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Abstract

Women in agriculture in the United States fall into two distinct groups. The first is women farmers, and the second is professional women who work in food and agricultural businesses, education, government and research. The second group outnumbered the first by almost two to one. They include one-third of the students in agricultural colleges; six thousand of whom are in graduate programs. They have tended to concentrate their studies in the physical sciences and in nontraditional fields of agricultural economics, but they are represented in virtually every discipline and all food and agriculturally related jobs. The professional women in agriculture are more likely than their male counterparts to have come from metropolitan areas, and from well-educated and well-off families. They are younger and more likely to be single and child free.

Women farmers who own and operate their own farms number about 122 thousand (5.4% of U.S. farmers). Their farms are small, concentrated in the South and Central states, and are relatively debt free. Two-thirds of them have farm sales of less than \$10,000 per year. Farm proceeds provide only one-third of their total income.

About 2.1 million U.S. women are married to farmers. Their tasks include earning an off-farm income, keeping house, raising children, providing support services to the farming business, and providing (unpaid) farm labor. Fifty-five percent of these farm women consider themselves to be one of the "main farm operators", but they do not identify themselves

as farmers, rather as farmers' helpers. The word "farmer" seems to have become a male noun.

Educational needs of farm women vary, but there is an increasing emphasis on vocational education in the business and technical aspects of farming and on preparation for off-farm jobs. Preparing farm women for entrepreneurship and management is a goal of federal educational programs and a request from the women themselves. Their most important role in the foreseeable future will be to supply cash income to cover family and farm expenses.

Barriers to women obtaining suitable jobs and wages in both rural areas and urban, agricultural firms and colleges exist on both sides of the labor market. Some women are not willing to do what is necessary to succeed, and some employers' attitudes still reflect discriminatory attitudes. A dearth of women teachers to serve as role models for aspiring women students is a problem at all levels of agricultural education. Only 4.6 percent of the faculty in agricultural colleges are women, but more are being hired. The vocational education teacher plays a key role in educating attitudes of students and employers as well as providing skills for the marketplace.

Equal opportunity legislation and affirmative action regulations certainly have helped open doors for women in agriculture, but they have not and cannot, by themselves, alter long-held attitudes and habits. Only men and women willing to take creative risks and willing to work together over the next several generations will allow women to be fully assimilated into the agricultural occupations for which they are being prepared.

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INTRODUCTION

Women have, for all time, been involved in the work of agriculture. In most developing economies even today, the majority of farmers are women. They plant and till and harvest multiple crops and market and process and cook the fruits of the land. Over time, as subsistence farm households evolve into the production of cash crops, women tend to do less field work and concentrate more on marketing, gardening and domestic work. As farms begin to produce crops for large commercial and export markets, women become even less involved in marketing, though they often take on a larger part of the management and accounting. When they move to the cities, their involvement with agriculture is largely as consumers of food and as workers in farm input industries, food industries, food and agricultural sciences, and education.

The story of women in agriculture in any particular country closely parallels the development of its agricultural economy, technology and science. The topic of this paper is the evolution and status of women's roles in agriculture in the United States over the past several decades. Because agriculture, as it is practiced in the United States, is highly commercial, highly mechanized and quite scientific, women who are employed in the agricultural sector fall into at least two distinct groups. The

first is women farmers. They include about 122 thousand women (5.4 percent of the U.S. farmers) who own or operate their own farms (Kalbacher, 1984). Women farmers also include 2.1 million farm wives who are involved in a range of activities from driving tractors and feeding calves to working at professional jobs in nearby towns. The second group of women employed in agriculture is the cadre of educated specialists and professionals who work in food and agricultural businesses, in education, in policy analysis, and in scientific research. Indeed, they outnumber women farmers in the U.S. by almost two to one (Coulter and Stanton, 1983).

This paper will first present the progress and status of women whose interests, education and training have led them to be employed in professional and technical occupations related to agriculture, but generally not on a farm or ranch. Second, the evolution of the activities of women farmers and their perceived educational needs will be discussed. Finally, some predictions about the future for women in agricultural occupations will be presented.

PROFESSIONAL WOMEN IN AGRICULTURE

College Enrollments

Studies of women enrolled in agricultural colleges and working in agriculturally related occupations are of recent vintage and limited in scope. Much of the data presented herein can best be understood in its regional or disciplinary contexts, but I believe an overall trend will become apparent.

The enrollment of women students in college degree programs began to increase dramatically in the late 1960s. Nineteen percent of the students

in agricultural programs in the land grant universities were women by 1973, 28 percent by 1977 and 36 percent by 1980 (Southern Regional Committee, 1982).^{1/} This lagged behind enrollment in all U.S. colleges and universities where, in 1981, over 50 percent of all students enrolled for Bachelors or Masters degrees and 32 percent of the Ph.D. students were women (Weis, 1985). Figures from the National Association of State Universities and Land Grant Colleges (NASULG) show that for the whole nation, 34 percent of the students in agricultural colleges were women in 1979 with twelve percent in graduate (Masters or Ph.D.) programs. By 1983, 33 percent of the students were women with 17 percent in graduate programs. This trend toward a larger proportion of women students in graduate school is a natural outcome of the enrollment bulge in the 1970s which produced a large number of women with Bachelor's degrees. Over one-third of them were both qualified and anxious to pursue advanced degrees.

