staff members of Michigan State University who are closely associated with the agricultural-chemical industry below the manufacturing level. Later, interviews with industry representatives were conducted in which these individuals were asked to check the list of functions. No changes were suggested.

### Determining the Competencies

For each of the functions listed, competencies that are necessary for successful performance of the function were listed. These competencies were checked by selected representatives from the agricultural-chemical industry in Michigan and staff members at Michigan State University who are closely associated with the industry. Suggested modification of statements were incorporated.

Selected representatives of the agricultural-chemical industry in Michigan were then asked to rate the importance of these competencies to the industry as a whole. Individuals were selected who could best identify and evaluate competencies needed by employees engaged in the agricultural-chemical business below the manufacturing level. In the selection an attempt was made to identify persons associated with agricultural-chemical firms operating in Michigan. It is estimated that individuals contacted were associated with firms doing 75 percent of the agricultural-chemical business in the state.

In preparation for the interviews, procedures were reviewed to develop uniformity and to reduce the possible variations and biases which might arise due to a variation in orientation and approach. Part of the orientation was done during the telephone conversation when the arrangements were made for the interview.

Interviewers were shown utmost courtesy and cooperation. Their enthusiasm indicates that the people in the agricultural-chemical industry are concerned about the training of workers for their industry.

Rather than follow the usual procedure of having the persons being interviewed check a list of competencies, each competency was placed on a small color coded card according to function. The interviewers were asked to place the cards in compartments of a partitioned box. The competencies were rated on a four-point scale, four being the highest rating and one the lowest.

The mean of the ratings for each competency item was determined. These are listed in the Appendix. The rating of the item may be used to help determine instructional content when courses are developed.

### Development of Training Programs

The content of instructional programs needs to be geared to the background, previous training and ability of class members. If it is assumed that individuals can make contributions to the performance of functions of

the industry at many different levels, then there probably is a level of training which can be given in high school and other levels of training which may be offered in post-high school programs.

It must also be recognized that programs may be offered to train individuals for performance at a specified level in the industry. For example, programs may be offered to prepare skilled mechanics, technicians in a specified field or professionals. Such programs may be offered in a variety of institutions and persons enrolling may be required to present certain prerequisites in terms of academic achievement and experience.

The subject matter taught, based on the skills, understandings, and abilities, will vary depending on the level of teaching which is taking place. It may be at the high school or post-high school level. The subject matter will be organized under various unit titles. These unit titles may also vary according to the section of the country in which the training takes place.

Training programs to prepare individuals for employment in the parts of the agricultural-chemical industry below the manufacturng level and for technician, skilled and semi-skilled jobs will include work in the following general areas. These areas are derived from the competencies listed in the Appendix. Appropriate courses may be prepared to include the areas suggested.[8]

1. Chemistry: application of principles, food and drug regulations, safety, public liability and responsibility
2. Crop and livestock production
3. Forest, nursery and ornamental plant production
4. Communication: demonstration, oral communication, visual presentation, written communication, mathematics, record keeping
5. Human Relations: personal relations and personnel management
6. Safety to: customers, personnel, materials, equipment, property
7. Equipment: use, care, maintenance and operation
8. Operation of the plant, schedules, and record keeping
9. Salesmanship
10. Business organization and management: credit, inputs, budgets, efficiency factors, inventory control, and business analysis
11. Merchandising and advertising
12. Agricultural economics
13. Market potential
14. Advisory service for customers

## Occupational Experience: A Part of Training

Occupational experience is a necessary part of any vocational training program. Occupational experience programs in business and industry should be a part of the total vocational program at both the high school and post-high school levels just as supervised farming programs have been an important part of the program of vocational agriculture.

Occupational experience may be offered either for high school or for post-high school students. For students under 18 years of age, working hours and kinds of jobs will be specified by labor laws. However occupational experience can be given within the legal limitations.

Teachers, coordinators, and school administrators should contact state vocational education authorities to secure recommended procedures for setting up and conducting satisfactory occupational experience programs in their states.

## SUMMARY

The need for training present and prospective workers for non-farm agricultural business and industry is seldom questioned. Tremendous shifts have taken place in the agricultural industry in recent years. A broad complex of off-farm agricultural businesses and services has evolved to facilitate the work of the production farmer. Agricultural educators and others are becoming increasingly aware that agriculture and farming are no longer synonymous. The President's Panel of Consultants on Vocational Education in their summary report recommended that:

> "The vocational agriculture program, under Federal reimbursement, should be broadened to include instruction and increased emphasis on management, finance, farm mechanization, conservation, forestry, transportation, processing, marketing the products of the farm, and other similar topics."

