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John K. Thomas  
*Texas Agricultural Experiment Station, Texas A&M University System*

Kathy L. Schiflett  
*Texas Agricultural Experiment Station, Texas A&M University System*

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# A Gender Comparison of Former Agricultural Students' Employment Experiences

*John K. Thomas and Kathy L. Schiflett*

*Department of Rural Sociology, Texas Agricultural Experiment Station, Texas A&M University System*

**ABSTRACT** Deepening shortages of highly qualified scientists, managers, and technical professionals seriously threatens American agriculture. The purpose of this study is to investigate the degree to which gender differences exist in former agricultural students' acquiring employment in the agricultural industry after leaving college. Data were obtained using a 30 percent random sample (n=1,730) of students enrolled in 1977 at two major land-grant universities in the Southwest. A mail survey conducted in late 1986 resulted in 707 respondents. Male out-numbered female respondents 3 to 1, which was approximately the same enrollment ratio in 1977.

Findings of the survey indicate that 9 out of every 10 respondents received a bachelor's degree with some type of agricultural major. Twenty-three percent had attained graduate-level education and about 10 percent are currently in graduate and professional degree programs; almost half were or are involved with agricultural disciplines. Few respondents used university placement, administration, and faculty as sources for obtaining employment after graduation. Job changes subsequent to first employment after college were toward nonagricultural jobs. In the transition from education to employment attainment, women were disproportionately under-represented in agricultural-related jobs. Moreover, their employment outcomes conformed to traditional gender-defined career patterns.

## *Introduction*

Researchers and other observers have noted the trend of increased participation by women in the overall labor force. Since 1970, the percent of women in the civilian labor force has increased from 38 percent to 44 percent in 1986. The proportion of all women who are working has risen likewise from 43 percent to 54 percent (Bureau of Labor Statistics, 1987). But these employment increases have differed across industries and occupations. This is evident particularly in American agriculture.

Despite significant enrollment increases by women in colleges of agriculture at 1,862 land-grant universities (Dunkelberger et al., 1982), women represent less than 5 percent of all agricultural scientists and concentrate primarily in such areas as nutrition, the social sciences, and food science (Busch and Lacey, 1983). Moreover, they comprise only 21 percent of those employed overall in the agricultural industry (Bureau of Labor Statistics, 1986), and most are concentrated in clerical jobs (Tienda et al., 1987; Horan and Tolbert, 1984). Two possible explanations have been offered to account for their lack of participation given the decreasing supply and projected shortage of professional and technical manpower confronting this industry (Bruene et al., 1985; Coulter and Stanton, 1980; Bender et al., 1985). Women who are attaining higher education in agriculture either are choosing not to pursue agricultural-related careers,

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or they are "locked out" from filling agricultural-related positions in the labor market.

To more adequately understand why women are under-represented in the agricultural industry given present and projected shortages of professional manpower (Coulter et al., 1986), it is necessary to examine the experience of women trained in colleges of agriculture in selected aspects of the labor market recruitment and entry process. In this paper, we first examine the educational achievement patterns of former students enrolled in colleges of agriculture at two land-grant universities in the Southwest. Since we do not expect all students who declare agricultural majors to remain in such majors until graduation, we identify the proportion who actually graduated with agricultural degrees, their academic area of study, and the proportion who pursued graduate education in agriculture. We conclude our analyses by examining patterns of market entry and employment. Specifically, we identify sources that facilitate job placement and transition into the labor market, the types of acquired jobs, and the types of employment benefits received.

### *Background*

Research on women's career development and participation in the labor force generally has taken two courses. Evolving from what had been predominantly male status attainment modeling (Sewell et al., 1970; Sewell and Hauser, 1975), one approach focused on estimating levels of influence that background factors had on career choices and attainments. Antecedent factors included in some combination parental socioeconomic statuses, significant other influences, and personal characteristics. These were hypothesized to affect achievement attitudes, which in turn determined status attainments. Research in this area demonstrated that the career development and attainment process for women was different and more complex than that for men during various stages in the life cycle (Alexander and Eckland, 1974; Falk and Cosby, 1975; Rosen and Aneshensel, 1978).