The types of college degree programs in food and agricultural sciences in which women were enrolled in 1978-79 were assessed at the national level by Coulter and Stanton (1983). At the Baccalaureate (B.S.) and Masters (M.S.) levels, food and agricultural fields of study with the largest numbers and percentages of female students were food science and technology, nutrition and nutritional science. At the B.S. level, other fields with large numbers of women were fruit and vegetable horticulture and natural resource management. At the M.S. level, large numbers of women were found in animal science and park and recreational management. At the Ph.D. level, many women were also found in food and nutritional sciences and plant pathology, but the largest number were in veterinary medicine.

Out of 366 Ph.D. degrees granted between 1980 and 1982 to women in agricultural sciences (excluding veterinary medicine and agricultural economics), 82 degrees (22%) were granted in food sciences. The next largest group was 62 degrees (17%) in plant pathology followed by animal science and nutrition with 47 degrees, and agronomy with 41 degrees. Forestry and animal husbandry captured the smallest percentage of women Ph.D. graduates (Kuehl, et al., 1987).

By 1983, the NASULG figures reported over 6,000 women graduate students in all agricultural and related sciences. The largest percentage (35%) was still found in the "related sciences" (e.g., biological science, genetics, nutrition, food science and dietetics) while plant and soil sciences claimed 16 percent of the women graduate students, and social sciences, including agricultural economics, claimed another 16 percent. Between 1979 and 1983, the percentage of women graduate students enrolled in general agriculture dropped from 5 percent to 0.5 percent.

A profile of the students enrolled in agricultural programs in the southern U.S. land grant universities showed that their women students mirrored the rest of the nation fairly closely. They sought an education in agricultural disciplines as a way to prepare for a career. They were increasingly specialized. They had gained technical and management skills that landed them jobs in off-farm agricultural industries, businesses, and education. Seventy-one percent of the women in southern agricultural schools, compared to 50 percent of the men, had neither a farm nor a rural background. A 1983 study of agricultural economics students at the University of Georgia found that 83 percent of them had no rural

background and none of the women came from farms compared to 56 percent of the men (Broder and Deprey, 1983). Women students at Georgia were less likely to have transferred into the university from a junior college (17% of women students vs. 62% of male students). The women students had slightly higher grade point averages (GPAs) than the men (2.97 vs. 2.80 at the B.A. level; 3.55 vs. 3.44 at the Master's level).

A 1981 study of graduate students in agricultural economics at Cornell University in northern New York State showed that 90 percent of the women compared to 66 percent of the men were raised in urban or suburban areas (Offutt, 1982). At Cornell, 90 percent of these women students as compared to 33 percent of the men came from outside New York State; fifteen percent were not U.S. citizens. Half of these women students had attended private, non-land grant colleges for their undergraduate degrees. As in Georgia, the women graduate students in agricultural economics at Cornell had somewhat higher average GPAs (3.49 vs. 3.44). They tended to concentrate in the study of international trade or natural resources (65% of the women vs. 45% of the men). Only 15 percent of the women vs. 45 percent of the men concentrated their studies in management, finance or marketing. Women had selected welfare, consumer and regional economic studies in relatively large numbers.

A profile of the women graduate students in agricultural economics at Cornell in the early 1980s showed them to be younger than the men (average age 26), more than twice as likely to be single (84% of the women vs. 40% of the men), and to have come from a household with an average yearly income of over \$50,000 (58% of the women vs. 28% of the men). Like women surveyed across the nation, these Cornell students were influenced

primarily by their teachers or fathers to pursue advanced studies in agricultural economics. They were more likely to have chosen their selected field of study because of intellectual interest than because of any work related experience.

When the women students of agriculture in southern universities were asked if any particular high school class influenced them to study some aspect of agriculture in college, 78 percent of the women noted biology. When asked about their future preferences, 40 percent wanted to continue their educations to obtain a higher degree and obtain a prestigious job. Sixty-eight percent wanted to live in a rural area as opposed to a city. At the University of Georgia, an alumni study of agricultural economists found that 42 percent of the women and 31 percent of the men had actually obtained graduate degrees (Broder and Deprey, 1983).

The data on students in agricultural college programs suggests a neo-agrarianism emerging among the youth who choose agriculture as a career. On the one hand, they were seeking good paying jobs and prestigious, exciting careers. On the other hand, they seem to have a preference for being close to nature, generally supporting a "back-to-basics" approach. They worry as much about the environment as they do about crop yields or farm income. Their tie to agriculture is through employment in industries that produce farm inputs and process farm outputs. They are a challenge to the established orientation of many agricultural colleges. "Maintaining this new student clientele will require that, as college graduates, these non-farmers (predominantly urban and increasingly female) can be assimilated into the various agricultural occupations with industry

and business for which they were prepared." (Southern Regional Committee, 1982, p. 41; words in parentheses mine.)

This brings us to the question of how successful these highly educated women have been at finding satisfying careers in agricultural sciences, industries and education. In the study of southern agricultural students (Southern Regional Committee, 1982), 30 percent of the male students said that they thought agricultural occupations were unsuitable for women and 40 percent said it was alright for women to work, but that their real fulfillment in life should come from motherhood. If these attitudes carry over into the work place and across the nation, one would expect significant barriers to women seeking equal employment opportunities and advancement in agriculturally related careers.

