

OCCUPATIONAL STATUS AND EDUCATIONAL NEEDS OF GRADUATES FROM THE COLLEGE OF AGRICULTURAL SCIENCES, TEXAS TECH UNIVERSITY, 1971-1986

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ABSTRACT

The purposes of this study were to determine the occupational status of Texas Tech University (TTU) College of Agricultural Science graduates from 1971 to 1986 and to evaluate the graduates' perceptions of their academic undergraduate program.

A random sample of one-half the graduates who earned their degrees between 1971 and 1986 were mailed questionnaires. This yielded a sample of 1720 graduates. After one follow up mailing to nonrespondents, a total of 35.6% (612) of the graduates returned a questionnaire. A third mailing to nonrespondents consisted of a postcard to determine first job, current occupational status and the agricultural cluster that best described their occupation. This resulted in responses from 248 additional graduates. Consequently, the occupational status of 50.0% (860) of the graduates was determined.

Graduates (860) employed in agricultural occupations were categorized into six occupational clusters as described in the U.S.D.A. publication "Employment Opportunities for College Graduates in the Food and Agricultural Sciences." The percentages employed in each cluster at the time of this study were scientist, engineer or related specialist, 18.5%; manager or financial specialist, 20.3%; marketing, merchandising or sales representative, 12.8%; education, communication or information specialist, 13.6%; social service professional, 2.1%; and agricultural production specialist, 32.7%.

Graduates in agricultural occupations (612) indicated a need for increased emphasis in the following subject areas: computer instruction, 89.4%; leadership, 54.3%; internships, 51.1%; and international agriculture, 31.7%.

Two-thirds of the graduates in agricultural occupations indicated the following business subject areas as needing an increased emphasis: business management, accounting and bookkeeping, business finance, and marketing. Fifty-seven percent of the graduates recommended increased emphasis in oral communications and 48% believed instruction in written communications should be increased. One-fourth of the graduates thought instruction in mathematics and statistics should be increased.

INTRODUCTION

Through the years occupational requirements have changed. Therefore, university curricula must constantly change to keep pace with professional needs. To determine occupational status and assemble educational information in order to revise the curriculum requirements for future students, colleges of agricultural sciences should continually monitor their alumni. The objectives of this study were to: (1) determine the occupational status of Texas Tech University (TTU) College of Agricultural Science graduates from 1971 to 1986; (2) compare occupational information obtained from TTU graduates with data in "Employment Opportunities for College Graduates in the Food and Agricultural Sciences," a report of the United States Department of Agriculture (U.S.D.A., July, 1986 by Coulter, Stanton, and Goecker); (3) evaluate their perception of the academic undergraduate program in the College of Agricultural Sciences; and (4) obtain descriptive information such as salaries, future employment opportunities, and how graduates obtained information concerning their first and current jobs.

Previous studies conducted by Cepica (1969), Townsend (1967), and Ward (1972) were reviewed to determine the methods, procedures, and recommendations concerning follow-up studies of college graduates. McKenna (1983) provided useful examples of how to survey alumni and procedures for implementing the survey. Coulter, et.al. (1986) projected expected employment opportunities for college graduates in the food and agricultural sciences through 1990.

METHODS

Data were secured through the mailing of a questionnaire to a random sample of Texas Tech University Agricultural Sciences graduates who earned their degree between the years 1971 and 1986. The questionnaire was developed by project directors and staff and was subsequently reviewed and revised based on suggestions from a graduate research class, College of Agricultural Sciences department chairpersons, and the college curriculum committee.

A letter of transmittal from the Dean of the College and the appropriate chairperson accompanied the questionnaire and defined the study. A stamped, addressed, return envelope was included in the mailing. Materials were mailed to 1720 randomly selected graduates. (Fifty percent of the graduates who earned their degree between 1971 and 1986.) A follow-up mailing was conducted which included the same questionnaire and another letter encouraging response. A total of 612 graduates (35.6%) responded to the questionnaire. To determine if those who did not respond were similar to the respondents, a postcard was mailed to the 1102 who did not respond to the first and second mailing of the questionnaire, requesting the graduates' first employment after leaving college, their present occupation, and the agriculture clusters which best described their occupation at the time of the study. The clusters listed were those used in Coulter, et. al. (1986). A total of 248 graduates (14.4%) returned the card.

