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TRAINING AGRICULTURAL ECONOMISTS: ARE WOMEN DIFFERENT?

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TRAINING AGRICULTURAL ECONOMISTS: ARE WOMEN DIFFERENT?

by Susan E. Offutt*

Agricultural economics is a discipline dominated by men with farm backgrounds, but the number of women is growing. Thus, questions can be raised about the backgrounds, career goals, and career-related problems of women in agricultural economics. For example, what factors encourage or discourage women from entering agricultural economics? Such questions were addressed by the American Agricultural Economics Association (AAEA) Committee on Women's Opportunities (COWOP), but their survey's sample was small and included very few graduate students. This paper provides additional evidence about the motivations and career goals of women graduate students in agricultural economics based on a survey of students at Cornell University.

Fewer than five percent of the AAEA's membership are women. While almost a quarter of presently enrolled graduate students are female, they remain a minority group within the profession. The assimilation of an increasing number of women can be expected to have an impact on the

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profession to the extent that the orientation and motivation of women differ from that of traditional agricultural economists. This survey seeks to illuminate the nature and extent of possible differences and considers their implications for women's future experiences in the discipline. In addition, the reciprocal effects of women on the profession are examined. The criteria by which the differences are judged are: socio-economic characteristics; motivation for pursuing graduate study in agricultural economics (and at Cornell in particular); areas of specialization and prior academic background; and expectations about graduate education.

In the past, women have perceived the existence of barriers to their advancement as professional agricultural economists. While the experiences of older women will have been different than those of their younger colleagues (who benefit from the achievements of those who go before), these barriers may still be an influence on the assimilation of women into the field. Using the results of the 1981 COWOP survey, Lane determined that the women

> ... had, for part, been dissuaded from becoming agricultural economists, found they had problems with consumption management, had spouses with negative attitudes toward their working, lacked role models, found they were professionally or socially isolated on the job, felt that they had employers who lacked perception of their potential, and had been questioned excessively about family affairs during interviews. (p. 1029)

While some of these barriers (in particular, the last three on the list) do not come into play until after a woman's entrance to the job market, their existence can be anticipated by women currently in graduate school. The results of this survey can be used to determine the extent to which women in graduate school now feel they have been discouraged from becoming economists and have suffered from a scarcity of role models. A number of

barriers are associated with a woman's marital status, i.e., consumption (household) management, spouse's attitude, and employer's interest in family affairs. Thus, married women might face greater impediments to career advancement than single women. The survey can identify marital status and future plans which bear on these issues.

Women's acceptance and participation in the profession may be reflected in their graduate school experience and also influenced by their choice of academic specialization. In particular, the survey results can provide the basis for comparison between men's and women's academic achievements which determine their relative quality as students and thus their opportunities and attractiveness in the job market. The existence of colleges of home economics at land grant institutions has left its imprint in the proportion of women concentrating in consumer and human resource economics. Does the present generation share this predilection or are women interested in traditional areas such as farm management and production? Again, the survey results will provide information on these facets of women's experiences.

The original COWOP questionnaire (itself based on an American Economics Association form) provided the basis for the Cornell survey, although modifications were necessary to make it relevant for graduate students. Both female and male students were sampled. The results of the survey provide new information on the status and future of women in agricultural economics through its concentration on graduate students. Further, a prototype questionnaire has been developed that can be used in constructing a form for use in a comprehensive survey of all graduate schools of agricultural economics. In addition, the department at Cornell should obtain some insight into its appeal to both males and females as a place for graduate study.

Conduct of the survey

The Cornell graduate student population available for sampling in the fall of 1981 was comprised of 23 females and 68 males. All women were surveyed. A matching sample of 23 men was chosen randomly. The only restriction on the sample of men was that the proportion of foreign students not exceed that found in the departmental student population. This limit was deemed necessary because over 85 percent of the women were domestic U.S. citizens. Therefore, to help assure some degree of comparability between the two groups, the proportion of foreign students could not be too great. No control was made so that the number of Ph.D. men in the sample reflected that of the male population, although the drawing did come out approximately correct (about one-third of the men's sample were doctoral candidates, compared to slightly less than fifty percent in the total male population).

The survey was distributed through intradepartmental mail; students were allowed ten days to complete and return it. The response was 19 out of 23 for the women and 20 out of 23 for the men. All completed questionnaires were used in reporting and analyzing the results. Although the identities of the respondants were known to the researchers, the completed questionnaires were coded numerically to preserve anonymity. A copy of the complete questionnaire is included in the appendix. Further information on responses is available from the author upon request.

Statistical overview

In order to provide some basis for comparison on enrollment composition, 40 other graduate departments of agricultural economics in addition to Cornell were queried about relative numbers of men and women in total

and by degree program. The departments surveyed enrolled about 1900 total graduate students, of which some 460 were women. Table 1 shows the percentage breakdown by sex and degree category for all schools surveyed.

TABLE 1. NATIONAL SURVEY: ENROLLMENT BY CATEGORY

	Women	Men
	---% of total----	
Degree program		
M.S.	19	45
Ph.D.	5	31

This table shows that 24 percent of the graduate enrollment is comprised of women, most of whom are Master's candidates. Looking at the national data another way, 30 percent of all M.S. candidates and 14 percent of all Ph.D. students are women. At Cornell, women also represent 24 percent of the total graduate population. Between degree categories, 31 percent of Cornell's M.S. and 16 percent of its Ph.D. students are female. This distribution is quite similar to that found in the national survey.

To put these figures in perspective, consider that, according to National Science Foundation data, 23 percent (about 4000) of all 1981 doctorates in engineering and the physical, mathematical, life and social sciences were awarded to women (Vetter, p. 1314). (A decade earlier, the figure was only ten percent.) Of these Ph.D.'s earned by females, 86 percent were in the life sciences (33 percent) and social sciences (53 percent). Within the social sciences, 35 percent of all 1981 doctorates were awarded to women.