This recommendation was implemented in PL88-210. The Act specifically states in Section 10B:

> "Any amounts allotted (or apportioned) under such titles, Act, or Acts for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural objects, whether or not such occupation involves work of the farm or

[8] Halterman, Jerry, coordinator, A SUGGESTED TWO-YEAR POST HIGH SCHOOL CURRICULUM and COURSE OUTLINE. 980 Kinnear Road, Columbus, Ohio 43212: Center for Research and Leadership Development in Vocational and Technical Education.

the farm home, and such education may be provided without directed or supervised practice on a farm."

The approach used in this study to determine what to teach was:

1. To determine what functions are performed by the industry as a whole.
2. To determine what competencies are required to perform these functions.

Later the following steps need to be taken:

1. Identify the understandings, skills, and abilities needed to perform these functions and allied competencies.
2. Organize these understandings, skills, and abilities into instructional units geared to the level of the group to be taught.

## CONCLUSIONS

The general conclusions from this study are:

1. Analyzing a total industry in terms of the functions performed, the competencies needed to perform these functions, and the understandings, abilities and skills supporting the competencies for proper performance of these functions is a satisfactory method for arriving at subject matter content for training present and prospective workers for non-farm agricultural business and industry.
2. Training programs can be developed to prepare workers for employment in the agricultural-chemical industry at whatever level is needed.
3. The foundation for the training program will be the competencies with their accompanying understandings, abilities, and skills.

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# APPENDIX

Vocational Competencies Needed for the Agricultural-Chemical Industry in Michigan. *(A copy of the Interview Request and a Compilation of Results)*

This study is an attempt to identify the *Functions, Competencies, Understandings, Skills* and *Abilities* needed in the Agricultural-Chemical Industry below the manufacturing level.

In the following outline we have listed, I. *Functions* which we believe must be performed somewhere in the industry in order for the industry to continue to operate. II. The *competencies* needed by workers in order for them to perform the functions at some level. Probably workers contribute to the performance of the function at several different levels.

We would like your rating of the *competencies,* indicated by 1, 2 3, or 4, in the following outline. We are using a 4 point scale — 1 being low, 4 being high.

*(Rating based on seven interviews, covering an estimated 75 percent of the Agricultural-Chemical Business in Michigan)*

| Competencies | Mean Rating |
|---|---|
| **Function 1 — RESEARCH** | |
| 1. Performs many basic skills required for testing agricultural-chemical materials. | 3.0 |
| 2. Carries out experiments and makes periodic observations. | 2.9 |
| 3. Analyzes data and draws conclusions. | 2.9 |
| 4. Specifies the data to be recorded and plans a procedure for recording the data. | 2.7 |
| 5. Recommends and determines need for research. | 2.7 |
| 6. Coordinates and cooperates in the development of new agricultural-chemical products. | 2.6 |
| 7. Uses and maintains equipment and machinery used for experimental work. | 2.4 |
| 8. Establishes the physical setup for research and plans daily and periodic routines of work. | 2.3 |
| 9. Carefully selects materials to be used in research projects. | 2.3 |
| 10. Formulates combinations of material for use in research. | 2.3 |
| 11. Designs research projects, including sampling, controls, and acceptable analysis procedures. | 2.3 |
| 12. Understands and interprets the experimental design and the data recording system. | 2.3 |
| 13. Prepares news releases related to agricultural-chemical research. | 2.1 |
| 14. Conducts tours to view research work. | 2.0 |
| **Function 2 — TRANSPORTATION** | |
| 15. Recommends procedures for reducing costs and increasing efficiency. | 3.4 |
| 16. Drives vehicles with full understanding of their operation, maintenance, and/or safe driving procedures. | 3.3 |
| 17. Plans routes for most economical transportation. | 3.1 |
| 18. Determines transportation costs on fleet of vehicles and on each individual unit. | 2.7 |
| 19. Delivers chemical products to local dealers. | 2.7 |
| 20. Plans efficient systems for keeping records on the use and maintenance of vehicles. | 2.3 |
| 21. Keeps a mileage record and log of deliveries. | 2.3 |
| 22. Knows limitations of stacking sacks and other forms of packages. | 2.3 |
| 23. Orders railroad cars for transportation purposes. | 1.9 |
| 24. Determines the efficiency of handling packages or bulk chemicals. | 1.7 |

