

The Hidden Work of the Farm Homemaker

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Abstract

Despite women's involvement in agricultural production, the work role of women residing in farm households has not been thoroughly examined. Data collected in 1994-1995 as part of the NIOSH-sponsored Farm Family Health and Hazard Surveillance Project were used to address task issues and health status of farm women in Kentucky. In 1996, the farm woman component of the Kentucky study was replicated in five counties in west Texas, allowing an examination of farm women in two large agricultural states. The Kentucky study employed a two-stage cluster design; the Texas study was based on a systematic quota sample of farms. Both studies selected a sample of women aged 18 years and older living in farm households. A total of 992 women in Kentucky (response rate = 85%) and 665 women in Texas completed a structured 30-min telephone interview on work roles, health status, injuries, and demographics. The results indicated that although 46.4% of the Kentucky respondents and 46.3% of the Texas respondents characterized themselves as farm homemakers, they regularly engaged in farmwork. Reported tasks included work with animals, tobacco-related chores, field irrigation, farm equipment operation, and farm management. Further, women who characterized themselves as homemakers reported rates of farm injuries that were comparable with women who classified themselves in other roles such as full agricultural partners. Role definition may influence the woman's perception of risk on the farm, preclude participation in farm safety programs, and prevent an accurate occupational medical history. This two-state descriptive study highlights the hidden work role of the farm woman—a role that remains invisible to the farm woman herself—and emphasizes the important occupational exposures that farm women encounter.

Keywords. Agriculture, Women, Injury.

The role of women engaged in farmwork is historically and socially defined as one of "helper" either as a farm wife or as reserve labor (Rosenfeld, 1985; Sachs, 1983, 1996). In the past 50 years, the family unit work force—depicted by early American scenes of husband, wife, and children laboring together in the

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fields—changed to the male farmer surrounded by machines and technology. The current role of farm women is obscured by this historical portrait, by the changing seasonal requirements for agricultural labor, and by the family life cycle of the farm unit (Pearson, 1980). Little empirical data exist that examine the roles women play in farmwork.

Most agricultural databases list principal operators or farmowners, of which few are females. Research has focused heavily on principal operators. Women have been excluded, perhaps in part due to their own descriptions and characterizations of their role on the farm. Because the U.S. Census of Agriculture counts only one farm operator per farm unit, it is the male who is traditionally counted, effectively hiding the role of the farm woman (Engberg, 1993). However, women comprise at least one-fifth of the farm labor force. Jones and Rosenfeld (1981) illustrated the contribution of women to farm labor in their national survey of 2,059 farm women. Over one-half of those surveyed reported being farm operators.

Farmwork tends to be defined as labor done outside the home and for remuneration. Farmwork is generally performed where one also resides, thus the differentiation of home and work site may not exist. Women performing farmwork generally do not receive wages for their work; therefore, no tangible record of their work contribution appears on official documents, such as tax records (Rosenfeld, 1985). Koski (1982) found that women engaged in full-time, off-farm employment reported the least involvement in farmwork, while farm homemakers did the greatest amount of farmwork. Women's roles are also likely to be highly influenced by prior experience, child rearing responsibilities, commodity produced, and other factors (Keating and Munro, 1988; Garkovich et al., 1995; Pearson, 1979; Sachs, 1996).

Actual work practices of farm women also vary by age and farm enterprise (Keating and Munro, 1988; Rosenfeld, 1985; Sachs, 1996; USDA, 1987). In a survey of 326 Alberta (Canada) farm women residing on grain farms, 97% of respondents reported farmwork hours (Keating and Munro, 1988). In the United States, younger women were more likely to have a farmwork role than older women but also were more likely to report barriers to farmwork (USDA, 1987). The seasonal aspects of farmwork translate into different and changing roles for women on the farm: at times they may be heavily involved in farm labor, and at other times they may have little involvement.