While enrollment is not an accurate predictor of degrees awarded in any one year, the data would suggest that agricultural economics lags

behind its sister disciplines in the social sciences in the proportion of Ph.D.'s which are earned by women. The performance of agricultural economics, though, is slightly better than that of economics, in which 12 percent of the 1980/81 Ph.D.'s were women (Bailey, p. 439). This rate of participation of women is comparable to that of the physical sciences, in which only 12 percent of 1981 doctorates were female (Vetter, p. 1314).

As for M.S. degrees, Vetter states, "Although women with master's degrees make up half of all women scientists (the figure is 37 percent for men), we know relatively little about the status of women scientists below the doctoral level" (p. 1314). In the graduate student body in the 40 departments surveyed, eighty percent of the women enrolled are M.S. students. For graduate men, sixty percent are M.S. students. These proportions are the same for graduate students in economics awarded M.A. and Ph.D. degrees (Bailey, p. 439). The higher overall fraction of M.S. students in agricultural economics and economics compared to the total science population is probably attributable to the fact that it is less usual to award master's degrees in other than the social sciences. Within agricultural economics, however, the general case, that proportionately fewer women than men hold doctorates or are studying for same, is reflected.

SURVEY RESULTS

Background characteristics

Students come to graduate school from different backgrounds, with different academic and family experiences, and at different stages of their lives. All these factors can be expected to influence an individual's intellectual orientation and career aspirations. To determine

whether women and men displayed consistent differences in these background characteristics, data on age, marital status, family characteristics, and academic achievement and preparation were obtained from each respondant. These results are reported in Table 2.

In general, the women tend to be younger than the men (an average age of 26 versus 28.5) and are more likely to be single (an interesting aside--all married females are Ph.D. candidates). In terms of family characteristics, a higher proportion of women's than men's fathers hold college and advanced degrees; for mothers, the differences are not so marked. An optional question about family income was included. Among those who responded (more than 75 percent), women's families appear more affluent. Sixty percent of their families had annual incomes over $50,000, compared to about 30 percent of those of the men. Ninety percent of the women were raised in urban or suburban areas; only two thirds of the men were. Men were more likely to have been raised in New York state (one third) than were women (one tenth).

As for academic preparation, half of the women attended private undergraduate institutions, versus a quarter of the men. Another third of the men graduated from land grant institutions, as did one fifth of the women. Taken together, land grant institutions were attended by thirty percent of the total sample. By comparison, Schrimper reports that, during the period 1975-1977, two thirds of all Ph.D.'s in agricultural economics had attended land grant universities as undergraduates (p. 17). Cornell, therefore, may be atypical among graduate schools of agricultural economics in drawing a large proportion of students from other public, non-land grant and private schools.

TABLE 2. BACKGROUND CHARACTERISTICS OF SAMPLED STUDENTS, CORNELL UNIVERSITY 1982

	Women	Men
	----------%----------	
PERSONAL		
Current age		
21 - 23	26	17
24 - 26	37	0
27 - 29	21	50
30 or over	16	33
Marital status		
Single	84	40
Married	16	60
Father's education (by degree)		
Advanced	50	35
College	28	10
High school, other	22	55
Mother's education (by degree)		
Advanced	17	5
College	33	30
High school, other	50	65
Family income (optional)		
$25,000 or less	9	16
$26,000 - $50,000	33	56
$50,000 or more	58	28
Type of area where raised		
Rural	10	35
Urban/suburban	90	65
State where raised		
New York	8	30
Other and foreign country	92	70
ACADEMIC		
Type of undergraduate institution		
Land grant	19	35
Other public	31	41
Private	50	24

TABLE 2. (Cont.)	Women	Men
	----------%----------	
Undergraduate major		
Agricultural economics	5	25
Economics	42	35
Other social science	11	15
Other sciences	21	10
Humanities	11	5
Other	10	10
Rank in college class		
Upper 2%	16	25
Upper 10%	58	20
Upper 25%	6	30
Upper 50%	10	5
Not applicable/available	10	20
College subjects		
Principles of economics	90	85
Additional economics	74	50
Calculus	74	55
Advanced mathematics	11	10
Statistics	68	75
Econometrics	26	35
Matrix algebra	32	40
Linear programming	5	25
First year graduate GPA		
4.3 - 4.0	18	9
3.9 - 3.7	18	23
3.6 - 3.3	32	41
3.2 - 3.0	9	23
3.0 and below	13	4
Primary academic speciality		
Intl. trade & development	39	25
Natural resources	26	20
Farm management	5	15
Ag. finance	0	15
Ag. marketing	10	10
Agribusiness management	0	5
Research methods	0	5
Ag. policy	10	5
Human resources	5	0
Consumer economics	5	0

In Table 2, the distribution of undergraduate majors reflects the types of undergraduate institutions attended. More men than women majored in agricultural economics, as more men attended land grant colleges where the major would be part of the curriculum. Sixty percent of the men majored in agricultural economics or economics, compared with about fifty percent of the women. More women than men (42 versus 25 percent) majored in fields outside the social sciences. As for rank in college class, 75 percent of the women graduated in the upper decile versus 45 percent of the men. However, men were slightly more likely to have finished in the upper two percent (25 versus 16 percent). In terms of subjects taken, women tend to have had more economics and calculus but fewer courses in applied quantitative subjects (econometrics, linear programming) than men (perhaps, again, reflecting the fact that these latter subjects are more likely to be offered in an undergraduate agricultural economics than economics department). This data dispells ideas about women's supposed deficiencies in mathematics.

In general, then, women and men appear equally capable and well-prepared for graduate study in agricultural economics. To see how each group subsequently fared over their first year of graduate coursework, the cumulative grade point average (GPA) for this year was obtained for each respondant (these figures were delivered to the researchers in a random order with no names attached). On average, women had a GPA of 3.49 and men one of 3.44. Table 2 shows the distribution across letter grade divisions. That for men is bell-shaped and symmetric; that for women is more evenly distributed over the higher grades. However, the cumulative distribution above 3.3 is about the same for both sexes, about seventy percent. Judging by this information, which may be an imperfect indicator of overall success

in graduate school, men and women perform equally well, although women are more likely to be at the very top or bottom of the grade distribution.

