Occupations generally exist at one of three hierarchical levels: managerial, technical, or skilled. Little research has been conducted concerning agricultural employment levels other than the skilled level. Occupations and their related training programs within the agricultural industry have evolved in the absence of a systematic effort to develop a hierarchical classification of tasks. Educational preparation for positions in agri-industries would benefit from detailed task inventories developed for specific jobs representing levels of employment. Educational programs for positions requiring similar skills could be more closely coordinated for more effective and efficient operation. This coordination would encourage the development of programs for skilled positions at the secondary level, for technical positions at the technical school level, and for managerial positions at the university level.

Objectives

The main purpose of this study was to identify the tasks performed by workers in twelve selected agribusiness occupations. Specific objectives of the study included:

1. To identify the tasks performed by workers in four selected agribusiness occupations at each of the three hierarchical levels: managerial, technical, and skilled.

2. To identify for each occupation the level (managerial, technical, or skilled) of each task as perceived by job incumbents.

3. To determine for each occupation the proportion of tasks at each of the three levels (managerial, technical, and skilled) as perceived by job incumbents.

Procedure

Selection of the Job Analysis Technique

There are a number of techniques of job analysis available; however, there are only four basic approaches. From these four basic approaches, the task inventory analysis technique was selected for use in this study.

The task inventory approach is considered by the Air Force to be the only feasible approach for collecting task information from large numbers of workers. Christal, in a 1974 report, gave three reasons for the choice of this analysis technique: (a) The technique is economical (b) The information obtained using job inventories is quantifiable (c) Information collected . . . can be stored, manipulated, analyzed, and reported by computer (Christal, 1974, p. 2).

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A task inventory consists simply of needed background information about the worker and a list of all significant tasks that may be performed by workers in that job. This simplicity makes the technique easy to conduct in addition to being economical.

Selection of Positions to be Analyzed

The positions analyzed in the study were selected from the grain, feed, seed, and fertilizer and chemical areas of agribusiness. The researcher identified 36 positions in these areas which were then grouped in terms of their hierarchical levels (managerial, technical, skilled). From the positions identified, four were randomly selected at each hierarchical level, yielding a total of twelve positions for analysis. Table 1 presents the twelve positions selected for analysis at each of the three hierarchical levels.

Table 1

Positions Selected for Analysis at the Three Hierarchical Levels

Level	Occupation
Managerial	Grain manager
	Fertilizer and chemical sales manager
	Feed manager
	Seed manager
Technical	Feed assistant manager
	Feed sales representative
	Fertilizer and chemical sales representative
	Seed assistant manager
Skilled	Feed delivery person
	Feed equipment operator
	Seed delivery person
	Fertilizer and chemical salesperson

Instrumentation

Following the selection of positions, the task inventory questionnaires were developed. This development involved first the establishment of an initial task list for each position using the "Master List of Duty Areas and Task Statements" (McCracken & Yoder, 1975). Each initial task list was then validated through a review by three job incumbents. Employees were asked to respond for each task as to whether or not it was a part of their job and to make any additions they deemed appropriate. At the same time, employees indicated their perception of the hierarchical level of each task that was a part of their job. Table 2 shows a segment from one of the twelve validation instruments.

Table 2

Segment from One Validation Instrument

Mgt.	Tec.	Skil.	N/A

B. Recording information
1. Balance daily cash statements
2. Balance monthly cash statements
3. Make bank deposits
4. Develop graphs and charts
5. Maintain accounts payable and receivable
6. Receive payments for accounts
7. Record general client information

Mgt. - Managerial
Tec. - Technical
skil.- Skilled
N/A - Not part of my job

Upon completion of the validation process, the data were summarized and appropriate changes were made in the inventory lists. The final task inventory lists were then prepared for distribution as survey instruments.

The task inventory instruments were developed as task lists with a seven point Likert-type scale and were designed to: (a) Determine whether or not each task was a part of the job, and (b) Estimate the significance of each task that was a part of the job. For tasks which employees felt were irrelevant to their jobs, zero was the appropriate indication. Tasks which were a part of the job were judged for the degree of significance by marking the scale, with one being minor significance and seven being most critical significance.

Instructions accompanying the instrument indicated that judgement should be in terms of three main factors: (a) the importance of the task, (b) the frequency of occurrence of the task, and/or (c) the relevance of the task on the job.

Reliability of each of the twelve task inventory instruments was calculated using Cronbach's Alpha procedure. The resulting reliability coefficients ranged from .70 to .99. Table 3 presents the number of items and the reliability for each of the twelve instruments.

Sampling Plan

The sampling plan for the study included: (a) a random selection of businesses, being certain to keep a record of the order in which businesses were drawn, and (b) a 100% sample of qualified employees within selected businesses. Qualified employees were defined as those currently holding one of the positions being analyzed with a minimum time of one year on the job. This process was continued until 30 employees were surveyed from each of the 12 positions.

Data Collection

Data were collected in the following manner. Initial contact with a business included in the sample was made by telephone. At this time the business manager was given a brief introduction to an explanation of the study and asked to participate. If the manager agreed, a time was arranged for the researcher to meet with him or her and the qualified employees in the business.

On a visit to a cooperating business, a further explanation of the study was given, and any questions were answered. The researcher and the manager then identified those employees in the organization which met the criteria for participation. A brief meeting was arranged with each of the potential participants to distribute the instruments, provide a brief explanation of the study, and answer any questions. Whenever possible, the researcher waited for the instruments to be completed. When this was not possible, a time was agreed on to personally return and pick up the instruments. In a few instances, neither of these options were feasible. Then, the job incumbent was given a self-addressed, stamped envelope and asked to return the instrument as soon as it was completed.

