

# A Follow-up of Female Graduates of the College of Agriculture at Oklahoma State University From 1985 To 1989

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Oklahoma State University (OSU) was founded as Oklahoma Agricultural and Mechanical College in 1890. In 1896, the first class of six male students graduated. And in 1914, the first female student graduated with a degree in agriculture from OSU. During the last five years, female students represented 20% to 24% of the undergraduate student population in the College of Agriculture. According to figures from the United States Department of Education, in 1970 only 4.2% of students earning a B.S. degree in Agriculture and Natural Resources were female. By 1985, this number had increased to over 31%. These numbers indicate that women have entered predominantly male fields of study and work during the last decades. But little is known about the level of acceptance by peers, teaching staff, the administration, future employers, and the work environment. Do female students enjoy their college training in a nontraditional field? Would they choose the same major again if they could remake their decision? Do they feel well prepared for future positions and are they finding satisfactory employment?

Not much research is available regarding female agricultural college students and their particular situation. As part of an ongoing evaluation process of the programs in the College of Agriculture at OSU, a follow-up study of female B.S. graduates was conducted. The following objectives were established: (1) To identify current positions of female graduates. (2) To determine female graduates' perceptions of the degree of relationship between their area of employment and their college degree. (3) To determine the adequacy of the programs within the College of Agriculture as perceived by female graduates. (4) To determine factors female graduates perceive as enhancing or inhibiting satisfactory employment in their field of study. (5) To determine the perceptions of female graduates as to sex bias and sex stereotyping in their college training and their work.

## Methods

A list of the female B.S. graduates from 1985-1989 was obtained from the OSU Alumni Association. The decision was made to utilize phone interviews in the data collection. A questionnaire was developed with questions pertaining to each of the objectives. This instrument was critiqued by several professors, pilot tested with former agricultural stu-

dents who were not part of the study population, and approved by the OSU Institutional Review Board.

The interviewing was started in November 1989. The great majority of graduates who were contacted reacted positively and were willing to participate. The response rate was 76% (192 graduates). Only 3% did not consent to participate. For the other 21% of graduates, current telephone numbers or addresses could not be obtained or they could not be reached during the time of data collection. After the interviewing was ended in January 1990, the data were compiled. Descriptive statistics were used in the analysis since the total study population was surveyed. Responses for each question were grouped and frequency scores, percentages, and means were calculated for each department separately and for the College of Agriculture total.

## Results

The distribution of female graduates in the degree major areas in the College of Agriculture differed from total enrollment patterns. Percentage-wise, female students chose majors in Agricultural Communication and General Agri-

Table 1. Comparison Of Relationship Of B.S. Degree to first and Present Employment.

Degree Major	Percentage of Respondents by Extent to Which Major Was Related to First and Present Employment							
	Not Related		Somewhat Related		Closely Related		In Field of College Study	
	1st Present	%	1st Present	%	1st Present	%	1st Present	%
Agr Comm	7.14	16.67	35.71	41.67	35.71	16.67	21.43	25.00
Agr Ec	31.91	34.88	23.40	23.26	23.40	25.58	21.28	16.28
Agr Ed	57.14	20.00	14.29	20.00	28.57	60.00	0.00	0.00
Agr (Gen)	0.00	0.00	0.00	0.00	50.00	100.00	50.00	0.00
Agronomy	0.00	0.00	0.00	0.00	71.43	50.00	28.57	50.00
Animal Science	28.07	34.00	15.79	22.00	19.30	14.00	36.84	30.00
Biochemistry	0.00	0.00	100.00	50.00	0.00	50.00	0.00	0.00
Entomology	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00
Forestry	20.00	20.00	20.00	0.00	40.00	60.00	20.00	20.00
Horticulture	14.29	20.00	21.43	10.00	14.29	20.00	50.00	50.00
Landscape Arch	0.00	0.00	11.11	0.00	22.22	33.33	66.67	66.67
Pre-vet Med	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00
Total	23.21	26.21	19.64	20.00	24.40	24.83	32.74	28.97