The purpose of this article is to describe the type of farmwork done by Kentucky and Texas women who characterize themselves as farm homemakers. The lifestyle and work of the rural woman is stereotypically depicted as a home-based mother and helper to her spouse. While this scene may have been accurate a century ago, rural women today frequently are employed off the farm. An increasing number of farm women hold outside jobs to supplement, yet concomitantly increase their involvement on the farm (Bushy, 1993; Garkovich et al., 1995; USDA, 1987). It is important to understand the farmwork contributions made by women who describe themselves as farm homemakers.

Methods

Women aged 18 years and older living on family owned and operated farms in Kentucky and Texas comprised the study population. A farm was defined as any establishment that sells, or would normally sell, \$1,000 or more of agricultural products in a year (Bureau of the Census, 1992). The Kentucky study used data from the National Institute of Occupational Safety and Health (NIOSH) sponsored Farm

Family Health and Hazard Surveillance Project, a multi-mode effort to assess the health status of persons living on family owned and operated farms. The Texas data was collected using a shortened, modified version of the Kentucky survey instrument.

Sample Selection

Details regarding the sampling design for Kentucky are provided elsewhere (Browning et al., 1998). In brief, a two-stage cluster sampling was used to construct the sampling frame. At the first stage, 60 counties were selected from the 120 counties in Kentucky using probability proportional to size (PPS) sampling, where size was the number of farms in each of the counties based on the 1987 Census of Agriculture for Kentucky (Williamson and Brannen, 1995). Several counties in the eastern portion of the state were excluded from the study prior to sampling, based on logistical considerations including the availability of telephones and the relatively few farms per county. At the second stage, approximately 125 households in each of the 60 counties were selected from a listing maintained by the Kentucky Agricultural Statistics Service. A short telephone survey was conducted with each of these farm households to identify women aged 18 years and older who lived on the farm. A sample frame of 8,685 women was derived from household members who agreed to a longer telephone interview. Then a simple random sample was selected from farm households within each county, yielding a total sample of 1,167 women to be contacted for the 30-min interview. Telephone interviews in Kentucky were conducted between June 1994 and September 1995 by the University of Kentucky Survey Research Center. A computer-assisted telephone interviewing (CATI) system was used to conduct the interviews.

In Texas, a sampling frame was generated from the county plat listings of farm operators in four counties of the Panhandle region. Counties were purposively chosen because of their agricultural diversity. Since the four counties were unequal in number of listings, a quota sampling technique was applied to each county to provide adequate representation (Lunsford and Lunsford, 1996). A fifth Texas county was added later in the study to achieve the desired final sample size. Within each quota cell (county), every farm in the stratified random selection of farms was called until the quota was reached. The West Texas A&M University Division of Nursing completed 665 telephone surveys between April 1996 and January 1997.

Telephone Survey

A 30-min telephone survey was designed by the Kentucky Farm Family Health and Hazard Surveillance Project team (Browning et al., 1999). The survey included questions on work roles, risk perception, health behaviors, the incidence of farm injuries, as well as characteristics of the farm and demographics of the farm women. Standard questions from the National Health Interview Survey (Massey et al., 1989) and the survey by Garkovich (1985) were used extensively in the development of the survey. The Texas survey was an adaptation of the Kentucky survey. Minor adjustments were made to accommodate the different farm commodities and agricultural work done in the Texas Panhandle region.

Telephone interviewers were trained in administering the phone survey and on the definitions of agricultural terms and questions. Study personnel monitored interviewers over the course of the data collection. No proxy respondents were used in the study. During the telephone interview, respondents were assured of the confidentiality of their responses. The interviews in both states were conducted over several months to minimize the impact of seasonal variation in farmwork.

For the purposes of this article, the self-defined role of the participant is the principal variable of interest. Women were asked to select the primary way they saw their role on the farm: as a farm homemaker, agricultural helper, business manager, full agricultural partner, or independent agricultural producer. These terms were not defined, allowing the respondents to answer the question as they normally would for other surveys. Respondents also reported their participation in the past year in a variety of farm tasks. Queries about farm tasks were specifically tailored for Kentucky and Texas agricultural production. For example, questions about tobacco work were only asked in Kentucky. Demographic variables such as age, years of education completed, paid wages for farmwork, employment off the farm, and health insurance coverage were also examined.