Agricultural Careers

A nationwide assessment of women's employment in scientific and professional food and agricultural occupations provides us with evidence about women in agriculturally related jobs (Coulter and Stanton, 1983). In the late 1970s, over half of the employees in the following occupations were women with a Baccalaureate or higher degree: dieticians, foresters and conservationists, health aides (not nursing), health technicians, insurance adjusters/examiners or investigators, and recreation workers. Over one-third of the employees in another nine food and agricultural occupations were women: adult educators, agricultural and biological technicians, assessors, controllers or treasurers, credit and collection managers, editors and reporters, estimators and investigators, real estate agents or brokers, retail sales managers or department heads, and sales workers or clerks. At least 6 of the 15

occupations listed above have been traditionally female dominated, but many women were also found in forestry, insurance and finance related jobs. Occupations which had five percent or fewer women employees were all types of engineers, marine and agricultural scientists, non-retail sales managers, surveyors, landscape architects, farm product buyers or shippers, farm managers, and grounds keepers. Over 14 percent of the agricultural economists were women.

Historical data for 1972-1978 shows that the percentage of females employed increased across the full spectrum of food and agricultural occupations, but most notably in farm management, marine and biological sciences, and in insurance and accounting related jobs.

Careers in Agricultural Economics

A study of agricultural economics alumni who graduated between 1970 and 1981 from the University of Georgia showed that women searched less time for their first job, received an average of \$3,000 more to start than their male colleagues, and received bigger pay increases in the first four years (9% vs. 3% for men). However, over the ten-year period, male graduates, as a group, were earning current salaries almost \$3,300 per year more than the women graduates. This reflects perhaps, in part, differences in their reasons for selecting jobs. Women looked for work in their fields of interest, that had a high starting salary and was in a desirable location. Men looked for opportunity, challenge, and then salary. When changing jobs, men's salaries increased almost twice as much as women's on the first change and five percent more on the second change. Half of the women and 45 percent of the men were still on their first job.

The Committee on Women in Agricultural Economics (CWEA), a standing committee of the American Agricultural Economics Association, has conducted several surveys of women graduate students and professional agricultural economists since 1981 (Lundeen and Clauson, 1981; Lane, 1981; Redman, 1981; Lundeen, 1982; Offutt, 1982; and Lee and Offutt, 1986). They found that male agricultural economists earned \$3,700 more than women after adjusting for differences in education, experience, number of professional publications and other salary determinants in 1981. In matched pairs of men and women with equal experience and education, women earned \$135 per year less on average, but younger women earned \$311 less and older women earned \$59 more (Lane, 1981). The actual difference in average salaries was \$14,000 more for male agricultural economists in academia and \$9,000 more in government.

A 1982 survey for the National Science Foundation found the median salaries of agricultural scientists in general were \$32,100 for men and \$21,700 for women--a ratio of .68. For those with fewer than five years' experience, the median salary for men was \$23,100 compared to \$20,000 for women--a ratio of .87. However, for those with six to ten years of experience, the median salary for women was \$3,200 more than for men, with a ratio of 1.13. There were too few women agricultural scientists with more than ten years' experience to make a meaningful comparison at that level (NSF, 1982). Figures from the American Association of University Professors (AAUP) (1985) show that the overall ratio of women's to men's salaries in academia were highest at the associate professor level (.94) and lowest at the full professor level (.90). It appears that experienced women in agricultural sciences earn higher salaries relative to their male

colleagues than academic women in general. This is consistent with other studies that show that women in male-dominated professions often earn more than their male counterparts (Stoltenberg and McCrum, 1986).

Using women agricultural economists as a special case of professional women in agriculture, several observations can be made about their general characteristics and their post-graduate progress. Regarding the fields of study, in 1981 men and women were equally represented in natural resources and econometrics, but there were fewer women in the more traditional fields of production and marketing. Women were more likely than men to be in the fields of economic growth, international development, and consumption economics. By 1986, women and men were more evenly represented in all fields, except that there were fewer women in production and farm management. The distribution of men and women in a particular field of study appears to be largely due to self selection. Women were more likely to report choosing a field of study because of their intellectual interests or curiosity than were men where choices were based more on past experiences.

The academic and government employment of women agricultural economists is well documented. In 1981, of those with Ph.D. degrees, 53 percent of the women and 70 percent of the men were employed in academic positions. The government employed 31 percent of the women and 20 percent of the men. Women were less likely to seek and/or find positions in academia. In 1981, they were young and inexperienced as a group; 60 percent having received that degree after 1975. Recall the increase in the number of women graduate students between 1979 and 1983 in all agricultural departments (up 5 percentage points). Those in agricultural

economics led this trend. By 1985, 19 percent of the total graduate degrees granted in agricultural economics by 38 Ph.D. granting institutions across the United States went to women. Sixteen percent of the women, compared with 28 percent of the men, who received a graduate degree received a Ph.D.