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culture combined (no separate numbers were available from the Office of Institutional Research), in Animal Science and Pre-veterinary Medicine combined, and in Horticulture and Landscape Architecture combined more often than the total student population. Majors in Agricultural Education, Agronomy, and Biochemistry were chosen less often. None of the respondents had majored in Agricultural Engineering, Mechanized Agriculture, or Plant Pathology. The distribution of the respondents by degree majors was as follows: 68 in Animal Science (35.42%), 52 in Agricultural Economics (27.08%), 16 in Horticulture (8.33%), 15 in Agricultural Communications (7.81%), 10 in Landscape Architecture (5.21%), seven each in Agricultural Education, Agronomy, and Forestry (3.65%), three each in General Agriculture and Pre-veterinary Medicine (1.56%), and two each in Biochemistry and Entomology (1.04%). The recommendation was made to the College of Agriculture and its individual departments to evaluate their recruitment and publicity strategies to ensure equal encouragement of and openness towards female and male students. Further research could determine and compare factors in the decision making process of female and male students regarding their degree choices as well as their drop-out rates and reasons for discontinuing their education in the College of Agriculture at OSU.

At the time of data collection 145 graduates (75.52%) held full-time employment. The others were either students (11.46%), unemployed (5.21%), homemakers (4.17%), or part-time employed (3.65%). Most of the graduates who were presently employed full-time expressed satisfaction with their employment.

Table 1 was developed to permit a comparison of the relationship of the B.S. degrees of respondents to their first and present employment. As reported in this table, 57.14% of the respondents indicated that their first job after graduation was in the field of their college study or closely related. A high percentage of graduates with a degree in Agricultural Education, Agricultural Economics, and Animal Science indicated no relationship between their first position and

their B.S. degree and a high percentage of graduates with a degree in Agricultural Economics and Animal Science indicated no relationship between their present position and their B.S. degree. It was concluded that female graduates in some degree major areas encounter difficulties in finding employment in their field of study. These degree programs should be further evaluated to ensure training of graduates in fields in which employment is available.

Salary ranges for the first position after graduation varied from "Below \$10,000" to "\$30,000-\$39,999". The "\$10,000-\$19,999" range had the highest percentage of responses. For the present positions a slight increase in salary ranges could be noticed.

Table 2 contains a summary of respondents' perceptions of instructional program quality and effectiveness in the College of Agriculture at OSU. In general, female students felt positive about their college education and it is recommended that the College of Agriculture continue to provide students with high quality programs. Individual evaluation factors show that in general all degree majors except Landscape Architecture majors (who had a mean response of "average") evaluated the quality of instructors in the major area of study as "good". Agricultural Economics majors had the highest mean response in this category (3.44) and General Agriculture majors the lowest (2.67).

On the average, respondents in all degree major areas evaluated the usefulness and quality of course content in their major area of study as "good". The individual mean responses ranged from 3.43 for Agronomy to 2.50 for Entomology and Landscape Architecture majors. Equipment and facilities used in instruction were rated as "excellent" by Pre-veterinary Medicine majors and "average" by Landscape Architecture and Entomology majors. Respondents in all other degree major areas on the average rated equipment and facilities as "good" with their mean responses ranging from 3.43 (Agricultural Education) to 2.50 (Biochemistry). In general, respondents from all degree majors together were less positive about the equipment and facilities (2.88) and

Table 2. Summary of Respondents' Perceptions of Instructional Program Quality and Effectiveness in the College Of Agriculture at OSU.

Degree Major	Mean Responses by Selected Quality/Effectiveness Factors							Total Overall Mean
	Instructors	Course Content	Equipment And Facilities	Preparation for First Position	Amount of Benefit to Career			
Agr Communications	3.07 Good	2.80 Good	2.60 Good	2.87 Good	3.40 Moderate		2.95	
Agr Economics	3.44 Good	3.06 Good	2.83 Good	2.76 Good	3.06 Moderate		3.03	
Agr Education	3.29 Good	3.00 Good	3.43 Good	2.60 Good	3.14 Moderate		3.13	
Agr (General)	2.67 Good	2.67 Good	2.67 Good	2.00 Average	2.33 Little		2.47	
Agronomy	3.29 Good	3.43 Good	3.00 Good	3.29 Good	3.86 Great		3.37	
Animal Science	3.35 Good	3.03 Good	3.15 Good	2.67 Good	3.24 Moderate		3.10	
Biochemistry	3.00 Good	3.00 Good	2.50 Good	3.00 Good	3.00 Moderate		2.89	
Entomology	3.00 Good	2.50 Good	1.50 Average	2.00 Average	2.50 Moderate		2.30	
Forestry	3.14 Good	2.86 Good	2.71 Good	3.00 Good	2.86 Moderate		2.91	
Horticulture	3.25 Good	3.00 Good	2.62 Good	2.64 Good	3.12 Moderate		2.93	
Landscape Architecture	2.10 Average	2.50 Good	2.10 Average	2.50 Good	3.30 Moderate		2.50	
Pre-vet Medicine	3.00 Good	3.00 Good	3.67 Excellent	2.67 Good	3.33 Moderate		3.13	
Total	3.24 Good	2.98 Good	2.88 Good	2.72 Good	3.18 Moderate		3.01	