Areas of primary academic specialty which indicate future professional orientation were reported by each respondant (Table 2). Sixty-five percent of the women and forty-five percent of the men listed concentrations in international trade and development or natural resources. The proportion of men in traditional specialities within the discipline (management, finance, marketing) was 45 percent, compared with only 15 percent of the women, who were more likely to be in policy analysis or human resource and consumer areas. Redman, in analyzing the results of the earlier COWOP survey, found the same two areas to be dominant. However, in that survey, 17 percent of the women reported welfare, consumer, or urban/regional studies specialties; the present study does not include consumer economists since the agricultural and consumer economics departments at Cornell are separate entities.

Career choice

In assessing women's motivations to enter the field of agricultural economics, the survey asked several questions about a student's process of choosing a career. The age at which the decision was made and the role models available at that time may influence decisions to pursue a professional career which requires graduate training. Respondants were also asked to delineate their reasons for selecting the particular field of agricultural economics as well as their ultimate degree plans. In all cases, the intent of the questions was to attempt to identify what, if any, systematic differences between men's and women's career selection processes exist. This information is of value in assessing and formulating the field's recruiting efforts and in understanding women's motivation.

The decision to pursue a career in agricultural economics was made, on the average, at age 23 by women and at 26 for men. Similarly, the decision to pursue any kind of career was made at age 17 by women and age 20 by men. These results are just the opposite of those obtained in the earlier survey, in which women were found to have made a decision on the field several years after men. Redman reports,

> Women were relatively more likely to make the choice during graduate school. Agricultural economics, by virtue of its male dominance, may not have occurred to as many women as a viable career choice during their earlier years of education. (p. 1019)

The explanation for this difference is not entirely clear, although it may be that women are more aware of the career decision than men, since men have probably always expected to have a career in the sense of a permanent job. That is, "career decision" may have a different connotation for women than men.

The existence of role models, as well as career dissuaders, is often cited as a potentially large influence on the career decisions of both men and women. Generally, the conjecture is that the lack of same sex role models with whom women can identify and to whom they may turn for guidance prevents women's greater participation in such traditionally male-dominated fields as agricultural economics (Weitzman, p. 121). The results of the role model question are reported below (since more than one could be listed by a respondant, totals do not add to one hundred). Most striking here is that more women than men reported having role models, indicating either that they are more available than commonly supposed or that women are more sensitive to the influence of others on their career decisions. For women, college professors were the most likely role model (in the survey, half of

these were reported as female). In contrast, relatives outside the immediate family and friends or colleagues were the two most influential model types for men.

TABLE 3. PRIMARY ROLE MODELS

	Women	Men
	---%---	
Father	11	5
Mother	5	0
Other relative	5	25
Friend or colleague	21	25
High school teacher	5	0
College professor	31	15
Employer	5	5
No one	37	50

In the earlier survey, separate questions about role models and career-encouraging individuals were asked; the present results may reflect some confusion over the distinction between the two categories. In those results, fathers and teachers were the most likely primary role models for both sexes and professors the most likely career-encouragers for both sexes. The results of the two surveys are alike in the respect that, as Redman says, "Women identified females as often as males as their most influential role models, while men almost never listed females" (p. 1022).

In general, neither men nor women felt anyone had attempted to dissuade them from pursuing a career. Twenty percent of the women, however, reported that a parent (most likely the father) or relative had been discouraging. For the ten percent of the men who responded that way, the person was likely to have been a mother or friend. These results are congruent with those of the earlier study.

The most commonly cited reasons for the decision to pursue a career in agricultural economics were previous, field-related experience or an attraction to an applied discipline. Thirty percent of the men cited work or farm background as a motivation, only five percent of the women did so. Furthermore, half of the men, but only twenty percent of the women, discussed the type of job they hoped to hold after graduation and the relevance of skills learned in graduate school. In contrast, over forty percent of the women identified the applied aspects of the field as an attraction, compared with 25 percent of the men. These results appear consonant with those of the earlier study, in which Redman found that

> ... women more often than men were guided by interest in the subject area. Men were relatively more likely to consider the personal economic opportunities in this field and to view it as an outlet for use of particular individual skills. (p. 1021)

The results suggest that men are more likely than women to have had prior exposure to the field. Since the men are, on the average, two and a half years older than the women, they would have had time for work experience before entering graduate school. As an example, 35 percent of the men in the sample had been in the Peace Corps, but none of the women had.

Only a small fraction of the women currently enrolled in graduate schools of agricultural economics are pursuing doctoral studies. To probe the reasons behind this phenomenon, respondants were asked to identify and explain their ultimate degree plans. Sixty percent of the women and forty percent of the men identified the M.S. as the terminal degree or were undecided about whether to pursue a Ph.D. The adequacy of the M.S. for future work requirements and job satisfaction was the main reason cited by both sexes for the decision not to continue. As a secondary factor, men

were more likely to cite a disinterest in continuing school than women, who were more likely to express a desire for work experience and a broader exposure to the field.

For both sexes, the major factors motivating the decision to pursue doctoral studies were expected increased flexibility in job choice and enhanced professional credibility. However, more than half the women said they chose to continue past the M.S. because they enjoyed school or the subject, compared to fewer than twenty percent of the men. Men were more likely to identify Ph.D. qualifications with skills they perceived as necessary to future job activities. Fifteen percent of men and of women sought the Ph.D. to enable university-level teaching. One third of both males and females mentioned an expected pay differential between M.S. and Ph.D. jobs, although they were split on whether the Ph.D. would actually enhance the future income stream. These answers present a picture of the male graduate student as having more work experience and as being more aware of the contribution of academic training to future work requirements and career development.

Expectations about graduate education

A student's satisfaction with graduate school and, by extension, the profession, would seem to be correlated with his or her expectations about the experience and assessment as to the degree to which they have been met. In addition to the nature of the experience itself, a student's perception of the intangible and tangible benefits would also be expected to influence his or her level of satisfaction with graduate training. In examining these issues, it was hoped the responses would illuminate the extent to which women might feel encouraged or discouraged about entering the profession based on the success of their graduate school experiences.