In 1985, 18 percent of the employees in the Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA) were women compared to 14 percent of the other agricultural scientists in the federal government. Only 4.4 percent of the academic agricultural economists were women and over half of them were assistant professors, the beginning academic rank (Lee and Offutt, 1986). One-third of the agricultural economics departments in the U.S. had no women faculty in 1985, and nine of the departments employed two-thirds of all the women faculty in agricultural economics. In 1985, however, 17 percent of the new assistant professors hired in agricultural economics departments were women. Perhaps academic jobs are opening up and becoming more attractive to women with doctorate degrees.

Regardless of the academic discipline, I would argue (along with Kuehl, et al., 1987) that it is essential to have visibly successful women faculty members if women students are to continue to be attracted to study in that field. Women students must perceive that their chances of success will not be hampered because of their gender. The faculty woman's role as a mentor or role model should not be minimized. The impact of students observing them as professionals with equal or superior status to their male colleagues is most encouraging. However, achieving a significant number of women on college faculties is a slow process. The education and

professional development alone takes years, to say nothing of the evolution in institutional attitudes and employment arrangements.

Agricultural Sciences in Academia

A recent study of women in all agricultural science programs in land grant universities across the nation found that women held 9 percent of the Ph.D.s in science and engineering in 1970. This increased to 30 percent by 1984 (Henderson and Cooper, 1987). The percentage of full-time faculty members in U.S. universities in 1984 was 13.6, whereas the percentage of agricultural scientists on academic faculties who were women was 4.6 percent. Over 80 percent of the latter group of women were in the physical sciences (agronomy/plant sciences, nutrition, and biological sciences). Universities in the southern and central states had the fewest women faculty members.

Women scientists in agriculture were more likely to be unemployed than their counterparts in the other physical sciences and engineering. A profile of the women faculty in agricultural sciences shows that nine-tenths of them had a Ph.D., over half were assistant professors, and over one-third were the only woman in their departments. They were extremely productive as researchers and publishers averaging seven journal articles and one book during the prior five years. Their average age was 39, over half grew up in a metropolitan area, and 95 percent were Caucasian. Forty percent of these women were not married, and 58 percent had no children (Cooper and Henderson, 1987). This compares with about 31 percent and 12 percent for the general population of women who are age 39.

Barriers to Career Development

Given the growth in the number of women students and professionals in agricultural sciences, one is tempted to conclude that institutional or attitudinal barriers to their success must be falling by the wayside rapidly. Not necessarily so. In the surveys done by the CWAE in the early 1980s, several barriers to women's education and career development in agriculture were documented. On the supply side of this labor market, i.e., the women themselves, numerous barriers were reported. They included difficulty in finding adequate domestic help, the immobility of husbands (in a two-career family), spouses' negative attitudes towards wives' careers, and inadequate high school or undergraduate education that had to be overcome during graduate school and beyond (Lane, 1981). Gladwin (1982) concluded that being married was, in itself, a deterrent to successful careers for women in agriculture. Barriers cited on the demand side, i.e., employer-related barriers, included a lack of role models in school and on the job, and isolation from colleagues. Employer discrimination was evidenced by lower salaries, slower advancement up the career ladder, and attitudes that said that a.) enjoying one's work is not an adequate reason for women to pursue a career, or b.) a woman doesn't need to be paid as much as a man because some man is (or should be) supporting her. Common concerns which women voiced about their employers were 1.) "They asked me a disproportionate number of personal and family questions during an interview, and 2.) "They do not perceive my potential to do the job." These incidents and attitudes imply women believe that, in general, employers still do not take them seriously. They do not offer women the toughest or most prestigious assignments. Many women believe

they are perceived as being less competent than men until they prove otherwise.

These barriers, I believe, are falling by the wayside, but slowly. They die hard. Equal opportunity legislation and affirmative action regulations certainly have helped. They have opened the doors, but they have not and cannot, by themselves, alter long-held attitudes and habits. Only men and women willing to take creative risks and willing to work together over the next several generations will allow women to be fully assimilated into the agricultural occupations for which they are being prepared.

WOMEN FARMERS

Historical Changes

The early history of women farmers in the United States is similar to that of women farmers around the world. In the 1700s, they lived on subsistence farms that depended on the diversified labor of all household members. Reoccurring labor shortages during Colonial times made it necessary for women to perform all types of farming tasks as well as household chores. Consequently, American farm women were more autonomous than their counterparts in Europe. A rigid hierarchical differentiation of labor did not develop while women were needed to perform a variety of farm tasks during labor shortages.

In the 1800s, as farming in the United States became more market oriented, farming became a male occupation. Cash needed to support the farm was earned by women (usually daughters) who went to work in nearby factories. It was expected that their earnings would be returned to their

home farms. Thus, daughters as well as sons were viewed as valuable economic assets in farm families of that era.

In the early 1900s, the U.S. Country Life Commission Report depicted a farm woman's life as one of hardships associated with poverty, isolation and a lack of labor-saving devices. The government believed that women's favorable disposition towards farming would play an important role in the success of rural life and agriculture. Thus, the U.S. Department of Agriculture responded with publications and a massive educational and extension program designed to convince farm women of the vital and virtuous role they played as helpmates and homemakers. Apparently, they were successful because in 1979 when farm women were surveyed about their roles and occupations, almost all of the farm wives reported that they were "helpmates" to their husband, who was a farmer, or that they were housewives. Even the 55 percent of farm women who considered themselves to be one of the "main operators" of their farm did not report their occupations as "farmer", but as a "farm helper."