about the course content (2.98) than they were in evaluating the instructors (3.24) even though all three mean responses were classified as "good". Since Landscape Architecture majors rated their instructors, equipment and facilities as only "average", it is recommended that special efforts be undertaken to determine how students' needs can be better met in that area. The Entomology Department is in the process of moving into new facilities which should improve its ratings in regard to that area.

The effectiveness of the total B.S. degree program as preparation for their first position after graduation was only rated as "average" by General Agriculture and Entomology majors. Efforts should be taken to further evaluate these degree programs to determine what changes might be needed to better serve the needs of students. All other degree majors on the average evaluated the effectiveness of their degree programs as "good". Agronomy majors had the highest mean response in this category (3.29) and Landscape Architecture majors the lowest (2.50). The overall mean response was 2.72.

Most respondents (84.90%) felt their B.S. degree program had been of "moderate" or "great benefit" to them in their careers. The mean response for General Agriculture majors was "little benefit" (2.33) and for Agronomy majors "great benefit" (3.86). All other degree majors on the average felt that their college training had been of "moderate benefit" to them in their careers with individual mean responses ranging from 3.40 (Agricultural Communications) to 2.50 (Entomology).

Total overall numerical means were calculated for each degree major area and for the College of Agriculture total regarding the different quality/effectiveness factors in the evaluation of the instructional program. These means were utilized as a measure of tendency towards positiveness. The degree majors arranged according to the power of their means were as follows: Agronomy (3.37), Agricultural Education and Pre-veterinary Medicine (3.13), Animal Science (3.10), Agricultural Economics (3.03), Agricultural Communications (2.95), Horticulture (2.93), Forestry (2.91),

Biochemistry (2.89), Landscape Architecture (2.50), General Agriculture (2.47), and Entomology (2.30). The mean response for the College of Agriculture total was 3.01.

Asked what they would do if they could remake their decision regarding study in the College of Agriculture at OSU 67.71% of the respondents indicated they would choose the same degree again. Less than 50% of graduates with majors in Agricultural Education and Landscape Architecture would choose the same degree again, indicating that their expectations regarding their degree major were not met. Pursuing a degree outside of agriculture was the response of 17.19% of all respondents.

Determining factors influencing respondents' decision to earn a degree in agriculture at OSU showed that "own interest" made up 41.13% of responses, "relatives or friends" 25.11%, and "farm background" 11.69%.

Several questions were included in the instrument concerning the influence of selected factors on respondents' careers. Based on the findings it was concluded that, in general, respondents felt that being married had more of a positive influence on their careers than being single which was not considered to influence the career. Respondents' assessment as to the influence of having children on their career varied widely. However, not having children, was generally considered to have a positive influence. Even though several factors seemed to influence respondents' careers, for the majority of respondents, gender had not influenced their career.

Respondents' perceptions of the specific situation of women in the field of agriculture were determined through several interview questions. As can be seen from the data in Table 3, all but three degree majors had mean responses of "slightly disagree" as to being treated differently during the college education because of being a female in the field of agriculture. The total mean response for all degree majors of 1.74 was also classified as "slightly disagree". "Strongly disagree" was the mean response of General Agriculture, Landscape Architecture, and Biochemistry majors. These findings indicate that the College of Agriculture in general is

**Table 3. Perceptions of Respondents as to Being Treated Differently Because of Being a Female in the Field of Agriculture.**