When asked to state expectations about graduate education, about half of both groups expressed a hope that it would be more rigorous and challenging than their undergraduate schooling. A significant proportion also mentioned their desire to be trained to be capable of independent research. As one woman said,

> I hadn't expected that such a sophisticated level of mathematical knowledge would be involved. However, in general, my expectations of gaining research experience and the opportunity to do relatively independent research, in addition to the usual coursework, have been met.

Men were more likely than women to mention their anticipation of interaction with faculty. One man said his expectation was "to actively interact with competent faculty involved in the teaching and research of subject areas which were of particular interest to me." Only two of the women, versus six of the men, identified collaboration with faculty or other students as an expectation about graduate school. While one woman answered that she had looked forward to working with knowledgeable people, the other said she did not have as close a working relationship with her chairman as she had anticipated. Most of both the men and women who had expectations about the nature and quality of the academic program felt that these had been met.

Among those students whose expectations had not been met (about half of each group) there was little consensus on the reason for the disappointment. Of the six men who mentioned interaction with the faculty as an expectation, two felt these had not been met. Fifteen percent of the men found that the program was not as applied as they had anticipated; none of the women had this complaint. In terms of overall satisfaction, no clear-cut pattern of differences emerges between men and women. However, women's expectations in general centered more on the curriculum and less on their anticipated involvement with faculty members.

Students appear to perceive that the benefits of a graduate education are closely related to expectations about it as well as to original motivation to enter the field. The enhanced capability for independent research work was cited as a benefit by 45 percent of the men but by only 26 percent of the women. Twenty percent of the men specifically mentioned the applicability of their training to what were termed "real world problems;" none of the women said this. This difference may again reflect the latter's lack of job experience and thus limited exposure to such problems. The same proportion of men and women, one quarter, cited the quality of interpersonal relationships (with fellow students and with faculty) and increased job versatility as benefits. About one third of each group explicitly expressed personal satisfaction as a benefit of graduate education. Here, women were more likely to emphasize an increase in their self confidence while men discussed their academic maturity and self-discipline. For example, one woman stated that "competing with bright people creates [a] perspective [regarding] one's own strengths and weaknesses and can build confidence." Another said that she had much greater confidence in her ability to do economic analysis. In contrast, the men's answers are typified by this response: "I feel I will leave school with a solid background for applied research, and <u>in particular</u> I feel I will have had the important opportunity to develop my own individualized research methodology/philosophy." So, while men's and women's assessment of the benefits are fairly similar, women are more likely to view them in a personal, not professional, context.

The survey also sought to determine why Cornell was chosen as an institution for graduate study, as opposed to any other, in order to identify factors which influence the choices of students with nontraditional

backgrounds, many of whom are female. Sixty percent of the men and an equal proportion of the women cited Cornell's reputation for academic excellence (the distinction between that of the university and the department not always clear) as the major factor contributing to their decision. One third of the womdn identified Cornell's location (East Coast) as important to their choice, as was the program's flexibility. Twenty percent of the men identified the significance of each of these factors. The major difference between the male and female responses was the assertion by 20 percent of the women that Cornell was chosen because it would be a convenient location for their husbands or boyfriends. None of the men mentioned their wives' or girlfriend's preferences as a consideration in their selection of Ithaca, even though three times as many men as women are married.

Having selected Cornell, students were asked whether their expectations about their experiences here had been met. The point of the question was to compare the levels of satisfaction between men and women at Cornell. The majority of the expectations about Cornell concerned the high overall quality of the graduate program (as reflected in student's perception of Cornell's good reputation). Seventy percent of the men stated categorically that their expectations in this area had been met. However, the women's responses were less enthusiastic and more equivocal. Of the forty percent of the women whose expectations about Cornell had been met, only one quarter of them did not qualify this affirmative response. For example, one woman wrote that not all of her expectations had been met, in particular,

> Some classes aren't as rigorous as I'd expected; some students aren't as rigorous as I'd expected; there is not an appropriate seminar format for sharing ideas and research; courses in the catalogue were not available.

On the other hand, men's responses were typified by an answer such as this: "I anticipated having a substantial degree of flexibility in both selection of coursework and formulation of a dissertation topic. This has in fact been the case." The women's reservations dealt mainly with faculty relationships (just as others had been well pleased) and the lack of coordination among courses on an intra- and inter-departmental basis. Men's disappointments, on the other hand, tended to focus on the program's lack of courses in specific areas of interest (e.g., Africa, finance). These differences may reflect women's more intellectual versus men's pragmatic orientation to graduate studies.

The graduate students did not expect their degrees to make them rich, a characteristic which may set them apart from their peers who attend professional school (Butterfield, p. A1). The answers to a question on their expected level of earnings five years after graduation illuminate the precise nature of this perception. Below, in 1981 dollars, is given the distribution of responses.

TABLE 4. EXPECTED EARNINGS

	Women	Men
	-------%-------	
$20,000 or less	5	20
$21,000 - $29,000	37	25
$30,000 - $39,000	33	40
$40,000 or more	5	15
Don't know/care or won't guess	20	0

Most students expect to be earning between $20,000 and $40,000. The most notable feature of the results is the 20 percent of the women who did not know or care or would not guess at expected earnings; none of the men refused to speculate.

Graduate school experiences

Having examined the motivation for the decision to undertake graduate study in agricultural economics, the survey also sought to determine how similar were the graduate school experiences of men and women. Are they comparable in the sense of providing equal opportunity for productive study and professional training? Information on sources of financial support, research work, thesis advisors, and publications was obtained. In addition, a question was included which dealt directly with the extent to which gender may have influenced graduate school activities.

An earlier section noted that men and women appeared equally well-prepared for graduate study, both in terms of courses taken and scholarly achievement. Furthermore, males and females had comparable performances once in graduate school, as measured by first year GPA. In view of these facts, it seems reasonable to expect that men and women would be university-funded, either through assistantships or fellowships, in the same proportions. Availability of financial support is not only a factor in the decision to attend graduate school, but also in the nature of the experience. Having to work to support oneself takes time away from study or leisure or both.

