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**FACTORS RELATED TO EMPLOYMENT OPPORTUNITIES
IN RETAIL FERTILIZER DISTRIBUTION IN IOWA**

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DEPARTMENT OF PUBLIC INSTRUCTION

Department of Education

and

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Iowa State University of Science and Technology
Ames, Iowa

in cooperation with

Vocational Agriculture Section
Division of Vocational Education
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This is an abstract of a thesis submitted to Iowa State University of Science and Technology by Thomas Raymond Powell in partial fulfillment of the requirements for the degree of Master of Science in 1965.

The study is one of a series conducted by the Department of Education of Iowa State University of Science and Technology with the assistance of graduate students in agricultural education in cooperation with the Iowa Agriculture and Home Economics Experiment Station and the Vocational Agriculture Section, Division of Vocational Education, State Department of Public Instruction.

The study was conducted under the direction of Professor C. E. Bundy.

FACTORS RELATED TO EMPLOYMENT OPPORTUNITIES IN RETAIL FERTILIZER DISTRIBUTION IN IOWA

by

Thomas Raymond Powell

Purpose of Study

The purposes of this study were to determine the employment opportunities in retail fertilizer distribution in Iowa in total, by job category, and by economic area, and to analyze managership background. The information secured would help administrators of agricultural education in planning future programs where employment opportunities exist.

The study was one of a series conducted by graduate students in agricultural education and Iowa State University of Science and Technology in cooperation with the Iowa Agricultural Experiment Station and the Agricultural Education Section of the Division of Vocational Education, State Department of Public Instruction.

Method of Procedure

Twenty-five Iowa counties were selected by drawing at random from each of the six economic areas in Iowa with the number of selected counties weighted by the number of counties in each economic area. County extension directors in the selected counties compiled a list of 383 retail fertilizer distributors in the selected counties. Forty-four of these firms indicated they did not retail fertilizer. Usable replies were received from 309 (91.3%) of the remaining 339 retail fertilizer distributors in the 25 selected counties, when surveyed with a mailed questionnaire.

Findings

Based on the responses of firms in the 25 selected counties, there were 6137 full-time male employees in firms retailing fertilizer in Iowa in 1959. There were 7286 in 1964 and these firms anticipated employing 9632 full-time male employees in 1968. The anticipated increase from 1964 to 1968 of 2346 full-time male employees was twice that of 1149 from 1959 to 1964. These figures are presented in Table 1.

Based on the needs for new full-time male employees, employee turnover, and replacement needs for men retiring, 3939 job opportunities exist in firms retailing fertilizer in Iowa from 1964 to 1968 or about 985 job opportunities per year averaging almost 10 job opportunities per county per year.

A need for 654 fertilizer salesmen from 1964 to 1968 was revealed with opportunity for 905 other unspecified employees, 562 servicemen, 328 clerical workers, 261 feed salesmen, 229 assistant managers, 177 heads of fertilizer departments, 151 heads of feed departments, 157 feed mill men, 105 elevator men, and 115 managers from 1964 to 1968.

Table 1. Iowa retail fertilizer manpower personnel by job category and year

Job category	Number of male employees						Job Opportunities
	Full Time 1959 ^a	Full Time 1964 ^b	Anticipated Full Time 1968 ^c	Actual		Anticipated Change 64-68	
				Change 59-64	Change 64-68		
Managers	1308	1356	1352	48	-4	44	115
Assistant Managers	630	775	802	145	127	272	229
Head, Feed Department	210	219	342	9	123	132	151
Head, Fertilizer Department	276	337	474	61	137	198	177
Elevator Man	276	403	438	127	35	162	105
Feed Mill Man	442	561	618	119	57	176	157
Fertilizer Salesman	333	510	1048	177	538	715	654
Feed salesman	224	391	566	167	175	342	261
Clerical Worker	312	272	526	-40	254	214	328
Service Man	442	714	1038	272	324	596	562
Other grain, feed, and/or fertilizer employee	1060	1091	1638	31	547	578	905
Non-grain, feed, and/or fertilizer employees	624	657	790	33	133	166	295
Total	6137	7286	9632	1149	2346	3495	3939

^aCalculated from 297 firms reporting employees in 25 counties in 1959.^bCalculated from 309 responding firms from 339 firms in 25 counties in 1964.^cCalculated from 308 firms anticipating employees in 1968 from 339 firms in 25 counties in 1964.^dBased on calculated needs from 1964-68 plus one-half of employees over age 60 in 1964 plus estimated 4.85 percent of employees leaving industry per year.