Degree Major	Mean Responses by Extent of Agreement of Being Treated Differently at Selected Points in Career Path					
	During College		While Seeking Employment		In the Job	
Agricultural Communications	1.73	Slightly disagree	2.60	Slightly agree	1.93	Slightly disagree
Agricultural Economics	1.56	Slightly disagree	2.57	Slightly agree	2.35	Slightly disagree
Agricultural Education	1.86	Slightly disagree	3.75	Strongly agree	3.33	Slightly agree
Agriculture (General)	1.33	Strongly disagree	2.67	Slightly agree	2.67	Slightly agree
Agronomy	2.43	Slightly disagree	1.86	Slightly disagree	2.14	Slightly disagree
Animal Science	1.88	Slightly disagree	2.66	Slightly agree	2.42	Slightly disagree
Biochemistry	1.00	Strongly disagree	2.50	Slightly agree	3.00	Slightly agree
Entomology	2.00	Slightly disagree	2.00	Slightly disagree	1.00	Strongly disagree
Forestry	2.00	Slightly disagree	2.50	Slightly agree	2.40	Slightly disagree
Horticulture	1.69	Slightly disagree	2.25	Slightly disagree	2.50	Slightly agree
Landscape Architecture	1.30	Strongly disagree	1.80	Slightly disagree	2.56	Slightly agree
Pre-veterinary Medicine	2.00	Slightly disagree	2.00	Slightly disagree	2.00	Slightly disagree
<b>Total</b>	<b>1.74</b>	<b>Slightly disagree</b>	<b>2.52</b>	<b>Slightly agree</b>	<b>2.36</b>	<b>Slightly disagree</b>

acceptive and supportive of female students. Comments from the 45 graduates (23.44%) who did feel they had been treated differently included that women were considered less capable, that they were a minority and that they had to face a bias towards men and male chauvinism.

Respondents used a variety of methods in making initial contact with their employer. Contacting the employer on own initiative was indicated by 47.46% of the respondents. Department contacts and the Agricultural Placement Center were utilized by 23.16%. Slightly over half of the graduates agreed with being treated differently while seeking employment because of being a female in the field of agriculture with their comments indicating that it is more difficult for women to find employment in agriculture than for men. Thirty-two graduates (35.16%) experienced employers who did not want to hire women, others felt women were considered less capable and qualified, and they were not taken seriously. Agricultural Education majors on the average "strongly agreed" with being treated differently and Horticulture, Entomology, Pre-veterinary Medicine, Agronomy, and Landscape Architecture majors "slightly disagreed". The other mean responses were in the "slightly agree" category as well as the total combined mean response of 2.52.

Responses regarding an assessment as to being treated differently in the job because of being a female in the field of agriculture had a combined mean response of 2.36 classified as "slightly disagree". Six degree major areas had mean responses in this category, one had a mean response of "strongly disagree" and five had mean responses of "slightly agree". About half of the respondents felt they were treated differently in their jobs indicating a lack of acceptance of women in agricultural professions. These respondents felt that women were considered less capable and they had to prove themselves more. Determined by responses to open-ended questions, stereotypes and beliefs regarding females and difficulties in job placement (44.81% and 9.43% of the responses respectively) were considered important barriers women face in the field of agriculture.

The area of job placement was addressed most often by respondents when asked about their suggestions for improvements in the College of Agriculture at OSU regarding female students. These findings indicate that the graduates felt this was an area deserving increased attention. It was recommended that the College of Agriculture expand its placement services regarding female students through department contacts and the Agricultural Placement Center. Since it is harder for women to find employment in agriculture and to be accepted within the different agricultural professions, it was also recommended that the College of Agriculture offer additional support programs for female students during their college training as part of their preparation for their future careers. Being professional women in agriculture, several respondents indicated willingness to make themselves available as role models for workshops or seminar discussions. Further research should be conducted to determine and compare female and male graduates' expectations regarding job placement services and future

employment, methods they utilize while seeking employment, and other related factors. Since the study population for this study was comprised of B.S. degree graduates, future research with similar objectives should be conducted with female master's and doctoral students.

### Summary

The conclusions drawn and recommendations made in this follow-up study were limited to the population of female graduates from the College of Agriculture at Oklahoma State University. It is hoped, however, that other institutions with similar programs will gain useful information from this study and might be encouraged to pursue additional research in this area. The study's results could be utilized in the recruitment, advisement, retention and placement of female students/graduates. It is important that career choices are not determined by sexual stereo-types but rather by interests and abilities.

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