More recent research has demonstrated not only differences but also reported them specifically for the recruitment to agricultural occupations. For example, Lyson (1981) reported that although men and women who are enrolled in colleges of agriculture come from similar social origins and are influenced by a similar set of significant others, female students are less likely than male students to have had prior agricultural work experience and participation in agricultural-related youth and high school organizations. Moreover, he found that male and female agricultural majors differed in their perceptions of labor market opportunities and reward structures. Female students pursuing agricultural education/research and agribusiness types of employment expected to attain lower incomes but higher status jobs than their male peers.

Our work will extend that of Lyson (1981) by examining labor market experiences of former agricultural majors. We control the level and type of educational achievement in our study by focusing on individuals who have attained baccalaureate degrees specifically from colleges of agriculture at two land-grant universities in the Southwest. Given what we know about female enrollments in colleges of agriculture and the under-representation of women in agricultural-related

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occupations, we hypothesize that female agricultural graduates are proportionately more likely than males to attain employment in non-agricultural sectors and non-professional/managerial positions.

***Methods***

***Data***

Participants in the current study were obtained from a 30 percent random sample of agricultural majors formerly enrolled at Texas A&M University (TAMU) and Oklahoma State University (OSU) in the 1976-77 academic year. Sample selection was random across all academic classes (e.g., freshmen, sophomore, etc.). The sample excluded individuals who were graduate students and special students in 1976, and foreign students with 1986 foreign addresses. A mail survey was conducted from late 1986 to early Spring of 1987. Notification letters were sent three weeks prior to the mailing of the questionnaires to sample members to inform them of the purpose of the study and to confirm current address information. Follow-up letters were sent 5 weeks after mailing questionnaires to nonrespondents. Overall, 48 percent (n=559) of the original TAMU sampling list and 28 percent (n=158) of the OSU sampling list participated in the study. Males represented 75 percent and females 25 percent of the study participants; this ratio compared well to that of undergraduate agricultural enrollment in 1976. Respondents and nonrespondents were not significantly different in terms of sex (Chi Sq.  $P=.679$ ). However, they differed by race ( $P < .001$ ) and school ( $P < .001$ ). There were higher percentages of whites (96 vs. 88 percent) and former TAMU students (77 vs 63 percent) respondents than among nonrespondents.

***Measurement***

The early career formation process consists of three stages: educational attainment, labor market entry, and market participation. In this study, we compare educational attainment with level or current status of attainment and type of past agricultural curriculum training (e.g., agronomy, animal science, agricultural economics, etc.). We follow this by identifying the types of resources study participants used to find employment. Five resources are included in the analysis: self-employment, personal acquaintances and efforts, university services and faculty, employment services (public and private), and civil service and military. Finally, we examine labor market participation according to first full-time position (occupation), industry status (agricultural and nonagricultural), starting salary, and total number of weeks unemployed since college graduation. In addition, we compare by gender 12 types of employment benefits received during respondents' first full-time jobs. They were: medical insurance, dental insurance, accident insurance, life insurance, sick pay, unemployment insurance, paid vacation, profit sharing, company training program, retirement/pension plan, company-provided transportation, and company housing.

**Table 1. Level of educational attainment by gender (percents)**

Educational Level	Male (n = 537)	Female (n = 172)
No Degree	5.6	7.6
Attained Bachelor Degree	66.7	63.4
Enrolled in Master Program	4.8	3.5
Attained Master Degree	14.3	11.6
Enrolled in Professional Program	1.3	3.5
Attained Professional Degree	3.4	5.8
Enrolled in Doctrate Program	1.7	1.7
Attained Doctrate Degree	2.2	2.9

Chi square test was not significant at .05 level.

*Statistical analysis*

The survey data were analyzed and compared by gender. Chi-square statistical tests of significance were conducted for most categorical comparisons. The Student's t-test was conducted when variable means could be calculated for each gender. No test of significance was conducted for descriptive data such as agricultural majors. The purpose of these tests was to determine if early employment/career experiences were equivalent for both genders given the similarity of their educational credentials.