All job categories anticipated job opportunities from 1964 to 1968 and all except manager, assistant manager, elevator man, and feed mill man anticipated a greater opportunity from 1964 to 1968 than had occurred from 1959 to 1964.

Economic Area 4 anticipated opportunity for 88.5 percent more full-time employees in 1968 than employed in 1964. Economic Area 1 anticipated an increase of 44.5 percent; Economic Area 2, 35 percent; Economic Area 3, 37 percent; Economic Area 6, 24.4 percent; and Economic Area 5, 10.5 percent.

The assistant manager job category numbered the largest with 13.1 percent of the full-time employees in 1964, other than the unspecified other job category with 18.4 percent. Twelve percent of the employees were servicemen, 8.6 percent fertilizer salesmen, 5.8 percent heads of fertilizer departments, and 11.1 percent were employed in areas other than grain, feed, or fertilizer.

Based on the responses of firms in the 25 selected counties, there were 2580 male part-time grain, feed, and/or fertilizer employees in 1963 in Iowa in firms retailing fertilizer with 2852 total male and female part-time grain, feed, and/or fertilizer employees. There were 3290 part-time male and female employees in firms retailing fertilizer of all job descriptions or about 33 part-time jobs per county in 1963 as is revealed in Table 2.

Forty-six percent of the grain, feed, and/or fertilizer part-time male and female employees in 1963 were in the unspecified other job category with 20.4 percent part-time servicemen, 11.4 percent part-time clerical workers, 7.4 percent part-time assistant managers and 4.3 percent part-time fertilizer salesmen.

There was no significant correlation between number of part-time employees and experience of the manager in retail grain, feed, and/or fertilizer business.

The mean employee (full-time male employees in 1964) age was 35.6 years compared to 42.8 years for managers. Approximately three-fourths of the employees were age 50 or less and 61.5 percent were age 40 or less and 36.8 percent were age 30 or less as is revealed in Table 3. The serviceman job category and unspecified other category tended to have younger employees than other categories.

Economic Area 4 tended to have more older employees, whereas employees of Economic Area 2 tended to be younger.

No significant correlation between manager's age and number of full-time employees was shown. There were 3.77 full-time male employees per firm in 1959, 4.4 per firm in 1964, and 6.1 anticipated for 1968. The number of fertilizer salesmen was correlated positively significant at the one percent level with age of the manager.

No significant correlation between number of 1964 full-time male employees and experience as manager, manager's experience in retail grain, feed, and/or fertilizer, or manager's experience with present organization was shown.

Table 2. Number of part-time male and female employees by job category and economic area, 1963

Job Category	Number of part-time employees							
	Economic area						Total	
	1	2	3	4	5	6	Sample ^a	State ^b
Assistant Manager	22	3	6	10	0	7	48	211
Head of Feed Department	0	3	4	1	1	2	11	48
Head of Fertilizer Department	1	4	5	4	6	0	20	88
Elevator Man	1	5	1	1	5	2	15	66
Feed Mill Man	3	5	5	3	0	0	16	71
Fertilizer Salesman	1	3	2	10	8	4	28	123
Feed Salesman	3	4	0	2	0	2	11	48
Clerical Worker	13	31	17	10	10	13	74	325
Service Man	51	23	11	11	22	9	127	558
Other grain, feed, and/or fertilizer employee	44	79	55	47	29	46	300	1314
Total male grain, feed, and/or fertilizer employees	131	135	90	88	71	74	589	2580
Total male and female grain, feed and/or fertilizer employees	139	160	106	99	81	85	650	2852
Non-male grain, feed, and/or fertilizer employee	27	18	14	7	10	15	91	400
Non-male and female grain, feed, and/or fertilizer employee	27	20	17	7	10	19	100	438

^aReported by 309 responding firms for 1963 part-time employment in 25 counties.

^bCalculated from 309 responding of 339 firms in 25 counties in state.