Separate agricultural and home economics education and extension programs were established in the early 1900s. The home economics programs undoubtedly eliminated some of the isolation and other hardships for farm women, but it aided and abetted the differentiation of labor by gender. It assigned women to housework, to providing support services to the farming business and to activities associated with subsistence farming. In the late 1900s, many farm women are still doing many nonmarketable tasks that help sustain the farm family, such as gardening, food preservation and cooking for farm workers. Because no market value is placed on these tasks, the economic value of these contributions are

vastly underestimated. However, farm women seem to hang onto the idea that farms can be self-sufficient much longer than male farmers do. Indeed, it is through the efforts of farm wives that many farms have been sustained through periods of low incomes from farming activities.

The types of activities which farm women do on farms today varies widely across regions, farms and seasons, but there has been a definite shift towards record keeping, financial management and research, that is, keeping informed about public policies and technical innovations that impinge on their farming operations. Another very important role for farm women now, is supplying a steady source of income from an off-farm job.

Off-farm Income

Least we think that farm women's cash earnings is a modern phenomenon, we are reminded by Rosenfeld (1981) that in the first quarter of the 1900s, farm women provided about 80 percent of the cash used for daily living expenses by selling what they produced and processed. These women may best be described as self-employed in on-farm enterprises. Self-employment among farm women continues today in rural areas, but only 9 percent of those who are self-employed earn money from agricultural activities. Twenty-three percent of all self-employed persons in rural areas in 1978 were women who worked in a non-agricultural occupation (Teal, 1981). Table 1 from Teal (1981, p.44) shows that over half of the self-employed women worked in the service industry and one-third were in retail sales.

The probability that farm women in 1979 would report working off the farm was between 30 and 40 percent, with the highest probabilities in the South, for women with higher educations and for women who were married to

men who also worked off the farm (Ross, 1982). Of those who worked off the farm, over half worked at least 40 hours a week. One-quarter held professional or technical jobs; one-third held clerical jobs and another quarter were operatives in nondurable manufacturing. One-quarter of them said they worked to help pay for farm expenses. On average, they earned \$7,000 a year, one-half as much as male farmers who held off-farm jobs (Jones and Rosenfeld, 1981; Dunn, 1981).

Table 2 from Teal (1981, p.35) shows a similar pattern of annual male and female earnings in non-metropolitan jobs. At that time, the overall ratio of women's to men's earnings was .59, slightly higher than in the rural areas. Teal (1981) points out that the increases in female employment, especially in rural areas, has been in the lowest paying jobs with little opportunity for advancement in wages or status. Industries looking for cheap labor often move into a rural area where women are available to work at low wages. The ironic result of several rural women entering the labor force, and concentrating in a few types of occupations has been a lowering of their already low wages. Even in the professional and managerial jobs, average earnings fell by 8.5 and 17.3 percent, respectively, between 1969 and 1976. In rural areas, increased educational attainment for women did not seem to ensure higher earnings or job advancement. White women with four years of college were often found earning less in rural areas than the men with fewer than 8 years of school (Teal, 1981 p.34). The implications of this for those who advocate further education to rural women are indeed sobering.

Looking at all rural women's labor force participation rates, Teal (1981, p. 30) provides Table 3. The labor force participation in rural

areas tracks very closely with the metropolitan participation in the United States. There is a slight decline in women working for wages during the prime child bearing years of age 25-34, but the participation rate at all ages has risen dramatically since 1960, except for those over age 55. Over half of rural women are in the paid labor force.

Farm Laborer

Conventional wisdom says that rural women work harder than urban women. They work harder physically, they have fewer conveniences, and they work longer hours. The truth of this varies, of course, across households, but it is obvious that in addition to their roles as housekeeper, child care specialist and wage earner, farm women also have the role of farm laborer (usually unpaid). The 1981 survey of American Farm Women (Jones & Rosenfeld, 1981) provides insight into this additional role. On average, farm women reported being involved in over 50 percent of the farm tasks on their farms. Table 4 from Jones and Rosenfeld (1981, p. 18) details the farm tasks performed by women. The majority regularly did bookkeeping, while almost half of them regularly ran errands for the farm business. Over a third cared for animals and 22 percent did field work and harvesting. The task they were least likely to do was applying chemicals to the fields. Virtually all of the women did housekeeping tasks and three-fourths looked after children and produced food for home consumption.

Farm women reported being rather involved in the major decisions made on the farm regarding its business operation. Table 5 from Jones and Rosenfeld (1981, p.29) shows that between 35 and 58 percent of the farm business decisions were made jointly by the husband and wife. Columns one

an two reveal, however, that wives were much more likely to make household-related decisions by themselves and men much more likely to make farm business decisions alone. Ninety percent of the women reported being satisfied with their decision making responsibilities.

Responding to questions about what USDA should do to help farm and ranch people, the majority of the farm women mentioned things that would raise farm incomes and alleviate the plight of small farms--things that would improve the well-being of the whole farm rather than the status of women themselves. Sixty percent did not even answer the question about what could be done specifically for farm women, but those who did mentioned changing inheritance procedures and estate tax laws, improving educational and informational programs, and increasing the recognition of the roles and economic contributions of women on the farms (Jones and Rosenfeld, 1981).