**Results**

*Educational attainment*

Educational statuses are reported in Table 1. General attainment patterns were similar for both gender groups. Less than 10 percent of the respondents did not graduate from college with a baccalaureate degree. Approximately 60 percent of both groups completed their undergraduate education and had not attained other degrees or enrolled in advanced programs. Slightly more men (14 percent) than women (12 percent) attained a master degree, while the reverse was the case for those who attained professional and doctoral degrees (women-9 percent, men-6 percent). Almost 1 in every 10 respondents in each group was currently enrolled in some type of graduate or professional program.

To determine whether respondents had actually completed their undergraduate education in agriculture, they were asked to report the curriculum or major of their bachelor's degree. Table 2 reports the results for 18 types of agricultural curricula. While a large majority (> 93 percent) of both groups received degrees from colleges of agriculture, they differed regarding specific areas of study. Among males, 72 percent majored in animal science, agricultural economics, agronomy, agricultural

84 *Southern Rural Sociology, Vol. 6, 1989***Table 2. Curriculum of major or bachelor's degree by gender (percents)**

Curriculum/Major	Male (n = 508)	Female (n = 161)
Agriculture Development	1.4	0.0
Agriculture Economics	15.8	7.5
Agribusiness	2.8	1.9
Farm and Ranch Management	0.4	0.0
Agriculture Education and Journalism	8.5	1.9
Agriculture Engineering	6.3	1.2
Agronomy	11.4	7.5
Animal Science	17.7	21.1
Biology	3.4	7.5
Dairy Science	0.6	0.6
Entomology	2.2	3.1
Horticulture	5.9	16.2
Food Science	0.8	5.0
Forestry	4.5	3.1
Poultry Science	0.6	0.0
Recreation and Parks	3.7	9.3
Range Science and Management	4.5	0.6
Wildlife and Fisheries	7.5	6.8
Other	2.2	6.8

education, wildlife and fisheries sciences, agricultural engineering, and range science, compared to 47 percent of the females' majoring in these areas. Animal science was most frequently mentioned by both groups. Among females, 38 percent, compared to 14 percent of the men, reported receiving degrees in horticulture, recreation and parks, biology, and food science.

*Labor market entry*

Sources contributing most to respondents' finding their first full-time employment after leaving college are reported in Table 3. Both groups, particularly women, relied heavily on personal acquaintances and individual effort (e.g., direct application to employer and response to employment advertising) to find employment. Almost a fourth of all respondents credited university placement services. Although few used employment agencies/firms and the civil service/military, women more frequently than men depended on employment services; the reverse was the case for the two groups regarding civil service/military employment. Finally, men were more likely than women to be self-employed. Much of

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**Table 3. Sources contributing most to respondents' finding first full-time employment by gender (percents)**

Factors	Male (n = 534)	Female (n = 170)
None Helped	3.2	4.7
Self-Employment	10.3	6.5
Individual Contacts	49.8	57.7
University Services	26.6	22.4
Employment Services	2.6	5.9
Civil Service/Military	7.5	2.9

Chi-Square test was significant at .05 level.

this self-employment was attributable to their beginning farming and ranching. Overall, these gender differences were statistically significant.

*Labor market participation*

The occupational positions of respondents' first full-time employment after college are presented in Table 4, and several gender differences in the allocation of this first employment are notable. Although large percentages of men (40 percent) and women (32 percent) attained managerial and professional specialty positions, men more often acquired employment in these and other traditionally defined male occupations (Lipman-Blumen, 1984; Talley et al., 1974; Treiman and Terrell, 1975; see also Abrahamson and Sigelman, 1987). As mentioned above, 20 percent compared to 5 percent of the women began farming or some agricultural production-related work. Twelve percent compared to 4 percent of the women took blue-collar jobs involving manufacturing, operative, and service types of work. Elsewhere, the distribution of women followed their traditional employment patterns with substantial percentages employed in sales (women-40 percent, men-19 percent) and technical types (women-17 percent, men-10 percent) of positions. Overall, 23 percent of the women versus 16 percent of the men were employed in specific professional and technical health and natural science positions (see Waite and Berryman, 1985 for discussion of women in male-dominated occupations).

Starting annual salaries also differed significantly by gender. As shown in Table 5, men (\$14,046) had an average annual starting salary greater than that of women (\$11,905). The fact that more women (35 percent) than men (17 percent) had starting salaries less than \$10,000 accounts for this difference.