Questions about injury were incorporated to establish baseline prevalence. Farm-related injuries were defined as injuries occurring while doing farmwork or farm chores over the 12 months preceding the telephone interview. In an open-ended query, participants were asked to describe the circumstance preceding the injury event, body part(s) injured, and type of injury.

Data Management and Analysis

Data from the 30-min interviews form the basis for this study. The Kentucky data were entered directly into the CATI system. Texas data, collected using a paper and pencil interview, were coded and double keyed into a computer database. Data were analyzed using SAS software (SAS, 1990). The data analyses for this descriptive report are unweighted and unadjusted for the design characteristics of the study. The unweighted results reflect the characteristics of the sample; previous analyses have demonstrated that the unweighted prevalence estimates are not materially different from the design-adjusted, weighted estimates (Browning et al., 1997). Only descriptive statistics for each group (Kentucky and Texas) are included in this report. No attempt has been made to adjust for differences between the samples.

Data collected in open-ended format were coded into categories at the conclusion of the study. These data were then entered into the quantitative database.

Results

Demographics

A total of 992 women, aged 18 years and older, drawn from a sample of 1167, completed the telephone interview in Kentucky (response rate = 85%). Data from 665 women were collected in Texas. Table 1 presents the demographic characteristics of both Kentucky and Texas participants who identified themselves as farm homemakers. In Kentucky, 46.4% (n = 460) of the respondents identified themselves as farm homemakers, while 46.3% (n = 308) of the Texas women did so. Nearly all the respondents were married and Caucasian. Farm homemakers were compared with other women in the sample using Student's t-test. Kentucky farm homemakers were older than non-homemakers and were less likely to be working off the farm. In Texas these differences were not significant. In both states, the farm homemakers were slightly less educated than non-homemakers.

Farm homemakers in Texas were slightly more educated and younger than their Kentucky counterparts. Due to the age differences, Kentucky farm homemakers reported a higher mean number of years spent on the farm than their Texas

Table 1. Demographic characteristics of Kentucky and Texas farm homemakers

Characteristic	Kentucky (N = 460)		Texas (N = 308)	
	N	(%)	N	(%)
Current Marital Status				
Married	438	95.2	292	94.8
Other	22	4.8	16	5.2
Race				
White, non-Hispanic	450	97.8	304	98.7
Other	10	2.2	4	1.3
Age				
< 30 years	12	2.6	11	3.6
30-49 years	122	26.5	113	36.7
50-69 years	248	53.9	135	43.8
≥ 70 years	78	17.0	49	15.9
Years on Farm				
< 30 years	110	11.9	101	19.2
30-49 years	153	33.7	89	29.5
50-69 years	148	32.6	85	28.2
≥ 70 years	43	9.5	27	8.9
Education				
< High school	137	29.9	26	8.5
High school/GED	204	44.4	115	37.3
> High school	118	25.7	167	54.2
Health Insurance				
Yes	401	87.2	281	91.2
No	59	12.8	27	8.8

counterparts (44.4 years versus 40.4 years). Over three-fourths of the farm homemakers had some type of health insurance.

Table 2 illustrates the work status reported by the farm homemakers. Few farm homemakers in either state were personally paid wages for their farmwork (2.4% in Kentucky, 5.2% in Texas). Over a quarter of the homemakers in both states were employed off the farm. Most respondents who worked were in full-time positions. The most commonly reported types of off-farm employment were in the areas of education, retail trade, manufacturing, and public administration. Nearly one-fourth

Table 2. Work status of Kentucky and Texas farm homemakers

Work Status	Kentucky (N = 460)		Texas (N = 308)	
	N	(%)	N	(%)
Paid for Farmwork				
Yes	11	2.4	16	5.2
No	281	61.1	278	90.2
Did not answer*	168	36.5	14	4.6
Work Off-farm				
Full-time	101	21.9	50	16.2
Part-time	43	9.4	40	13.0
None	316	68.7	218	70.8

* This question was inadvertently omitted from some interviews.

of the respondents in both states indicated the primary reason for their off-farm job was to increase income.