Table 3. Ages of full-time male employees by job category, 1964

Job Category	Age													66 and over	Response Total
	20 and under	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66				
Assistant Manager	3	23	34	35	20	27	17	10	7	5	2	3	187		
Head, Feed Department	0	6	9	9	7	6	4	9	3	2	0	0	55		
Head, Fertilizer Department	5	8	15	15	14	8	5	6	2	0	0	3	81		
Elevator Man	0	8	14	14	12	9	11	9	7	2	1	3	90		
Feed Mill Man	5	27	26	14	16	6	13	8	7	4	2	4	132		
Fertilizer Salesman	5	8	26	17	8	12	12	3	8	3	5	4	111		
Feed Salesman	2	8	8	12	5	10	8	12	5	2	3	2	77		
Clerical	7	16	10	5	13	6	3	7	1	3	2	0	73		
Service Man	16	28	33	13	26	18	6	8	4	6	1	13	172		
Other grain, feed and/or fertilizer employee	24	64	24	27	19	24	29	13	10	3	2	6	245		
Non grain, feed and/or fertilizer employee	5	17	19	15	19	17	12	12	11	2	1	0	130		
Total	72	213	218	177	159	143	120	97	65	32	19	38	1353		

Forty-six percent of the managers were age 41 or less with 37 percent between 31 and 41, whereas 39 percent were age 42 to 53, and 14.7 percent were age 54 or over. No significant trends were noted in manager's age by economic areas in the state.

In Table 4, it was observed that older managers did not have more areas of business in their firms with only .4 of a commodity area being added from age 30 to 47. Only 25.8 percent of the firms handled fertilizer alone, whereas, 19.1 percent handled both feed and fertilizer, and 53.5 percent handled grain, feed, and fertilizer with 1.6 percent handling grain and fertilizer.

Table 4. Age of manager by commodity areas included in business

Age	Commodity area				Total
	Fertilizer	Feed, Fertilizer	Grain, Feed, Fertilizer	Grain Fertilizer	
18-23	2	0	0	0	2
24-29	5	6	16	0	27
30-35	18	8	26	0	52
36-41	20	12	30	0	62
42-47	8	14	46	4	72
48-53	11	11	25	1	48
54-59	6	5	13	0	24
60-65	4	2	6	0	12
66 and over	6	1	3	0	10
Total	80	59	165	5	309

Years of experience as manager was positively correlated with commodity areas of business in their firms. Almost twice as many of the managers with 10 years or more of experience as managers handled all three commodities as those with four years of experience or less. Only one-half as many of managers with 10 years of experience handled fertilizer alone as did those with four years of experience or less.

Years of experience with the present organization and total years of employment in retail grain, feed, and/or fertilizer by the manager were positively correlated significant at the 1 percent level with commodity areas included in the firms.

A negative correlation significant at the 4 percent level for educational attainment and number of specific jobs held before becoming manager indicated that managers with more years of schooling held fewer specific jobs before becoming managers. An average of 2.76 specific jobs were held by managers before becoming managers. Those with 12 years of schooling held an average of 3.1 specific jobs before becoming managers while those with some college training held only 2.0 specific jobs before becoming managers.

Thirty percent of the managers has some college training with 15.2 per-

cent having four years or more, whereas 53.5 percent had 12 years of schooling, and 71.7 percent had eight years or less of schooling as is revealed in Table 5.

Nineteen percent of the managers held no other specific jobs before becoming managers while 48.5 percent held two or less specific jobs and 82 percent held five or less before becoming managers. Of the 45 managers who held only one specific job before becoming managers, assistant manager was the job held most often with fertilizer salesman next.

A nonsignificant negative correlation at the 5 percent level between vocational agriculture background and number of positions held before becoming manager was observed. It was observed in Table 6 that of the 222 managers with no vocational agriculture background, an average of 3.1 positions were held before becoming manager while 2.5 positions were held by those with four years of vocational agriculture background.

A significant negative correlation at the 1 percent level was observed between farm experience after age 12 and number of positions held before becoming manager. Managers with more farm experience after age 12 tended to hold fewer positions before becoming manager. This finding was observed from data presented in Table 7.

A significant positive correlation at the 1 percent level was observed between number of positions held before becoming manager and father's experience in retail grain, feed, or fertilizer business. Managers who had fathers with more experience in the business tended to hold more specific jobs before becoming managers than those with fathers with less experience.

No significant correlation at the 5 percent level was noted between farm experience after age 12 and vocational agriculture background of the managers. Fifty-three percent of the managers with some high school vocational agriculture had 1 to 10 years of farm experience after age 12, whereas only 21.8 percent of the managers had 11 to 20 years of farm experience after age 12 and some high school vocational agriculture.

Younger managers tended to have more years of vocational agriculture background -- correlated significant negatively at the 1 percent level. Younger managers tended to have more years of schooling -- correlated significant negatively at the 5 percent level.