Because the survey requested an identification of the major sources of support, it was not possible from the results to determine the main source conclusively. Consequently, actual figures on funding for the 88 active

students in Spring 1982 are used (67 males, 21 females). In total, 48 percent of the students are on assistantships, another 11 percent on fellowships. Because foreign students quite often matriculate with funding from their home countries, they are not included in the following statistics, which show the distribution of assistantships and fellowships among domestic men and women to be quite even. Seventy-nine percent of the women and 74 percent of the men are supported. Women and men are equally likely to be on assistantships (85 percent) or fellowships (15 percent); so, there is apparently no bias in the distribution of financial support.

Another question attempted to gauge the extent to which students were involved with major research projects and the impact this had on thesis work at the M.S. and Ph.D. levels. Major research projects are usually focused on areas the profession recognizes as deserving attention and study. The idea was to determine the extent of women's participation in these mainstream studies. At the M.S. level, one quarter of both the males and females were involved in a major project to which their theses were related. For Ph.D. students, five percent of the women and ten percent of the men were similarly involved. There seems to be little difference between the sexes in terms of research participation; however, bear in mind that these figures also represent the influence of funding sources, since those on assistantships are probably most likely to be closely involved with major departmental research efforts. For both sexes, three quarters of both M.S. and Ph.D. students responded that their thesis advisor/committee chairman was prominent in his or her field at the time they studied. This question was asked to determine whether women tended to work with less esteemed faculty members than men. However, since the definition of prominence was not given, there may be some ambiguity in its interpretation by respondants.

Possibly reflecting equal research opportunities, one third of both men and women had published articles, presented papers, or co-authored departmental publications. In both cases, the students were usually Ph.D. candidates. However, the total number of works by men (17) was twice as large as that of women (8). Reasons for this discrepancy are not readily apparent; however, with less job experience than men women may not sufficiently appreciate the significance of the publications record. Moreover, faculty members may do nothing to foster this recognition in either men or women.

The earlier COWOP survey found the men and women equally likely to have interrupted graduate studies. The Cornell results show that more men than women had stopped school for some period of time (35 versus 20 percent). Furthermore, while Redman reported that women usually quit to gain work experience and men to assume home responsibilities, this outcome is reversed in the current study. It is difficult to think of a systematic explanation to illuminate either pattern of behavior.

To allow respondants to identify more subtle and/or less quantifiable differences in graduate school experience, a question directly asked whether "your experience in graduate school would have been different if you were a member of the opposite sex." For both males and females, half of the responses were in the affirmative. Among women, there was no consensus on how the experience would have been altered; some examples of women's responses are given below.

> If I were a member of the opposite sex I would be surrounded by role "models" -- the absence of professional women in the department is lamentable. If I were a member of the opposite sex I would probably be less aware of the practical aspects of life and would be more prepared to accept traditional academic roles and ideas.

> The only effect I might trace to being female is my "math phobia" which causes me to avoid certain quantitative courses. I have not been hampered in activities though I have noted some male chauvinism among male faculty members and graduate students.

Two women discussed the ways that alternative family relationships and structures would be an influence. Specifically, having a working wife or one who stayed at home or no children were seen as arrangements which might have increased participation in the department's activities.

The men's responses, on the other hand, tended to be more specific than those of the women, whether the men answered the question affirmatively or not. Again, however, there was little agreement on the nature of the changes; some examples are presented below.

> It's hard for me to assess the psychological effects of having a male-dominated faculty on a woman. I have not noticed any blatant sexism in the actions or attitudes of the faculty... there may be social advantages to being a woman at Cornell in that there are many more men. I'm not sure that women notice this, but many males including myself do see it as a disadvantage.

> I imagine that, had I been a female, I might have felt greater pressure to excel.

> Feel that the extent to which students maximize the benefits to be had from a graduate program is determined more by the types of academic and working experience gained before entering the program. Once in the program I am not personally aware of any differences in the problems - or their solutions - confronted by students of either sex, who have displayed the necessary motivation and commitment.

This last response is representative of several of those of the men, which made distinctions between discrimination or effects of the general culture and background of women as opposed to the influence of graduate school specifically.

Great diversity of opinion among graduate students was exhibited in the responses to this question. The perceptions of the influence of gender are as varied as the individuals in the department at Cornell. Half of the respondants, it should be noted, were in disagreement with the premise that being a member of the opposite sex would have any effect on graduate school experiences at all. Most who felt this way did not elaborate.

Summary and conclusions

The results of the Cornell survey certainly raise more issues and suggest more implications than have been discussed in this report. Interpretation of the survey data and responses can be difficult and not all will agree with any particular set of conclusions drawn from it. Some additional points of interest deserve mention, however, and suggest areas in which further research would be fruitful.

The less visible emotional aspects of women's opinions about and experiences in graduate school have not been explicitly considered in this depth. The literature on the psychology of women's choices and compromises between career and family attachments is growing and has clear relevance to issues raised by the survey. For instance, to what extent do young women feel these options to be mutually exclusive? How do they view the potential trade offs involved in attempting to satisfy the demand of filling two roles simultaneously? Are their views different from those of women already established in the profession? These questions raise concerns which transcend the bounds of any particular discipline but clearly influence the choices women make, while still in graduate school, in anticipation of their future roles. In the current case specifically, is the present small number of female Ph.D. candidates in some way related to women's

reluctance to make such a large commitment to a career because of its perceived deleterious effects on other aspects of their personal lives? Does the graduate school experience reinforce or assuage this hesitancy?

The survey responses indicate that, in spite of demonstrably dissimilar backgrounds from those of men, women do not seem to feel major differences with a traditionally male-oriented profession. Are their personal and professional values the same as those of men or have they simply embraced what they see as the prevailing norm? Juanita Kreps suggests that women's limited participation in graduate education may be related to their lack of acceptance by members of the academic community. She asks,

> Is it true, as Margaret Mead has argued, that 'the academic world is fundamentally hostile, by tradition ... to those aspects of femininity which involve child bearing' and that, as students and faculty members, academic women must forgo their emphasis on such things as personal appearance in favor of interests which are monastic in nature? (p. 51)

These issues are somewhat outside the scope of the present survey but merit closer scrutiny. To the extent that women are uncomfortable or confused about their dual roles, their constructive participation in the profession will be hampered.