| Competencies | Mean Rating |
|---|---|

### Function 3 — PROCESSING

| | | |
|---|---|---|
| 25. | Understands and interprets MDA, USDA, and US Health regulations regarding labeling and use of agricultural chemicals. | 4.0 |
| 26. | Packages and labels according to specification. | 3.7 |
| 27. | Samples and tests products for conformity to desired specifications. | 3.3 |
| 28. | Keeps in touch with research in the area of agricultural chemicals and is alert to new opportunities for the business. | 3.1 |
| 29. | Keeps abreast of activities in the business. | 3.0 |
| 30. | Understands and interprets chemical formulas and the procedure for mixing them. | 2.7 |
| 31. | Develops and improves the materials accounting system for increased efficiency. | 2.7 |
| 32. | Plans and schedules processing operations. | 2.6 |
| 33. | Recommends machine and equipment changes and requisitions parts and materials. | 2.6 |
| 34. | Records receipt of materials and stores under suitable conditions. | 2.4 |
| 35. | Records and reports daily consumption of ingredients, amounts and kinds of material processed, kinds of packaging and disposal. | 2.4 |
| 36. | Adjusts machinery to meet processing specifications. | 2.4 |
| 37. | Cleans storage facilities. | 2.4 |
| 38. | Develops efficient processing techniques and trouble shoots problems encountered. | 2.3 |
| 39. | Reads and interprets trade journals. | 2.3 |
| 40. | Plans a program of storing materials at lowest cost. | 2.1 |
| 41. | Performs operations, such as grinding, mixing and packaging. | 2.1 |
| 42. | Keeps processing and mixing equipment in proper repair. | 2.0 |
| 43. | Understands techniques of processing agricultural chemicals through data processing and prepares computer programs for this purpose. | 2.0 |
| 44. | Keeps storage equipment in proper repair. | 1.9 |

### Function 4 — PUBLIC RELATIONS

| | | |
|---|---|---|
| 45. | Meets and cooperates with related agricultural agencies and their personnel. | 3.3 |
| 46. | Initiates, plans and conducts educational seminars and farmer conferences and clinics. | 3.1 |
| 47. | Prepares materials suitable for in-service training and professional upgrading of personnel. | 3.0 |
| 48. | Visits local dealers and assists them in solving their management problems. | 2.9 |
| 49. | Visits producers to determine the understanding of the relationship between their production problems and the agricultural producers of the area. | 2.9 |
| 50. | Prepares promotional materials including: brochures, charts, farmer bulletines, television, and radio releases. | 2.9 |
| 51. | Plans tours of interest to dealers and farmers. | 2.7 |
| 52. | Prepares and delivers talks related to the agricultural chemical business. | 2.4 |
| 53. | Prepares materials related to policy and trends which affect present and future practices. | 2.3 |

### Function 5 — SALES

| | | |
|---|---|---|
| 54. | Assists farmers in planning programs and troubleshoots their problems of plant and animal diseases, weeds, insects and parasites. | 3.7 |
| 55. | Develops reputable company rapport with dealers through honest representation of products. | 3.6 |
| 56. | Sells directly to customers across the counter in an informative manner without misrepeperesentation. | 3.4 |
| 57. | Recognizes abnormal and detrimental practices in relation to health conditons. | 3.4 |
| 58. | Assists local dealers in promoting the use of agricultural chemicals by local producers. | 3.3 |
| 59. | Assists local dealers in promotional campaigns and agricultural-chemical clinics for producers. | 3.1 |
| 60. | Assists producers with individual problems by reviewing specific situations. | 3.0 |
| 61. | Follows up on results obtained by customers and reports these to the management of the business. | 3.0 |
| 62. | Keeps records of sales, inventories, credit accounts, deliveries, and other pertinent information. | 3.0 |
| 63. | Assists local dealer in maintaining adequate inventories for regular business and for seasonal demands. | 3.0 |
| 64. | Reviews credit ratings of local dealers and customers and recommends credit extension to them. | 3.0 |
| 65. | Solicits local dealers to sell company products. | 2.7 |
| 66. | Digests developing technology and explains agricultural policy information. | 2.7 |

| Competencies | Mean Rating |
|---|---|
| 67. Develops and designs promotional sales programs. | 2.6 |
| 68. Provides local dealers with market trends and outlook information concerning the industry. | 2.6 |
| 69. Sells direct to producer. | 2.4 |
| 70. Evaluates and disseminates other tried and tested programs, techniques and efficiency ideas. | 2.4 |
| 71. Keeps personal records, time, travel, expenses, and data required by the personnel office. | 2.4 |
| 72. Develops complete accounting systems for producers and analyzes results. | 2.4 |
| 73. Helps farmers to arrange credit and accepts the responsibility for the collection of accounts receivable. | 2.3 |
| 74. Keeps a file of sales techniques of each customer. | 2.3 |
| 75. Understands acceptable techniques in entertaining dealer customers. | 2.1 |
| 76. Arranges mode of delivery and handling agricultural chemicals on the farm of the producer. | 2.0 |
| 77. Promotes rewards for outstanding production by producers. | 2.0 |
| 78. Keeps progress charts on national and local trends of the agricultural-chemical industry, outlets for local sales, and other evaluation data. | 2.0 |