Fringe benefits received by men and women during first full-time employment were similarly distributed for primary types of compensation such as medical insurance, paid vacation, and sick pay. Few respondents received benefits outside of the 12 categories they were asked about and the distribution of many of these benefits differed significantly according

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**Table 4.** Occupation of first full-time position by gender (percents)

Occupations	Male (n = 527)	Female (n = 168)
<b>Managerial and Professional</b>		
<b>Speciality Occupations:</b>		
Executive, Administrative, and Managerial Occupations	16.1	8.9
Engineers and Physical Scientists	5.3	3.0
Natural Scientists and Veterinarians	7.4	6.6
Health Occupations	1.0	2.4
Teaching Occupations	4.2	6.0
Agriculture and Forestry Teaching and Vocational Occupations	3.0	2.4
Other Professions	2.9	2.4
<b>Technical Occupations:</b>		
Health Occupations	1.0	3.0
Engineering Occupations	0.2	0.6
Natural Science Occupations	6.6	10.7
Other Technical Occupations	2.1	2.4
<b>Sales and Administrative</b>		
<b>Support Occupations:</b>		
Sales Occupations	14.4	19.1
Administrative Support Occupations and Clerk	4.2	21.4
<b>Private and Public Service Occupations:</b>	1.1	1.8
<b>Farming, Forestry, and</b>		
<b>Fishing Occupations:</b>		
Farm Operators and Managers	11.8	3.6
Other Occupations	8.5	4.2
<b>Precision Production, Craft and Repair Occupations:</b>	5.3	1.8
<b>Operator, Fabricator, and Laborer Occupations</b>	5.3	0.0

to gender. Table 6 reports the results. Regarding benefits other than those just listed, men received more frequently than women accidental insurance, life insurance, company training, retirement plans, company-provided transportation, profit-sharing, and housing. While only access to such benefits has been examined here (Lord and Falk, 1982), the extent of benefit coverage also has been shown to be a function of gender characteristics in the general population and characteristics of employing firms (Dalto, 1987).

Finally, total number of weeks that respondents were out of work are presented in Table 7. Women were out of work significantly longer than men. They averaged 53 weeks out of work since leaving college

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**Table 5.** Starting annual salary of first full-time job after leaving college by gender (percents)

Starting Annual Salary	Male (n = 500)	Female (n = 159)
Less than \$10K	17.2	34.6
\$10K - \$20K	72.4	56.6
\$20K - \$30K	8.4	7.6
\$30K - \$40K	1.2	1.3
\$40K - \$50K	0.2	0.0
\$50K or more	0.6	0.0
<b>Mean</b>	\$14,046	\$11,905
<b>Standard Deviation</b>	\$6,777	\$5,084

T-test was significant at .05 level.

while men averaged 19 weeks. Fourteen percent were not working a year or longer, compared to only 2 percent of the men. We did not determine whether they and other respondents were out of the work force or actively sought employment during this period. Clearly though, women had more difficulty than men in finding jobs. While about 36 percent have been employed continuously since leaving college, about 67 percent of the men have been steadily employed.

***Summary and discussion***

The intent of this paper was to examine the transition of female and male agricultural students from colleges of agriculture into the labor market. By selecting individuals with a similar level of education and area of study (college agricultural sciences), we partially controlled the educational qualifications of study participants. Although we suspect that specific majors (e.g., agricultural economics, animal science, etc.) are important for employment outcomes, we could not pursue determining this with our sample. Nevertheless, by selecting students formerly enrolled during 1976-77 and obtaining their participation in the 1986-87 study, we attempted to control also "period effects," temporal changes in occupational opportunity structures that occur within various labor markets (Horan and Tolbert, 1984: 101).