While investigation of these less obvious aspects of women's experiences would be worthwhile, the administration of the current survey to a broader sample of graduate students nationally would be very useful. While Cornell's department is numerically representative of other school's, its large draw of students from nontraditional backgrounds may be atypical. Beyond providing more comprehensive results, the administration of the survey itself is a valuable means to "raise consciousness" about women's issues. It is hoped that financial support for a nationwide survey based on the one developed here at Cornell will be forthcoming.

Based on the results of the survey, a profile of the typical Cornell female graduate student in agricultural economics can be described. She is a 26 year old who is single and has little work experience. She comes from an affluent, well-educated, urban or suburban family and probably did not attend a land grant university as an undergraduate. In college, the female student is equally likely to have majored outside the economics discipline as within it; she was probably in the top ten percent of her graduating class. In short, she does not have a traditional background by the standards of the profession.

This woman made the decision to embark upon a career in agricultural economics at age 23. Her most important role model for pursuing a career was likely to have been a college professor (male or female). She does not feel that any one attempted to dissuade her from this path. The discipline was selected bacause of her intellectual interest in its applied aspect, not because of any work experience. If an M.S. candidate, she plans that it be her terminal degree. If a Ph.D. candidate, she decided on the advanced degree because she felt it would enhance her future professional flexibility and credibility.

Her expectation about graduate school was that it would be more challenging and rigorous than her college training. She has found this to be the case and felt the experience made a significant contribution to her personal development. While graduate school left her well-trained, she had no expectation that it would make her rich. Five years after graduation she thinks she will be earning about $30,000.

During graduate school, she was probably on some type of full support, an assistantship, or, less likely, a fellowship. She felt her academic advisor was prominent in his or her field and, if a Ph.D. candidate, she

had done at least some publishing. Her graduate school experiences might have been different if she were male, she thinks, but cannot say specifically how.

This profile differs from the one which would be associated with a traditional agricultural economist by more than just gender. Most notable is the female graduate student's lack of farm background, and in this she is distinguished from her male contemporaries as well. In this respect, her suburban background and choice of a non-land grant undergraduate school are probably related. Her academic interests, in the areas of resource and international economics, also diverge from the traditional focus of the discipline. These differences between young women in graduate school and their male contemporaries and their seniors as well are suggestive. At present, two major implications are examined.

First, the predominance of single women, should it continue as the present cohort ages, implies that women trained in the field can be expected to pursue careers vigorously (Polachek, p. 92). As discussed at the beginning of this paper, marital status is associated with several barriers to a woman's career advancement. The demands of household management and of the spouse on the married woman may impinge upon her participation in the field as a professional (there was evidence that this is also a problem for female graduate students, particularly when children are present). Whether married or not, though, women may be asked questions (albeit illegal ones) during interviews about their family affairs. While the proportion of single women (which includes those involved in less formal but stable relationships) may change over time, the evidence indicates that never-married or divorced women are most likely to be found in high paying

positions, at least in business. Ferretti cites the results of a survey of women who had attained the rank of corporate vice president. He reports, "Fifty-two percent had never married or were divorced or separated, (and) 70 percent had no children" (p. C8). Thus, there is an apparently high correlation between career commitment and success and single marital status. For agricultural economists, this tendency implies that a large portion of graduate women will likely remain in the profession with a dedication to pursue a career and can be expected to have a strong attachment to the work force.

Second, it remains to be seen whether the concentration of young women's interests in nontraditional areas of agricultural economics will hamper their assimilation into and acceptance by the majority of those in the profession, whose focus lies in more conventional production, management, and price and income analysis. The results of the survey indicate that the academic concentration of two-thirds of the women surveyed lies in the areas of resource and international economics. This is in contrast to the findings for graduate men and also for the profession at large. Examining the declared speciality areas for AAEA members (AJAE Handbook-Directory 1982), only one quarter had designated those two areas. In contrast, the more traditional specialities in management, marketing, and price, income and policy analysis accounted for about half of all members' concentrations. Only five percent of the women at Cornell selected these areas as their focus. To the extent that the mainstream of the profession is involved in areas which do not attract women, women will play the role of a minority group in a nontraditional subject area. Their full acceptance and assimilation into the profession will not be facilitated under

these circumstances. An analogous situation evolved in the medical profession, in which women doctors were initially concentrated in obstetrics and gynecology. Only in the past decade have women begun to select traditional specialties such as surgery and internal medicine. As long as women remain segregated in one area or another of the discipline, they will find it difficult to exert much influence on the direction or priorities of their profession or fully establish themselves as the equals of men in its mainstream.

These results show that young women in graduate schools of agricultural economics are seriously committed to the pursuit of their education and careers. As for their concentration in nontraditional areas of the field, this tendency likely reflects the fact that women are less likely to have come from the usual farm and rural backgrounds of many current agricultural economists. Consequently, women are less likely to be drawn to areas such as farm management, say, simply from lack of exposure. With limited work experience in addition, women are even less likely to be aware of the issues and opportunities in traditional areas of agricultural economics. Their relative ignorance of the discipline may also handicap them in their pursuit of careers in nontraditional areas as well. So, although women are clearly as capable and perform as well academically as men during their training, their concentration in a few areas may be attributable to their lack of exposure to and information about the entire spectrum of specialities within agricultural economics.

In order that women have a basis from which to consider choice of academic speciality and of a career within it, they should be given the kind of information and career counseling that their backgrounds do not provide. Because of the obvious difficulties in reaching an undergraduate

audience outside the land grant university system, graduate schools are best equiped to offer this service to future agricultural economists (many men would also benefit from this guidance). Early on in their program, women should be apprised of the breadth of the field and the numerous kinds of career opportunities within it. Perhaps women should be specifically encouraged to become production economists or extension agents, for example, fields in which they are now scarce. Regardless of particular interest, more women should be encouraged to pursue a Ph.D., otherwise role models for future women in the discipline are limited. Again, the small proportion of women doctorates may reflect the fact that women in general are not aware of the professional benefits of a Ph.D. The graduate schools have the resources of their faculties, who should be enlisted in this effort. The dissemination of such information could only benefit the profession by helping to encourage the distribution of capable individuals in general, and women in particular, across its divisions. Without such affirmative programs, the assimilation of women into the profession will take a time very much longer than it need be. Women and the profession at large would suffer from such a delay.