### Function 6 — SERVICE

| | |
|---|---|
| 79. Keeps abreast of developing trends, new developments, and new farm technology. | 3.6 |
| 80. Exhibits alertness and sensitivity to situations in which a service is rendered. | 3.6 |
| 81. Recommends agricultural chemicals for specific farm situations. | 3.4 |
| 82. Works with local dealers on the promotion and sales of agricultural chemicals through his organization. | 3.4 |
| 83. Maintains a cooperative spirit and sense of loyalty among his fellow workers. | 3.4 |
| 84. Recommends changes in procedure which will increase organizational efficiency. | 3.4 |
| 85. Speaks at farmers' meetings on problems of the use of agricultural chemicals. | 3.3 |
| 86. Assists producers in solving problems related to agricultural chemicals. | 3.3 |
| 87. Delegates authority to employee to the extent he can satisfactorily perform work expected of him. Delegates authority to workers in best interest of local operations. | 3.3 |

| Competencies | Mean Rating |
|---|---|
| 88. Keeps local dealers informed regarding problems most frequently encountered on farms. | 3.1 |
| 89. Attends meetings sponsored by cooperative extension service and teachers of vocational agriculture. | 3.1 |
| 90. Works with employees in maintaining morale. | 3.1 |
| 91. Interviews and hires new personnel, orients new workers, and makes them feel a part of the organization. | 3.1 |
| 92. Provides the in-service training for employees. | 3.1 |
| 93. Promotes the use of company products by encouraging their use by farmers. | 3.0 |
| 94. Promotes farm automation and encourages farmers to adapt techniques on their farms. | 3.0 |
| 95. Evaluates and commends worker performance. | 3.0 |
| 96. Supervises personnel and coordinates their work within departments. | 3.0 |
| 97. Works with employees on sales promotion. | 3.0 |
| 98. Hears and processes grievances of workers. | 3.0 |
| 99. Establishes approved systems of collecting accounts receivable. | 2.9 |
| 100. Makes periodic summarization of the business for purposes of analysis. | 2.9 |
| 101. Clearly instructs employees as to what work is expected of them. | 2.9 |
| 102. Keeps employees informed concerning general policies related to operations. | 2.9 |
| 103. Maintains line of communication within the company organization. | 2.9 |
| 104. Cooperates with the employee to increase job efficiency. | 2.9 |
| 105. Recommends and names agricultural farms and businesses as consultation for customers who have special problems. | 2.7 |
| 106. Works with dealers to help them with their credit rating with the company and with dealers management and organization problems. | 2.7 |
| 107. Applies modern principles and concepts of accounting. | 2.7 |

### Function 7 — OFFICE RECORDS AND MANAGEMENT

| | |
|---|---|
| 108. Maintains a cooperative spirit and sense of loyalty among his fellow workers. | 3.4 |
| 109. Recommends changes in procedure which will increase organizational efficiency. | 3.4 |

| Competencies | Mean Rating |
|---|---|
| 110. Delegates authority to employee to the extent he can satisfactorily pursue work expected of him. Delegates authority to workers in best interest of total operation. | 3.3 |
| 111. Works with employees in maintaining morale. | 3.1 |
| 112. Interviews and hires new personnel, orients new workers, and makes them feel a part of the organization. | 3.1 |
| 113. Provides the in-service training for employees. | 3.1 |
| 114. Evaluates and commends worker performance. | 3.0 |
| 115. Supervises personnel and coordinates the work within departments. | 3.0 |
| 116. Works with employees on the promotion of sales. | 3.0 |
| 117. Hears and processes grievances of workers. | 3.0 |
| 118. Establishes approved systems of collecting accounts receivable. | 2.9 |
| 119. Makes periodic summarization of the business for purposes of analysis. | 2.9 |
| 120. Clearly instructs employee as to what work is expected of him. | 2.9 |
| 121. Keeps employees informed concerning general policies related to operation. | 2.9 |
| 122. Maintains line of communication within the company organization. | 2.9 |
| 123. Cooperates with the employee to increase job efficiency. | 2.9 |
| 124. Applies modern principles and concepts of accounting. | 2.7 |
| 125. Establishes and uses approved systems of cost accounting. | 2.6 |
| 126. Prepares records and data required by supervisor and in an acceptable form. Provides information to his supervisor about the organization, its products and services. | 2.4 |
| 127. Provides the proper care of equipment and facilities. | 2.4 |
| 128. Prepares tax reports and establishes tax accounting systems. | 2.4 |
| 129. Performs administrative duties in line with established and accepted organizational policies. | 2.3 |
| 130. Helps to maintain complete and accurate record files. | 2.1 |
| 131. Determines policy concerning wages, hours and benefits. | 2.0 |
| 132. Prepares financial reports for public release. | 2.0 |