The results of our study clearly indicate that comparably trained women and men experience different occupations and employment benefits. Although more than 90 percent of both study groups graduated with degrees from colleges of agriculture, women experienced more occupational segregation than men (Bielby and Baron, 1986; Abrahamson and Sigelman, 1987). Their first full-time jobs after leaving college were concentrated in primarily traditional female occupations such as sales, clerical, and technical positions that generally allocated lower earnings and employment benefits than those for men, who were employed more

88 *Southern Rural Sociology, Vol. 6, 1989***Table 6.** Company benefits for first full-time job after leaving college by gender (percents)

Benefits	Percent Reporting Benefit	
	Male (n = 530)	Female (n = 169)
Paid Vacation	76.4	75.1
Medical Insurance	72.6	71.6
Sick Pay	61.9	65.7
Accident Insurance*	62.4	50.0
Life Insurance*	57.4	42.6
Retirement*	47.4	36.3
Company Training Program*	36.2	25.6
Unemployment Insurance*	34.8	33.7
Company Transportation	33.2	17.2
Dental Insurance	29.6	24.3
Profit-Sharing*	22.1	10.7
Housing*	14.3	7.7
Other	7.4	7.7

\*Chi-Square test was significant at .05 level.

frequently in managerial and professional positions. These findings agree with those of other studies which found differing patterns for men and women in general (Abrahamson and Sigelman, 1987; Dalto, 1987; Lyson, 1985; Hodson, 1984).

Numerous explanations have been offered to explain career differences between women and men. Several explain factors that affect occupational choice by contending that women do not vigorously pursue career advancement because they have other priorities, differ from men in prior background experiences and other influences (Lyson, 1981; Falk and Cosby, 1975), and pay a higher career cost for getting married and having children (Treiman and Terrell, 1975; Tienda et al., 1987). Recently, researchers have explored more structurally-based explanations. For example, Horan and Tolbert (1984: 80-83) have used characteristics of individuals and the characteristics (categories) of industries and occupations to which they were allocated to examine the organization of work in labor markets in the South. Their findings indicated that (1) characteristics (e.g., urban trade, agricultural, export, etc., types of labor market) of these labor markets vary, (2) these types of markets have a significant effect on the individuals' chosen occupations and resulting salaries, and (3) extreme gender and race differences existed in occupational and earning allocative outcomes when type of market was controlled.

It seems then that the particular education qualifications of women in this study could have served primarily to allocate them to white-collar, secondary jobs. Opportunity structures associated with such jobs depend on internal labor markets within particular types of firms and establishments. Conceptual and empirical features of this allocation have been occasionally described using two forms of segmentation within labor

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**Table 7.** Number of weeks since leaving college and becoming employed by gender (percents)

Weeks	Male (n = 529)	Female (n = 170)
None	67.3	35.9
1-6 Weeks	14.0	14.1
7-12 Weeks	7.4	14.7
13-26 Weeks	4.5	13.5
27-52 Weeks	4.9	8.2
More than 52 Weeks	1.9	13.5
<b>Mean</b>	<b>18.5</b>	<b>52.8</b>
<b>Standard Deviation</b>	<b>26.9</b>	<b>98.5</b>

T-test was significant at .05 level.

markets--occupational internal labor markets (OILMs) and firm internal labor markets (FIRMs). Smith (1983) distinguishes OILMs as occupational groups (defined by skill and work requirements) that cut across firm and industry boundaries. FILMs represent essentially career ladders, accompanying benefits, training programs, and work conditions developed by large firms to control and retain skilled labor (i.e., professional, managerial, and technical positions).

Cautiously extrapolating findings regarding the operation of OILMs and FILMs from other studies, we can infer that women in our study who are employed in white-collar, secondary jobs, particularly those in the peripheral economic sectors (e.g., the agricultural industry) will have access to limited internal labor markets that restrict career mobility and earnings. Mobility tends to be across industrial sectors and firms since employing peripheral firms are generally smaller, less complex and bureaucratic, and more competitive than core firms (Baron and Bielby, 1984). Women with jobs in larger, core firms will be afforded, on the other hand, more employment security, pay, and career movement (Lorence, 1985; Granovetter, 1984; Jacobs, 1983).

Future analyses should investigate subsequent employment allocations of these former male and female agricultural students to determine whether indeed their mobility patterns coincide with general segregative patterns for all men and women. If the patterns are not significantly different, educators and students may become concerned that agricultural higher education fails to produce nontraditional career advantages for women in the labor market. Moreover, questions should be raised regarding not only why women with college educations continue to be allocated to secondary jobs, but also why they choose to accept such employment. Finally, our study did indicate that some women with agricultural majors/degrees were allocated to primary employment positions. More effort needs to be directed toward identifying academic and background characteristics that distinguish these women from other women graduating from colleges of agriculture.

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