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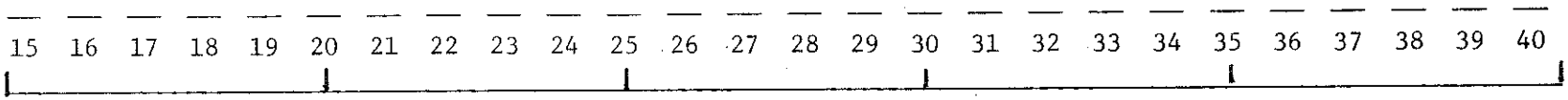
APPENDIX: QUESTIONNAIRE

PROFILE OF CORNELL GRADUATE STUDENTS IN AGRICULTURAL ECONOMICS

INSTRUCTIONS

The questionnaire should take only about 15 minutes to complete. When you are done, put the questionnaire in the envelope provided and return in person or by mail to Susan Offutt in room 146. Do not put your name on the questionnaire itself. Strict confidentiality of your replies is assured. Thank you for helping with this project. We would appreciate your returning the questionnaire by Wednesday, December 16, 1981.



A Decide to pursue a career

B Decide to pursue a career in agricultural economics

C Decide to pursue M.S.

D Decide to pursue Ph.D.

E Enter college (undergraduate)

F Graduate from college (undergraduate)

G First full time employment

H First full time employment related to agricultural economics

I Join Peace Corps

J Leave Peace Corps

K Marry

L Divorce

M Have first child

N Enter grad school for M.S.

O Enter grad school for Ph.D.

P Leave grad school-degree incomplete

Q Complete M.S.

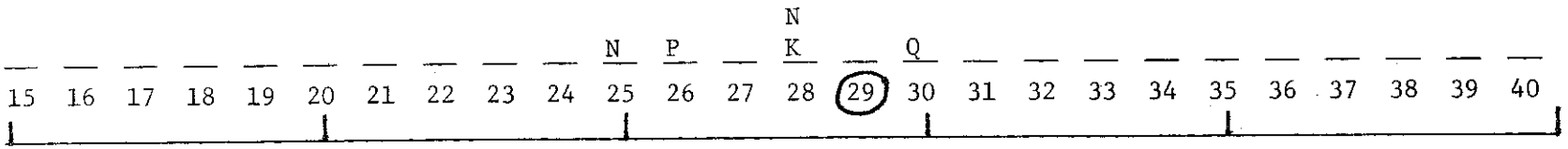
R Start Ph.D. thesis

S Complete Ph.D. thesis

INSTRUCTIONS: Circle your current age. Indicate how old you were when the listed events occurred in your life. Leave out events that do not apply to you, but include events which indicate your future plans. If two or more events occurred in the same year, list them in a column over the relevant age.

* *EXAMPLE* *

For example, if you are now 29, entered graduate school to pursue an M.S. when you were 25, took a leave of absence when you were 26 (the next year), returned and were married when you were 28, and plan to finish your M.S. next year, your time line should look like this:



1. Please fill out the following table concerning your undergraduate and graduate degrees.

	Name of Institution	Location	Degree Rec'd & Year
Undergraduate work:			
Master's program:			
Additional grad. work:			

2. In college, did you take any of the following courses? Check those which apply:

Principles of economics	____	Matrix algebra	____
Econometrics	____	More advanced math	____
Statistics	____	Linear programming	____
Calculus	____	Additional economics	____

3. What was your undergraduate major?

Agricultural economics	____	Physical or biological science	____
Economics	____	Humanities	____
Other social science	____	Other, specify	____

4. To the best of your knowledge, where did you rank academically in your college graduating class?

Upper two percent	____	Upper 50 percent	____
Upper 10 percent	____	Lower 50 percent	____
Upper 25 percent	____	Don't know or not applicable	____

5. What was your source of financial support while you were a student? Check the most significant source(s) for each time period.

	College	M.S.	Ph.D.
Fellowship/scholarship/grant	____	____	____
Teaching or research assistantship	____	____	____
Bank loan	____	____	____
Personal savings	____	____	____
Support from spouse	____	____	____
Support from parents	____	____	____
Paid employment away from department in which doing graduate study	____	____	____
Other, specify _____	____	____	____

6. Why do you want to pursue a career in agricultural economics?

7. Did you have a role model for pursuing a career? (If more than one, list in order of importance to you.)

Relation to you	Male	Female
1._____	____	____
2._____	____	____
3._____	____	____
If no one, circle 0	0	

8. Did anyone try to dissuade you from pursuing a professional career?

Relation to you	Male	Female
1._____	____	____
2._____	____	____
3._____	____	____
If no one, circle 0	0	

9. What are your ultimate degree plans?

_____M.S. _____Ph.D. _____Undecided

Why have you made this choice? Please discuss any important financial, professional, and personal considerations. If you are undecided, what factors do you expect will influence your decision?

10. Did you participate as a research assistant in any major research project when you were a graduate student? Check appropriate space for each degree.

M.S.	Ph.D.	
____	____	Yes, substantially, and my thesis was related to or grew from this
____	____	Yes, substantially, but my thesis was independent of this project
____	____	Yes, but this involved very little of my time
____	____	No

11. Was your thesis advisor/committee chairman prominent in his or her field at the time you studied?

M. S. thesis		Ph.D. dissertation	
____	Yes	____	Yes
____	No	____	No

12. Have you had the opportunity to publish in your specialty since entering graduate school? Include any works co-authored.

____ Number of articles published or accepted for publication
____ Number of papers presented at professional meetings other than above, or submitted for publication but not yet accepted
____ Number of departmental publications
____ Number of books written, edited, reviewed

13. Did you interrupt your graduate studies for any reason? Yes____ No____ If you have interrupted your studies more than once, please indicate the reason for each interruption.