| Competencies | Mean Rating |
|---|---|
| **Function 8 — MAINTENANCE** | |
| 133. Understands and respects safety features and uses safety coding through the use of colors, signs and warning devices. | 3.1 |
| 134. Understands function of each operating machine. | 3.0 |
| 135. Understands the distribution systems for moving or conveying agricultural chemicals. | 3.0 |
| 136. Understands relationship between machines and the total operation. | 2.7 |
| 137. Prepares budget analysis to show benefits of using agricultural chemicals in specific farm situations. | 2.6 |
| 138. Prepares farm plans for producers who are operating marginal or risky business. | 2.6 |
| 139. Establishes and uses approved systems of cost accounting. | 2.6 |
| 140. Prepares records of problems observed in the area and suggests procedures for solving them. | 2.4 |
| 141. Assists in the promotion, distribution and use of publications, bulletins, and movies of the industry. | 2.4 |
| 142. Provides the proper care of equipment and facilities. | 2.4 |
| 143. Prepares reports of activities, including purposes of each activity, procedure used, and evaluation of results. | 1.6 |
| 144. Reads and understands the manual of installation and operating instructions. | 2.7 |
| 145. Makes requisitions for maintenance supplies and materials. | 2.6 |
| 146. Keeps a physical equipment inventory, and maintains an orderly tool and material room and office. | 2.4 |
| 147. Maintains and makes minor repairs on delivery trucks, and similar equipment. | 2.4 |
| 148. Designs installation of equipment to meet specific needs and local situations. | 2.4 |
| 149. Performs mechanical functions pertinent to maintenance work. | 2.4 |
| 150. Maintains scales, testing and sampling devices | 2.3 |
| 151. Maintains electric motors, belts, and drives and wiring installations. | 2.3 |
| 152. Operates equipment whenever called upon to do so. | 2.3 |
| 153. Maintains all mechanical equipment. | 2.1 |
| 154. Maintains plumbing systems, buildings, heating systems, and air conditioners | 2.1 |

| Competencies | Mean Rating |
|---|---|
| 155. Frequently designs machines or equipment for a specific operation. | 2.1 |
| 156. Installs new machinery and equipment. | 2.0 |
| 157. Secures proper foundation, bases or footings for small equipment. | 2.0 |
| 158. Frequently remodels machinery and equipment to perform different operations. | 2.0 |
| 159. Makes simple electrical wiring installations. | 2.0 |
| 160. Requisitions supplies and materials necessary to make installations. | 1.9 |

## Function 9 — PURCHASING

| | |
|---|---|
| 161. Purchases ingredients for formulations from suppliers. | 3.4 |
| 162. Buys specified kinds, quality and grades of materials. | 3.4 |
| 163. Determines purchase price based on market reports, grades, and transportation differential. | 3.1 |
| 164. Arranges for deliveries and modes of transportation. | 3.1 |
| 165. Studies market trends and prices. | 3.1 |
| 166. Makes effective use of telephone and telegraph to complete transactions. | 2.9 |
| 167. Buys chemical ingredients from several sources with the intent of formulation to meet grade specifications. | 2.7 |
| 168. Records volume purchased, conditions, grade, price, source, transportation, freight and insurance. | 2.6 |
| 169. Determines prices to offer for chemical ingredients based on knowledge of outlook and future trends. | 2.6 |
| 170. Directs mixing of chemicals to meet specifications. | 2.1 |
| 171. Talks at farmers' meetings and institutes on matters of interest. | 1.9 |
| 172. Encourages education concerning economics of the chemical industry and government subsidies and controls. | 1.9 |

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