RESULTS

Employment

A chi-square test considering the occupational categories of agriculture and non-agriculture revealed no statistically significant difference between the questionnaire respondents and those who returned the postcard (computed chi-square = 2.038, $p > .05$). Data obtained from the questionnaire and the postcard reveal that 66.5% of the graduates were employed in agricultural occupations at the time of this study (Table 1).

TABLE 1. GRADUATES RESPONDING TO QUESTIONNAIRE AND POSTCARD BY CURRENT OCCUPATIONAL CATEGORY*

Occupational Graduates Category	Questionnaires		Postcard		Total	
	n	%	n	%	n	%
Agriculture	416	68.0	156	62.9	572	66.5
Non-Agriculture	196	32.0	92	37.1	288	33.5
Total	612	100.0	248	100.0	860	100.0

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*Chi-square value = 2.038. Table value at five percent level and one degree of freedom is 3.841. Not significant

TABLE 2. GRADUATES' OCCUPATIONAL CATEGORY IN FIRST OCCUPATION BY YEAR OF GRADUATION

Occupation Graduates	1971-75		1976-80		1981-86		Total	
	n	%	n	%	n	%	n	%
Agriculture	122	80.3	148	79.6	185	67.5	455	74.3
Non-Agriculture	30	19.7	38	20.4	89	32.5	157	25.7
Total	152	100.0	186	100.0	274	100.0	612	100.0

^aChi-square value = 12.137**. Table value at one percent level and two degrees of freedom is 9.210. Significant

Fewer recent graduates (1981-1986) are employed in an agricultural occupation immediately upon graduation than graduates who completed their degree in 1971-1975 or 1976-1980 (Table 2). Approximately two-thirds of the 1981-1986 graduates entered an agricultural occupation upon graduation as compared to 80% of those who graduated between the years of 1971-75 and 1976-80. These differences were determined to be significant at the .01 level when the data were analyzed using chi-square.

The geographical location of graduates by occupational categories was determined using regions designated by the first three digits of the United States Postal Zip Code. Over 45% of the graduates in an agricultural occupation were located in the West Texas region. Over one-third (36.4%) of those in non-agricultural employment were also located in this region. The major cities in the West Texas region are Amarillo, Lubbock, Abilene, Midland, Odessa, and El Paso.

Employment by Occupation Cluster

Coulter, et. al. (1986) categorized employment opportunities into six major occupational areas as shown in Table 3. The occupational clusters were included in the questionnaire for graduates to classify themselves so that the present occupations of Texas Tech graduates in agricultural employment could be compared to the career opportunities projected in the

TABLE 3. PROJECTED EMPLOYMENT OPPORTUNITIES IN AGRICULTURE NATIONALLY BY EMPLOYMENT CLUSTERS COMPARED TO SURVEY RESPONDENTS IN AGRICULTURAL EMPLOYMENT

Cluster	Agricultural Annual Employment Opportunities ^a	Texas Tech Graduates in Agricultural Employment ^b	
		N	%
Scientist, Engineer or Related Specialist	29	106	18.5
Manager or Financial Specialist	14	116	20.3
Marketing, Merchandising or Sales Representative	32	73	12.8
Education, Communication or Information Specialist	6	78	13.6
Social Service Professional	11	12	2.1
Agricultural Production Specialist	8	187	32.7
Total	100	572	100.0

^aSource: "Employment Opportunities for College Graduates in the Food and Agricultural Sciences," a publication prepared by Higher Education Programs, United States Department of Agriculture.

^bResponses from questionnaire and postcard of those graduates in agricultural employment.

U.S.D.A. publication. Each graduate selected the occupational cluster that represented his/her employment. Table 3 indicates the percent of expected employment opportunities for college graduates as projected by the U.S.D.A. Office of Higher Education and the percent of Texas Tech graduates who were presently employed in agriculture within the same agricultural occupation categories.

Traditionally a large percentage of TTU agriculture graduates enter farming and/or ranching due to the intensive agriculture production in West Texas. Consequently, more graduates (n=187, 32.7%) were presently employed in cluster six as agricultural production specialists. This is four times the expected future employment opportunities predicted by the U.S.D.A. publication. These graduates had entered areas of agricultural employment such as ranching, farming, grain/seed production and production of horticultural plant materials.

The percentage (13.6) of Texas Tech graduates who were employed as education, communication and information specialists, or in cluster four, was more than double the six percent of national opportunities forecast by the U.S.D.A. publication.