Farmwork Participation

Table 3 describes the participation of the farm homemakers in various agricultural tasks during the previous year. The farm homemakers in both states performed a variety of tasks related to the administration and management of the farm: running errands, paying farm bills, preparing income taxes, and ordering farm supplies.

A surprising number of these farm homemakers also described duties directly related to equipment operation and animal care. Roughly one-third of the farm homemakers in both states reported driving a farm tractor in the past year. Texas farm homemakers were especially involved in hauling goods and animals to market. A number of Texas farm homemakers were involved in heavy equipment operation, especially operating combines and mowing fields. Although the specific types of tasks with animals were not asked, over one-third of the farm homemakers in both states reported working with farm animals.

Well over one-half of the respondents worked in a vegetable garden, either for home consumption or private sale. About 12% of the homemakers in both states reported applying pesticides in the past year (the type and extent of application was not asked). Fully one-fourth revealed active farm community participation by their presence at farm meetings.

Since tobacco is the main crop in Kentucky, a subset of questions relating solely to tobacco production were included in the Kentucky survey. The 133 farm homemakers living on tobacco-producing farms indicated active involvement in tobacco crop production (table 4). The majority of the homemakers on these farms

Table 3. Farm tasks performed by farm homemakers in past 12 months

Task	Kentucky (N = 460)		Texas (N = 308)	
	N	(%)	N	(%)
Work in vegetable garden	337	78.7	152	60.1
Run errands for farm	339	74.7	257	88.9
Pay farm bills	301	65.7	229	78.4
Work with farm animals	174	43.2	102	38.8
Prepare farm income tax	108	32.7	78	31.8
Order farm supplies	140	31.5	129	47.6
Drive a farm tractor	155	34.5	79	29.8
Attend farm meetings	97	25.7	97	36.6
Apply pesticides	50	12.3	29	11.5
Haul goods to market	41	9.6	70	27.4
Haul animals to market	29	7.3	49	20.3
Mow fields	31	6.9	29	11.6
Operate a combine	5	1.7	16	6.3

Table 4. Tobacco-related work of Kentucky farm homemakers (N = 133)*

Task	N	(%)
Set tobacco	80	60.2
Strip tobacco	74	56.1
Pull tobacco	63	50.4
Top tobacco	49	36.8
Cut/house tobacco	33	24.8

* Question was asked only of women who lived on tobacco-producing farms.

participated in setting, stripping, and pulling tobacco. Over a third were involved in topping tobacco, and one-fourth participated in cutting and housing tobacco. These tobacco-related activities are commonly associated with high rates of injury in the general farm labor population (Tim Struttman, personal communication, March 1999).

Injuries

Previous research provided a comparison of injury rates for farm women in Kentucky and Texas (Browning et al., 1997). The rates for injuries sustained while doing farmwork were similar for farm women in both states. Work involving animals was the leading cause of farmwork injuries for women in both Texas (25% of the injuries) and Kentucky (21%). Sprains and strains were the most frequently reported types of injuries. These injuries were related to bending, twisting, lifting, and repetitive motion. Bites, stings, and burns were also reported. When the rates of farmwork injuries were examined for women self-described as homemakers, Kentucky farm homemakers had a lower farmwork injury rate (1.7/100 farm homemakers) compared with other Kentucky farm women (3.0/100 farm women). Texas homemakers also had a lower farmwork injury rate (2.3/100 farm homemakers) compared with other Texas farm women (3.6/100 farm women). The results suggest a relatively modest risk of injury resulting from farm chores for women in both Texas and Kentucky, with perhaps a slightly decreased risk of a farmwork injury among women classified as homemakers in both states compared with other farm women. However, given the relatively small numbers of farmwork injuries reported in both the Kentucky and Texas women, the number of injury events was not sufficient to determine whether these modest injury rate differences were significant.