There was a high positive correlation between managers' years of experience as manager and years of employment in grain, feed, or fertilizer business, and between years of experience with the present organization and years of employment in retail grain, feed, and/or fertilizer business. This indicated a short period of time in the business in a non manager job category and long tenure with one organization. The correlations were positive and significant at the 1 percent level and high in comparison to others.

Number of full-time male employees anticipated in 1968 was correlated positively significant at the 1 percent level with vocational agriculture background and at the 5 percent level with educational attainment, and

Table 6. Vocational agriculture background and specific jobs before becoming manager

Positions	Years of vocational agriculture					Total
	None	One year	Two years	Three years	Four years	
Assistant Manager	112	10	7	0	17	146
Head, Feed Department	64	5	8	1	8	84
Head, Fertilizer Department	92	6	12	1	10	121
Elevator Man	59	5	6	0	7	77
Feed Mill Man	41	3	4	0	7	55
Fertilizer Salesman	89	7	11	2	19	128
Feed Salesman	73	5	8	2	18	106
Clerical Worker	75	7	8	1	8	99
Serviceman	51	6	6	2	8	73
Other grain, feed, and/or fertilizer employee	20	4	2	0	4	30
Non grain, feed, and/or fertilizer employee	14	1	4	0	3	22
Total	222	16	21	6	44	309

Table 7. Specific jobs held before becoming manager by farm experience after age 12

	Years of farm experience											Total
	0 to 5	1 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 and over	
	N	N	N	N	N	N	N	N	N	N	N	N
Assistant Manager	50	16	44	13	9	6	1	4	1	0	2	146
Head Feed Department	26	5	25	12	2	6	2	5	1	0	2	84
Head Fertilizer Department	36	9	29	15	6	8	4	5	4	0	5	121
Elevator Man	24	10	26	6	4	3	0	2	1	0	1	77
Feed Mill Man	14	6	22	6	1	3	0	0	2	0	1	55
Fertilizer Salesman	32	12	32	14	9	11	5	4	3	1	5	128
Feed Salesman	30	12	28	14	4	7	3	3	2	0	3	106
Clerical Worker	38	14	26	9	1	3	2	4	1	0	1	99
Service Man	22	7	21	8	5	4	1	2	2	0	1	75
Other grain, feed, or fertilizer employee	10	3	9	3	2	1	0	1	0	0	1	30
Non grain, feed, or fertilizer employee	7	0	7	4	0	0	1	2	0	0	1	22
No Response	0	0	0	0	0	0	0	0	0	0	0	0
Managers	80	31	81	34	20	16	13	14	10	3	7	309

correlated negatively significant at the 5 percent level with experience as manager, indicating younger managers will have more employees in 1968 than older managers.

Number of fertilizer salesmen was correlated positively significant at the 5 percent level with vocational agriculture background and correlated negatively significant at the 1 percent level with commodity areas of business in the firm.

An anticipated opportunity for 32.4 percent more full-time male employees in 1968 than were employed in 1964 in retail fertilizer distribution in Iowa was found. Greatest opportunity exists in sales, service, and unspecified job category workers.

Implications

This study has revealed that employment opportunities do exist and has outlined them by job category. Other studies have and will show the competencies needed and possessed by employees in this and other off-farm agricultural related occupations. The combined findings show training needed and employment opportunities. Administrators of agricultural education programs can then plan future programs and update present programs to meet the competency training needs of future employment opportunities.

Present and future expanded programs of vocational agriculture in high school may serve to prepare future employees for service, clerical unspecified other, and non-grain, feed and/or fertilizer job categories where 2090 job opportunities were anticipated from 1964 to 1968, or 522 per year or about two employees per present vocational agriculture department in Iowa. With additional experience and training some of these employees then might move through sales jobs to managerships. Vocational agriculture departments in the high school should cooperate with area post-high school technical training centers in updating and training present employees of the retail fertilizer distribution industry in Iowa.

Area post-high school centers or special technical training courses should be used in updating present employees and preparing people for sales or department managership jobs which would lead to business managership job categories. An anticipated job opportunity of 1505 future employees from 1964 to 1968 was revealed for these job categories.

College training should be made available for preparing future managers, assistant managers and sales personnel in retail fertilizer distribution. An anticipated need for 1259 future employees from 1964 to 1968 was revealed in these job categories. Colleges should also assist in updating present managers and other employees in short courses at the college centers or in cooperation with area post high school centers.

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