Women Farm Operators

Before turning to the educational needs of the women living on farms and in rural areas, a brief look at those women who own and operate their own farms is in order. The census of agriculture shows that the percentage of women employed as farmers or farm managers has increased from 2.7 percent in 1950, to 5.0 percent in 1970, to 5.2 percent in 1978, and to 5.4 percent in 1982. These increases may be due to an increased willingness to report themselves as farm operators and/or to an increased number of divorced and widowed farm women who inherited their farms from their husbands. Although over 57 percent of the women farm operators were over age 54, their average age in 1982 was 56, three years younger than in 1978. They are only a little older, on average, than male farm operators.

They tend to be concentrated in the South and Central states and on small farms that earn low incomes. The average number of acres per farm rose slightly from 285 in 1978 to 291 in 1982. More than two-thirds of these farms had sales of less than \$10,000 in 1982. Twenty percent had sales of over \$20,000, up from 17 percent in 1978. Approximately one-third of the total income of these women farm operators comes from the farm operation compared to 46 percent for farms run by men (Kalbacher, 1983).

Many of the women who farm own their whole farm (79%) and some rent out all or part of their land (19%). Women comprised 35 percent of the farm landlords in 1978 (Kalbacher, 1983). Almost half of the women farmers are involved in livestock operations with the next most popular type of farming being cash grains (13%). According to Kalbacher (1985b, p. 17) the typical woman farmer "is the woman who runs a small livestock operation in the South. She's white, just under 60 years of age, and probably a widow. She's likely to be farming because she loves the land and enjoys working around animals."

The major obstacles women farmers face in greater proportion than males, are in obtaining credit, hiring farm workers and leasing additional land. Most of them also have to prove themselves to a rural community unaccustomed to thinking of women as "real farmers" (Kalbacher, 1985a, 1985b). Unfortunately, the word "farmer" has become a male noun.

Vocational Education for Rural Women

The history of vocational education for agriculture and rural life has an interesting twist with regard to women's participation. In the early 1900s, numerous women were enrolled in vocational agricultural (vo-ag) programs. In Wisconsin in 1917, there were more women than men

enrolled, and in Michigan during the 1920s, one-quarter of the enrollment was women. Then women all but disappeared from vo-ag classes only to reappear in the 1970s. How might this be explained? It appears to be related to early efforts to seat at least one woman on the commission to study vocational education (vo-ed) before the passage of the Smith-Hughes Act of 1917. This act established federal guidelines and funds for vocational education aimed primarily at men. The early attempts to have women's needs and concerns recognized by those designing vocational educational programs continued, and by 1929, the vocational needs of women were finally acknowledged. However, a separate vocational program was established for the women with the George-Reed Act of 1929. Half of the vo-ed funds were designated for home economics programs designed specifically for women. They tended to draw almost all of the women's enrollment. It was mentioned earlier that one of the purposes of this activity was to educate rural women about scientific techniques in homemaking in order to alleviate some of their hardships. It was also designed to convince them of the virtues of their "helpmate" position on the farm. It was not designed to train them to be better farmers nor to find off-farm jobs. It did not develop in the farm women entrepreneurial, professional, or business skills. To borrow a term from J. Kenneth Galbraith (1973, p. 229), these home economics vocational programs established and perpetuated a "convenient social virtue". Women were supposed to stay in the home, raise the children, keep the house, and provide any and all support services needed by their husband farmers. Those women who could do it best were the most highly praised and valued by their families and by society.

During the 1960s, there was a general civil rights movement that demanded equal access for women to all forms of education. There were no women vo-ag teachers to be found in the nation until 1975 in Wisconsin. It was not until 1980 that the first woman enrolled in a large vo-ag educational training program, that being at The Ohio State University. The number of girls enrolled in rural high school vo-ag programs increased from 5.3 percent in 1972 to 21.2 percent in 1979. Table 6 shows the percentage of females in various vo-ag programs in three types of institutions in 1979 (Rosenfeld, 1981, p.13). The majority of women seem to have been in ornamental horticulture and natural resources, not the traditional agricultural occupations. Note also that the percentage of agricultural instructors in high schools in 1979 (4.4%) was almost the same as the percent of women college professors in agricultural sciences in 1984 (4.6%). One of the special problems cited in attracting girls into vo-ag programs was a lack of female role models among their teachers. This is a problem at all levels of agricultural education, and it is a problem that does not seem to be going away.

In studying farm women and their vocational education needs in the 1980s, Hill (1982) found that there were three main tasks performed by contemporary farm women: managerial, technical and financial/marketing tasks. These women needed more precise technical information as technology changed. Eighty percent of the farm women in her sample did farm bookkeeping which required knowledge of the tax codes, financial investments, and the costs of technical production decisions. Many were moving into computerized bookkeeping and data input activities in order to use outside computer services. Specific courses that these farm women

believed would be helpful included business practices, farm management, farm production techniques, women's legal and economic rights, and job counseling.