Discussion

The work of farm homemakers is not confined to the home or off-farm job. Evidence of women's involvement in farm labor is demonstrated by these findings from Kentucky and Texas. Although differences in the type and amount of farm tasks exist between the two samples, these differences may be the result of age disparity between the groups. The younger age of the Texas farm homemakers indicates that their participation in farmwork occurs while other competing life demands, such as child bearing, are at the forefront of the life cycle. The somewhat older group of women surveyed in Kentucky confirms that farmwork continues well into advancing years. Garkovich et al. (1995) noted that farmwork becomes part of the daily life routine of women in farm households. The type of work may change over the years, depending in part on the availability of paid labor, placement in the family unit, and health status.

Findings from this study and previous research indicate that farm homemakers engage in the same types of farmwork activities as other women who identify themselves as agricultural helpers or partners. Rosenfeld (1985) noted a high percentage of farm women who maintained farm records, paid bills, ordered supplies, and prepared tax records. The USDA (1987) found similar patterns in their study of female farm cooperative members. The work of farm homemakers in this study extends beyond the desk to the field, as evidenced by the labor of homemakers in crop and animal production.

Work with animals, particularly cows and calves, is consistent with work done by all farm women, but the proportion of women participating in this activity was greater than expected, since most farms in the study were tobacco/beef cattle operations in Kentucky and cash crops in Texas. Qualitative data from open-ended questions revealed that farm homemakers engaged in activities ranging from feeding baby calves to sorting and penning large animals. The risk associated with animals is reflected by the reports of injuries sustained as direct results of work with farm animals.

The mechanization of agriculture extends to women. A large number of farm homemakers reported driving tractors and operating equipment. The dangers of farm equipment are well documented (Baker et al., 1992; Purschwitz and Field, 1990; Stallones, 1990; USDHHS, 1997). Agricultural machinery is designed for male adults; thus the risk of injury may be greater for females. Muscular strains reported by farm homemakers may be the results of twisting and stretching required to operate farm equipment.

The engagement of Kentucky farm women in tobacco production is historically congruent with the culture of tobacco. Southern women have long been the labor mainstay in the planting of this fragile crop (Garkovich et al., 1995; USDA, 1987). Tobacco work is a classic example of reliance on the seasonal labor of farm homemakers. As work demands on the farm increase, homemakers comprise the reserve labor pool (Garkovich et al., 1995; Sachs, 1983). The recent influx of migrant labor in Kentucky has not served to alter the role of farm homemakers in tobacco production. Tobacco work, particularly pulling plants and housing the crop, requires prolonged periods of bending and twisting. These activities may contribute to the report of musculoskeletal injuries.

Responsibility measures reflect the patterns in division of farm labor. They tend to underestimate the actual farmwork of women and overemphasize the lines of labor division (Hardesty and Harmon, 1986). When task performance rather than responsibility is measured, the labor of farm women becomes evident. In our study, women who did not identify themselves as part of the agricultural production team were clearly a part of the farm labor force. The physical labor of tractor operation, crop production, and the care and raising of large animals indicates that farm homemakers contribute to the bottom line of the farm income in a very tangible way. Unfortunately, their contributions remain off the farm expense records because so few receive paid wages. This finding is consistent with previous research and continues to be a part of the farm family culture (Garkovich et al., 1995; Rosenfeld, 1985; Sachs, 1983, 1996; USDA, 1987).