	1st	2nd	3rd
To support family or self	___	___	___
To assist spouse to complete his or her graduate work	___	___	___
To attend to family and/or child at home	___	___	___
To get teaching degree or other job experience before degree awarded	___	___	___
Illness	___	___	___
Lack of motivation to complete degree	___	___	___

Other, specify_____

14. What level of income do you expect to be earning five years after you complete your degree? (1981 $)

_____

15. Do you think your experience in graduate school would have been different if you were a member of the opposite sex? For example, would you have chosen a different committee? Would it have affected your participation in department activities? Would you have felt more confident academically or socially?

16. Why did you choose to pursue your graduate studies at Cornell as opposed to any other institution?

17. Have your expectations about graduate education in general been met? Please state your expectations explicitly.

18. Have your expectations about Cornell been met? Please state your expectations explicitly.

19. What do you feel are the benefits of the graduate education you have chosen to pursue?

BACKGROUND INFORMATION

1. Are you now a member of the American Agricultural Economics Association?

   ____Yes ____No

2. Using the list of specialties given on the last page, fill in the codes of the primary and secondary fields in which you are now studying.

   ____ Primary ____Secondary

3. What is your current citizenship?

   ____United States

   ____Other, specify

   _____

4. In what state were you principally raised? (If non-US citizen, specify principal country.)

5. In what type of area were you raised?

   ____ Rural farm
   ____ Rural nonfarm
   ____ Suburban
   Urban - population:
   ____ Under 100,000
   ____ Over 100,000

6. Please give your parents' current or pre-retirement occupations and education levels.

	Occupation	Education
Mother	_____	_____
Father	_____	_____

7. Please indicate approximate current or pre-retirement incomes of your mother and father. (Optional)

Mother	Father	
_____	_____	$0 - $15,000
_____	_____	$16,000 - $25,000
_____	_____	$26,000 - $50,000
_____	_____	$50,000 or more

8. Using the chart below, please indicate the gender of your siblings and the birth order. Circle your position and gender.

   Example:

Position	1st	2nd	3rd	4th	5th
Gender	M	F	(M)	F	M

your position and gender

Position	
Gender	

9. What is the highest attained and expected level of education completed by your present or intended spouse?

   attained_____
   expected_____

10. If you are married, what is your spouse's occupation?

Areas of Specialization in Agricultural Economics

- 810 FARM MGMT/PRODUCN ECON
  - 811 Farm Product Econ
  - 812 Farm Mgmt
  - 813 Farm Accts/Rcrd-Keep
  - 814 Farm Firm Growth
- 820 AGR MARKETING
  - 821 Firm/Plant/Market Effic
  - 822 Food Proc/Distrib
  - 823 Transport Loc/Storage
  - 824 Plant Loc/Interregion Trad
  - 825 Market Regulation
  - 826 Market Sys/Struct/Perform
  - 827 Futures Markets
  - 828 Cooperat Organiz/Policy
  - 829 Pricing Systems
- 830 AGRIBUSINESS MGMT
  - 831 Bus Admin
  - 832 Managerial Economics
  - 833 Finance/Acctg
  - 834 Marketing/Advtsg
  - 835 Decision Anlys/Risk Mgmt
  - 836 Forecasting/Planning
- 840 AGRIC PRICE/INCOME/POLICY ANLYS
  - 841 Cmdty Supply/Demand Anlys
  - 842 Agr Situation/Outlook
  - 843 Agr Income/Expenses
  - 844 Agr Policy Analysis
  - 845 Agr Sector Perform Meas
  - 846 Farm Structure
- 850 INTRNTL AGR TRADE/DEV
  - 851 Trade Policy
  - 852 Food Assist Programs
  - 853 Technical Assist
  - 854 Commodity Analysis/Proj
  - 855 Cntry/Regnl Analysis
  - 856 Economic Growth/Dev
  - 857 Agr Sector Analysis
- 860 AGRICULTURAL FINANCE
  - 861 Farm Financial Mgmt
  - 862 Farm Lending/Instit
  - 863 Financial Mrkts
  - 864 Macro-Economic Finance
  - 865 Farm Real Est Val/Prices
  - 866 Risk Mgmt
  - 867 Insurance
  - 868 Taxation
- 870 NATURAL RESRCE/ENV ECON
  - 871 Water Resources
  - 872 Forestry
  - 873 Fisheries
  - 874 Recreation
  - 875 Land
  - 876 Environ/Chem-Anml Waste Mgmt
  - 877 Mineral Resources
  - 878 Energy
- 880 COMMUNITY RESRCE ECON
  - 881 Commun Facility-Wtr/Sewr/Hlth
  - 882 Employment
  - 883 Housing
  - 884 Regional Econ
  - 885 Land Use Zoning/Planning
  - 886 State/Loc Govt Finance
  - 887 Industrialization
  - 888 Econ Planning
- 890 HUMAN RESRCE ECON
  - 891 Education
  - 892 Health Srvcs
  - 893 Poverty
  - 894 Welfare Prog Incl Food Prog
  - 895 Employee Trng/Dev
  - 896 Demography
- 900 CONSUMER ECONOMICS
  - 901 Consumer Demand
  - 902 Consumer Education
  - 903 Consumer Regul/Protection
  - 904 Consumer Finance
- 910 GENERAL ECONOMICS
  - 911 Micro-Economic Theory
  - 912 Macro-Economic Theory
  - 913 International Economics
  - 914 Labor Economics
  - 915 Industrial Economics
  - 916 Institutional Economics
  - 917 Welfare Economics
  - 918 Intrntl Trade Theory
  - 919 Regional Econ/Local Theory
  - 920 Decision Theory
- 930 RSRCH METH/ECONMTRCS/STATS
  - 931 Econometrics Meth
  - 932 Statistical Meth
  - 933 Mathematical Meth
  - 934 Syst Analysis/Simulat
  - 935 Data Collection
  - 936 Rsrch Meth/Philosophy
- 940 OTHER SPECIALTIES
  - 941 Agr Animal Sciences
  - 942 Agr Plant Sciences
  - 943 Sociology
  - 944 Political Science
  - 945 Law
  - 946 Engineering
  - 947 History
  - 948 Research Mgmt
  - 949 Public Admin