Table 3

Reliability of Task Inventory Instruments by Occupation

Occupation	Number of items	Realiability[a]
Feed manager	173	.98
Fertilizer and chemical sales manager	207	.98
Grain manager	159	.98
Seed manager	161	.89
Fertilizer and chemical sales representative	201	.93
Seed assistant manager	157	.98
Feed assistant manager	146	.97
Seed sales representative	102	.94
Fertilizer and chemical salesperson	120	.97
Feed delivery person	44	.92
Seed delivery person	44	.70
Feed equipment operator	37	.90

[a]Cronbach's Alpha Reliability Coefficient

Results

Tasks Performed by Workers

Twelve agribusiness occupations were subjected to a job analysis using the task inventory analysis procedure. The results of these analyses identified the tasks performed by workers in each occupation and the mean level of significance to the job for each task. These tasks were also grouped by duty areas and determinations were made as to the duty areas which received the highest overall ratings for each occupation. The scale utilized for rating the level of significance was constructed such that seven indicated most critical significance, one denoted minor significance, and zero meant irrelevant. A sample of the findings related to job tasks and duty areas is presented in Tables 4 and 5. Table 4 shows the duty areas rated highest overall by Feed Managers responding to the questionnaires while Table 5 presents the specific tasks which received the highest ratings by the same group.

Table 4

Duty Areas Rated Highest by Feed Managers

Duty Area	Mean Rating
1. Purchasing merchandise and supplies	5.47
2. Planning and supervising work	5.10
3. Formulating feeds	4.67
4. Following general safety precautions	4.60

Hierrarchical Level of Tasks

The second objective of this study was to identify the hierarchical level of each task for the twelve agribusiness occupations as perceived by job incumbents. The data related to this objective were collected during the task inventory field test. Job incumbents were asked to respond as to whether or not each task was a part of their job and to identify their perceived level of each task.

A value was assigned to each possible response. If the respondent indicated that the task was managerial in nature, a value of three was given to it; a two was assigned to tasks perceived as technical; and a one for those identified as skilled. These values were then averaged for each task and a determination made as to the primary nature of each task. The value ranges used to make this determination were: up to 1.49 equalled skilled; 1.50 to 2.49 equalled technical; and 2.50 and more equalled managerial.

The results of this portion of the study were summarized for each of the twelve occupations separately in the tables containing the results of the task inventory analyses. The appropriate designation (M) for managerial, (T) for technical, and (S) for skilled appears just after each task statement. See Table 5 for a sample of these findings.

Table 5

Specific Tasks Rated Highest by Feed Managers

	Level[a]	Mean Rating
1. Supervise day-to-day operations	(M)	5.90
2. Assign specific responsibilities to workers	(M)	5.76
3. Evaluate worker's performance	(M)	5.72
4. Follow safe work habits	(T)	5.66
5. Determine amount of products and supplies to keep on hand	(M)	5.55
6. Meet customers	(T)	5.52
7. Record customer order information	(T)	5.52

[a]M = Managerial, T = Technical

Proportion of Tasks at Each Level

The third objective in this study was to determine for each occupation the proportion of tasks at each of the three levels (managerial, technical, and skilled) as perceived by job incumbents. The findings relevant to this objective were derived from task inventory field test data, as with objective two. These findings were calculated for each occupation separately through the following steps: (1) Calculate, for each field test respondent, the proportion of tasks at each hierarchical level; and (2) Calculate the mean percentage at each level for the three field test respondents in each of the twelve occupations.

The data will be presented here as summarized by hierarchical level of the occupations. The data concerning percent tasks at each level by hierarchical level of occupations area are shown in Table 6.

Job incumbents in managerial occupations who participated in this study indicated that about 60% of the tasks associated with their jobs were managerial in nature. In addition, 17% of the job tasks were technical and 23% were considered to be skilled in nature.

Across all technical occupations analyzed, respondents rated 33% of their tasks as managerial, 40% as technical, and 27% as skilled. Occupations at the skilled level tended to be the most level specific with almost 80% of job tasks considered by job incumbents to be skilled in nature, 14% technical in nature, and only 6% managerial in nature.

Table 6

Employees' Perceptions of Percent Tasks at Each Hierarchical Level by Occupational Level

	Perceived level of tasks			
Occupational level	Managerial	Technical	Skilled	Total
Managerial	59.5%	17.1%	23.4%	100%
Technical	32.6%	40.0%	27.4%	100%
Skilled	6.1%	14.2%	79.7%	100%

Conclusions

From the conduct of the occupational analyses reported in this article, the researchers were led to the following conclusions:

1. Task inventory analysis is very specific in identifying what a worker does on the job.

2. Each occupation contains some job tasks at each of the levels (managerial, technical, and skilled).

3. Task inventory analysis provides valuable information for planning day-to-day instructional activities.

4. In many agribusiness organizations, especially smaller ones, job titles are difficult to identify.

5. Personal contact with study participants enhances response rate.

Recommendations

The findings and conclusions of the study served as the basis for the following recommendations.

Recommendations for Practice

1. Occupations for which training programs are designed should be periodically subjected to an occupational analysis to assess the relevance of the training program.

2. The task inventory analysis procedure should be used for curriculum development purposes. This is recommended because (a) the task inventory procedure is simple and results are easily understood; (b) results are unlikely to be used as they cannot be readily understood; and (c) task inventories may be overly detailed, but seldom are overly general in nature.

Recommendations for Further Research

1. Further attention should be given to the idea of hierarchical levels in job analysis. Since much of what a manager does is not managerial in nature, educational and training programs should be coordinated to prepare persons for relevant activities at each step in their educational preparation.

2. Further research should be conducted to compare other job analysis techniques available (Functional Job Analysis and the Job Diagnostic Survey) as to their potential value for curriculum development.

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