Some of the most valuable training may be for off-farm jobs, but Hill cautions against vocational education programs geared too closely to new industries seeking to locate in a rural area. One of the worst things these educational programs can do is to train women for non-existent or short lived jobs. One of the best things they can do is assure equal access for men and women to all the courses they do offer. One of the biggest challenges to vo-ed programs is to consider the multiple demands on rural women and provide training applicable in the context of where they'll live and work. Rural women are a very heterogeneous group. They tend to accept their role as sole housekeeper and farm helpmate. Yet, they are career oriented, well educated, and expect to work outside the home. Reentry into the labor market for those who have not worked away from home for several years presents special problems besides vocational skills. Courses or counseling services for the returning laborer could be valuable for reorienting oneself as an employee.

The most critical factor found to influence mixed gender training and work is the interaction of the teachers', students' and employees' attitudes. Teachers were seen to be especially important because they can influence both the students and the employers (Hill, 1982). Hill found that many employers were prejudiced against hiring girls, until they had actually hired one that had been well trained. Girls in the rural areas saw the biggest impediment to having a career was getting married. Obviously, if women are going to seek training and hold jobs for which

they are trained, many attitudes as well as skills will need to be educated.

Legislative Help

A necessary, but insufficient, measure that caught the attention of educators and employers alike was federal legislation called Title IX of the Education Amendment of 1972. A key section of that amendment says,

"No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance".

This helped open doors to women who aspired to more and different forms of education. It will not, by itself, find them jobs or ensure that they succeed.

The four goals of this legislative effort were: 1.) To remove sex bias and sex stereotyping from courses, programs and counseling; 2.) To take positive steps to provide opportunities for women in nontraditional fields; 3.) To make education and training programs more accessible to rural women and girls; and 4.) To prepare women for entrepreneurship and develop their management skills (Dunkle, 1982). This latter goal is perfectly compatible with the requests of rural women and recommendations of others who have studied vocational educational needs in rural areas since the 1970s.

FUTURE AGRICULTURAL CAREERS

Professional Careers

It has been estimated that 48,000 new college graduates with expertise in agriculture, natural resources and veterinary medicine will be needed annually through 1990 in the United States (Coulter, et al.,

1986). There will be less than 44,000 new employees available annually, but there will be an excess supply of those trained in education and communication, except for those in nutritional and health education where there will be an increased need. There will also be an excess supply of farmers and ranchers and those specializing in farm production. In the agricultural sciences and engineering, there will be a shortage of new graduates, especially in dietetics and nutrition. Students with Master's degrees will be in excess demand as managers, financial experts, sales representatives, and marketing specialists. Significant areas of employment will be in basic plant and animal research, food and fiber processing and agribusiness management and marketing. It is estimated that 40 percent of the future Ph.D. graduates will be needed to replace retiring agricultural faculty members, 27 percent of whom will reach age 65 by 1994. If even half of the agricultural scientists working for the federal government retire when they become eligible over the next decade, another 17 percent of the future Ph.D. graduates in agriculture will be needed to replace them (Coulter and Stanton, 1980).

How does this news bode for women who have been and are being educated in agricultural fields? Generally good! Women were found in very small numbers in production agriculture. Employment there is declining. Women were found in relatively large numbers in nutritional sciences, dietetics, natural resources and animal science. All these fields show a future shortage of workers. Women who are currently in agriculturally related fields should find very good employment opportunities in the near future. Whether by design or default they have concentrated in fields of study that are increasing in demand.

Women Farmers

For those women who own and operate their own farms, the future is not dim as long as they have sufficient off-farm income for living expenses. Many of these small farms have low debt and a flexibility that allows them to respond to changing markets more quickly than large, commercial operations. Tenant farming is increasing in the United States. Thus, opportunities for renting out their land will increase.

The future of those who are wives of farmers will go much the same as their farms. Many of their husbands will stop farming and their role as a main income earner will increase. Being educated or trained with salable skills will be critical. They will no longer be able to sustain their farms and families with subsistence agricultural activities; labor force participation will be necessary for most. This means that both jobs and wages will need increase in rural areas. For this to happen, both employers' attitudes and the social structure of the community will need to change.

Rural communities can no longer afford to waste the talents of its women and youth. As many rural towns are disappearing from the map, those that survive are generously using all of their available human capital including their women, their youth, and even their newcomers.

FOOTNOTE

^{1/} Land grant universities were first established in the U.S. in 1862 under the Morrill Act. Each state was granted land and money to establish a university to provide higher education to youth from farms and working class citizens. Each of these schools has a college or division of agriculture and home economics, in addition to curriculums in arts, letters and science.

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TABLE 1

**Distribution of Non-farm, Self-Employed Rural Workers,
by Industry and Sex, 1978**

Total Non-Farm Self-Employed: 6,305,000

Industry	Female		Females in Industry	Male	
	Percent of Females	Number	Percent	Percent of Males	Number
		1,774,000	(28.2%)		4,524,000
Mining, Construction, & Manufacturing	4.8	85,248	6.1	29.2	1,322,468
Transportation, & Public Utility	1.1	19,536	8.1	4.9	221,921
Wholesale Trade	1.4	24,864	10.5	4.7	212,863
Retail Trade	32.4	575,424	38.6	20.2	914,858
Finance, Insurance, & Real Estate	5.0	88,800	22.6	6.7	303,443
Services	55.2	980,352	38.8	34.2	1,548,918
Business and Rep.	6.1	108,336	17.1	11.6	525,364
Personal	28.7	509,712	69.2	5.0	226,450
Professional	16.6	294,816	30.5	14.8	670,292
Education	6.6	117,216	83.8	0.5	22,645
Other	10.0	177,600	21.5	14.3	647,647
Other Services	3.9	69,264	35.3	2.8	126,812