Employment and Income Expectations

Overall, agriculturally employed alumni were optimistic regarding opportunities for new graduates as they rated opportunities "good" with a mean value rating of 2.67 on a four point scale ("excellent" = 4, "good" = 3, "poor" = 2 and "none" = 1). The graduates in agricultural occupations rated cluster three, marketing, merchandising or sales representatives, as having the highest opportunity for the new graduate with a mean rating of 2.91. The lowest opportunity rating given by the graduates in agricultural occupations was for cluster six, agricultural production specialist, with a mean rating of 2.41 for the new graduate. The 305 respondents who reported their salaries, earned a median income of \$27,000.

Graduates believed a need existed for additional advisement and assistance in obtaining their first employment. Only 10.1% of the graduates indicated they received information leading to employment from the University Career Planning and Placement Center.

Curricular Perceptions

Graduates were asked to evaluate various subject areas based on "educational needs met," "increase emphasis," "decrease emphasis" and "not needed."

Of the graduates who were in an agricultural occupation at the time of the survey, 89.4% indicated increased emphasis was needed in computer instruction and over 54% desired additional leadership instruction. This may be because graduates did not have the opportunity to complete a computer or leadership course when they earned their degrees. Fifty-one percent of the respondents also requested the internship program to be increased. Increased instruction in international agriculture was desired by 31.7% of the graduates.

Two-thirds of the graduates in an agricultural occupation indicated the following business areas as needing an increased emphasis: business management, 67.2%; accounting and bookkeeping, 66.0%; Business Finance, 65.1%; and Marketing, 65%.

Graduates also recommended increased emphasis concerning courses in communications. Fifty-seven percent of the graduates who were in an agricultural occupation believed additional instruction in oral communications was needed and 48% believed increased emphasis in written communications was needed. A need for increased emphasis in mathematics and statistics was expressed with 24.1% recommending increased emphasis in mathematics and 22.9% in statistics.

Music Appreciation and Visual Art Appreciation were indicated as not needed by 71.5% and 60.5% of the graduates respectively.

When asked the question, "Do you believe your B.S. degree adequately prepared you for your occupation," 71.2% of the graduates in agricultural occupations responded "yes" while 54.0% of the graduates in non-agricultural occupations replied "yes".

Concerning "general comments on your education", 53 respondents stated their college education was excellent and 151 stated it was good to very good. The other 408 graduates did not respond to this question.

Graduates had positive comments about their professors and indicated that the professors should be the strongest part of the department and should challenge students with subjects current to the present agricultural industry. One graduate stated, "The degree taught me to be adaptable to constant change in agriculture today."

CONCLUSIONS AND RECOMMENDATIONS

Graduates believed a need existed for additional advisement and assistance in obtaining their first employment. Also, they indicated an increased need for computer instruction, leadership courses, and internships. The administration and faculty of colleges of agricultural sciences should respond to the graduates perceptions.

College of Agriculture faculty should recognize that opportunities may exist for marketing, merchandising, and sales representatives as the projected need is considerably larger than the Texas Tech graduates who have employment in this cluster. Also, the faculty should be aware of the number of graduates who have become agricultural production specialists, as 32.6% were employed in agricultural production at the time of this study. Because of the intensive agricultural production in this area, a higher percentage of Texas Tech graduates may become agricultural production specialists than the eight percent predicted opportunities nationally.

College administrations and faculty should study the data pertaining to the graduates' opinion as to whether course areas should be increased or decreased and consider revising curricula accordingly. Special attention should be given to business, communications and certain agricultural courses.

Another concern among graduates was employment upon graduation. College faculty may want to determine why relatively few students used the University Career Planning and Placement Center.

Another reason the college must continually seek to improve advisement and placement of graduates is because the percentage of graduates in agricultural occupations is declining. Eighty percent of the 1971-1980 graduates and 67.5% of 1981-1986 graduates entered into agricultural occupation for first employment, resulting in a decline of 12.5% of graduates entering into agricultural occupations from the earlier years. Agriculture faculty should advise students into career clusters that have the

largest opportunities for employment. Also, an individual within the Agriculture Colleges could be assigned the duty of coordinating a placement program.

At the time of this study, 45.2% of graduates were employed in the West Texas region. Implications were that to enhance employment potential, graduates entering agricultural occupations may need to be more willing to accept jobs throughout the United States.

Continuous systematic follow-up of graduates to develop relevant curriculum programs, efficient student advisement, and improved placement programs should be a priority of all College of Agriculture programs.

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