In addition to their farmwork and household responsibilities, farm homemakers contribute to the gross household income by holding concurrent off-farm jobs. Farm life appears to be conducive to this lifestyle, although the effect of the stress and strain of multiple job holding has not been examined. Women reported various reasons for off-farm employment, especially citing supplemental income and social expansion. These results are consistent with previous studies. Garkovich (USDA, 1987) reported that 46.2% of the women in her study were employed off the farm. The data from Kentucky and Texas indicate that farm homemakers are not homebound but are active in the public work force. The Texas farm homemakers demonstrated less off-farm employment than their Kentucky counterparts, but this may be a function of their younger age, during which child rearing responsibilities are predominant. The Texas farm homemakers were more involved in farm administration and agricultural production. This increased responsibility on the farm may have precluded off-farm employment.

Even though farm homemakers reported fewer farmwork injuries than non-homemakers did, the number of injuries sustained by homemakers warrants attention. Although the severity of injury is minimal, the fact that a group with limited exposure experienced so many injuries supports the idea of novice or intermittent work, such as tobacco work or moving irrigation systems, as being more likely to result in injury. Farm women are often called in as "reserve labor", especially in times of seasonal intensity or when the spouse is employed off the farm (Sachs, 1983, 1996). Injuries reported by farm homemakers in Kentucky and Texas are similar in etiology and severity to findings reported by NIOSH (USDHHS, 1997).

Strengths and Limitations

The Kentucky and Texas studies encompassed large population-based samples covering two geographically distinct rural states. Tobacco and beef cattle operations typified Kentucky farms, while cash grain crops and beef cattle were reported as the primary commodities in Texas. The range of agricultural commodity bases may be representative of the typical Kentucky or Texas panhandle farms.

One of the challenges of studying farm women has been the problem of incongruent role definitions. This study incorporated the categories employed in two previous studies (Rosenfeld, 1985; USDA, 1987) and used identical farm task questions when feasible. While we cannot make direct comparisons between the studies because of sampling differences, this study adds to the body of knowledge about the self-reported role identification of farm women and their contribution to farm labor.

Much farmwork is seasonal in nature and may be so ingrained in daily routine that it is quickly forgotten. The administration of the surveys over a prolonged period of time may have minimized recall decay and enhanced the reported variation of farm tasks. For example, the Kentucky survey was conducted over an entire 12-month period, thus capturing the full agricultural cycle. Seasonal work, like tobacco tasks or crop irrigation, would be more likely to be reported by respondents who had just completed that task.

One of the primary limitations to the data is the self-report of all information from the telephone surveys. The self-reports may underestimate the prevalence of farmwork, farm injuries, and other health conditions reported in the survey. Non-respondents may have differed from respondents across a range of demographic factors that were not known to the investigators (Dillman, 1978). Farm women who immediately perceived they were not part of the agricultural operation of the farm may have declined to participate. Further, farm households without telephones were not contacted in this survey; therefore, we may have missed the very poor and other special populations, such as the Amish and Mennonite farmers. The roles of women in these farm households may be different from those we surveyed. Furthermore, as this sample was composed of predominantly white females living on family owned and operated farms, we could not examine differences in role perception by race.

Implications and Conclusions

In summary, this study supports the findings of previous studies of farm women; however, this article highlights the work contribution of farm women who did not identify themselves as part of the agricultural production force. These results illustrate that homemakers perform a variety of physically demanding farm tasks in addition to their administrative roles.

The cultural history of farm families continues to influence the perception of work roles, with the male head of household being the "farmer" and the spouse being the homemaker. The seasonal work of farm women further serves to obscure their exposure to the risks of agricultural production. This study illustrates the need for more in-depth research on the type and frequency of farm tasks done by farm women, the movement of women in and out of farmwork roles during the course of their lives, and the physical and mental stresses of the multiple work roles assumed by these women.

The number of injuries sustained by women who do not identify themselves as agricultural production workers underscores the need for all members of the farm household to participate in farm safety education. Health educators should consider designing courses and other educational tools for farm homemakers. These courses could include instruction on ergonomics, body mechanics, equipment safety, and animal handling. Medical professionals should be aware that "homemaker" does not imply that the farm woman does not participate in physical farmwork. Medical professionals should take a thorough occupational history with specific questions about farmwork when they encounter farm women as patients.

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