Source: U.S. Department of Labor

TABLE 2**Mean Earnings of Nonmetro Persons 16 Years
and Older Employed 50-52 Weeks, 1976**

Occupation Category	Total Amount Earned Per Year, Dollars		Percent Female
	Male	Female	
Professional/ Technical	13,812	7,484	54
Managers/ Administrators	13,339	5,928	44
Sales	10,646	3,823	36
Clerical	9,484	5,299	56
Crafts	10,013	5,493	55
Operatives	8,543	4,898	57
Transportation/ Equipment Operators	8,904	1	-
Labor	6,313	1	-
Services	6,934	3,521	51
Private Household	1	1,654	-
Farms & Farm Managers	8,858	1	-
Farm Labor/ Supervisory	4,025	1	-

1 Figures not available; data base less than 75,000 persons.

Source: Bureau of the Census

TABLE 3**Labor Force Participation Rates by Age for Nonmetro
Women, Selected Years**

Age Group	Percent Women in Labor Force			
	1960	1970	1973	1978
14-17 yrs.	13.2	13.4	(16-19yr) 45.6	52.4
18-24	37.8	47.0	(20-24yr) 57.5	65.8
25-34	32.9	43.8	50.7	60.6
35-44	39.9	50.1	55.5	62.3
45-54			54.1	56.7
55-64	36.9	43.9	40.0	39.5
65 & over	9.2	9.2	9.6	8.9
TOTAL, NONMETRO	30.3	36.0	43.5*	48.0*
TOTAL METRO	36.2	40.8	45.4*	51.0*

* 16 years and over

Source: U.S. Census of Population, 1960 & 1970.

TABLE 4

FARM WOMEN'S INVOLVEMENT IN FARM AND HOME TASKS (Percent)

	Percentage Responding			Total percent	b N
	Regular Duty	Occasion-ally	Never		
A. Plowing, disking, cultivating or planting	11	26	63	100	2,257
B. Applying fertilizers, herbicides, or insecticides	5	12	83	100	2,377
C. Doing other field work without machinery	17	25	58	100	2,281
D. Harvesting crops or other products, including running machinery or trucks	22	29	49	100	2,351
E. Taking care of farm animals, including herding or milking dairy cattle	37	29	34	100	1,944
F. Running farm errands, such as picking up repair parts or supplies	47	38	15	100	2,483
G. Making major purchases of farm or ranch supplies and equipment	14	23	63	100	2,455
H. Marketing your products--that is, dealing with wholesale buyers or selling directly to consumers	15	18	67	100	2,380
I. Bookkeeping, maintaining records, paying bills, or preparing tax forms for the operation	61	17	22	100	2,489
J. Doing household tasks like preparing meals, house-cleaning, and so on ^a	97	2	1	100	2,499
K. Supervising the farm work of other family members	24	26	50	100	2,060
L. Supervising the work of hired farm labor	11	25	64	100	1,643
M. Taking care of a vegetable garden or animals for family consumption	74	14	12	100	2,350
N. Looking after children ^a	74	13	13	100	1,846
O. Working on a family or in-home business other than farm or ranch work ^a	34	13	53	100	1,139

^a Items excluded from indices of farm tasks.

^b Total excludes those who say task was "not done" on their operation.

TABLE 5

FARM WOMEN'S INVOLVEMENT IN HOME AND FARM DECISION-MAKING

Item	Usually respondent	Usually husband/ someone else	Both together	Total Percent	N ^a
Who usually makes final decisions about . . .					
A. Whether to buy or sell land?	3	39	58	100	2,166
B. Whether to rent more or less land?	2	48	50	100	1,915
C. Whether to buy major household appliances? ^b	22	4	74	100	2,481
D. Whether to buy major farm equipment?	2	52	46	100	2,426
E. Whether to produce something new such as a crop or a new breed or type of livestock?	3	58	39	100	2,174
F. When to sell your products?	4	60	36	100	2,349
G. When to make household repairs? ^b	24	14	62	100	2,468
H. Whether to try a new production practice?	3	62	35	100	2,125
I. Whether you take a job off the (farm/ranch)? ^b	41	7	52	100	1,959

^a Respondents who reported that a particular type of decision had never come up were excluded from that row.

^b Not included in indices of farm decision-making.

TABLE 6**Female Enrollment in Vocational Agriculture Programs,
by Type of Institution, 1979**

Programs	Females in Program, Percentage		
	Comprehensive High Schools	Junior or Community Colleges	Vocational Centers
Agricultural Production	15.3	25.6	24.5
Agricultural Supplies/Services	14.6	31.1	33.0
Agricultural Mechanics	4.5	8.7	2.4
Agricultural Products	16.5	34.0	30.4
Ornamental Horticulture	41.4	44.7	52.8
Renewable Natural Resources	23.0	25.3	17.8
Forestry	13.7	21.0	9.1
Other Agricultural Programs	17.4	43.3	26.8
Coop Programs	14.3	32.5	25.7
Agriculture Instructors	4.4	7.3	10.3

Source: Office of Civil Rights survey, 1979.