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Characteristics of Women Farm Operators and Their Farms

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Abstract

Over the past three decades, the number of women-operated farms increased substantially. In 2007, women operated 14 percent of all U.S. farms, up from 5 percent in 1978. Women-operated farms increased in all sales classes, including farms with annual sales of $1 million or more. Most women farmers operated very small farms in 2007; about three-fourths of their farms had sales of less than $10,000. A small share of their farms (5 percent), however, sold $100,000 or more in farm products. About half of women-operated farms specialized in grazing livestock—beef cattle, horses, and sheep or goats. In addition to a principal operator, some farms have secondary operators. If both principal and secondary operators are counted, the number of women operators in 2007 expands from 306,200 to nearly 1 million.

Keywords: farm operators, farm structure, farm women, female farm operators, female-operated farms, small farms, women farm operators, women-operated farms, women in agriculture

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Contents

Summary

What Is the Issue?

The share of U.S. farms operated by women nearly tripled over the past three decades, from 5 percent in 1978 to 14 percent by 2007. Although there have always been women farm operators, national-level statistics to track their numbers and examine their characteristics were not available until the Census of Agriculture began asking for principal farm operators' gender in 1978. Using census data from 1978 through 2007, this report provides detailed information about women farmers and the types of farms they operate.

What Did the Study Find?

In this report, "women-operated farms" are defined as those whose principal operator—the individual most responsible for the day-to-day decisions of the farm (or ranch)—is a woman. Based on this definition, results of the analysis were as follows:

- **Women-operated farms increased in all sales classes.** Between 1982 and 2007, the number of women-operated farms grew from 121,600 to 306,200, with increases in all sales classes (measured in 2007 dollars). In contrast, the number of men-operated farms declined by 220,800, with only the largest and smallest sales classes ($500,000 or more and less than $1,000) experiencing growth. Some of the increase in the lower sales classes, however—for both women- and men-operated farms—was due to extensive methodological changes in the Census of Agriculture, introduced over time to include more small farms.

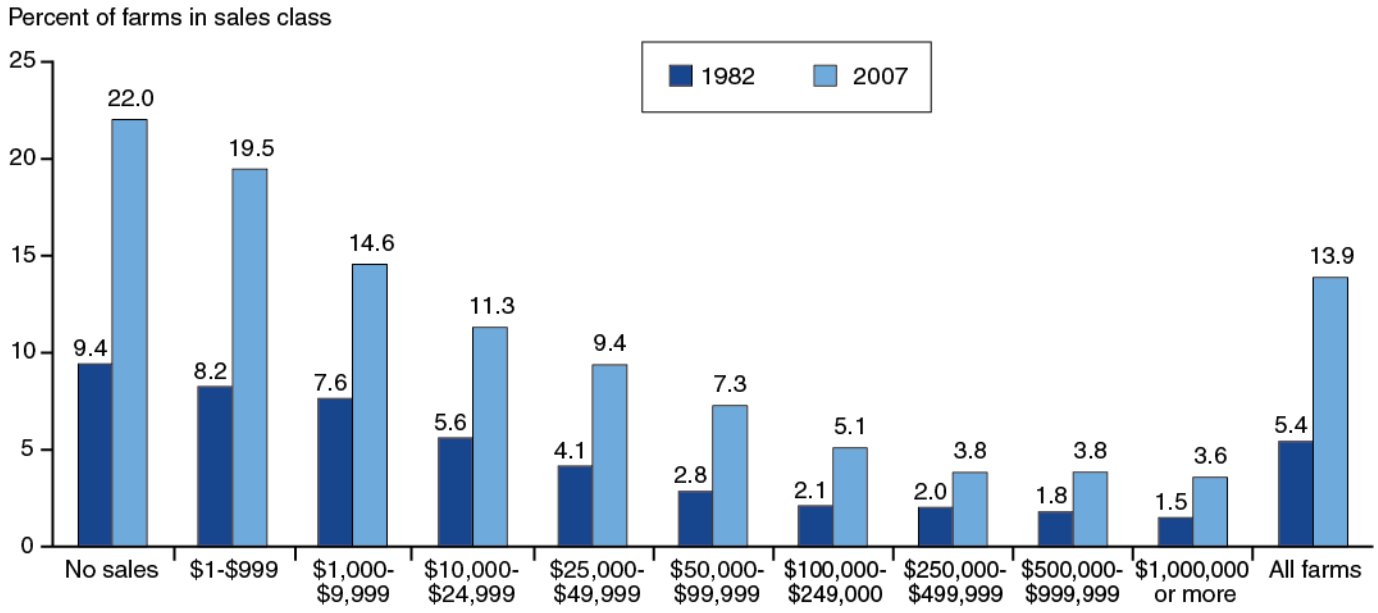
- **Most women-operated farms are very small.** Since 1982, a majority of women-operated farms have had annual sales of less than $10,000. Most of the growth in the number of women-operated farms occurred in that sales class, increasing from three-fifths of all women-operated farms in 1982 to three-fourths by 2007. In both years, the share of women-operated farms with sales less than $10,000 was about 20 percentage points more than the share of men-operated farms with sales that low.

- **Five percent of women-operated farms (15,400 farms) had sales of $100,000 or more in 2007.** Most of these farms specialized in grains and oilseeds, specialty crops, poultry and eggs, beef cattle, or dairy. The poultry and egg specialization alone accounted for roughly half of women-operated farms with sales of $1 million or more.

- **Nearly half of farms operated by women specialized in grazing livestock.** In 2007, 45 percent of women-operated farms specialized in raising beef cattle other than in feedlots (23 percent), horses and other equines (17 percent), or sheep and goats (6 percent). Most of these farms, however, were very small, accounting for only 16 percent of sales by all women-operated farms.

Share of farms and ranches operated by women in each sales class, 1982 and 2007

Women operators increased their share of farms and ranches in all sales classes



Note: Sales classes are expressed in constant 2007 dollars, using the Producer Price Index (PPI) for farm products to adjust for price changes.
Source: USDA, Economic Research Service, compiled from the 1982 and 2007 Censuses of Agriculture.

- **Women-operated farms specializing in poultry, specialty crops, grains, or dairy had the most sales.** Although these farms totaled only 21 percent of women-operated farms, they generated 72 percent of sales from all women's farms.
- **Counting secondary operators increases the number of women farmers to 1 million.** In addition to the principal operator, many farms have one or more secondary operators involved in daily decisions for the farm. When all women operators, principal and secondary, were tallied for the 2007 census, about 1 million were counted as farmers—up from the 306,200 principal operators and totaling 30 percent of all U.S. farmers. Most secondary women farm operators (96 percent) were on farms whose principal operator was a man, generally the woman's husband.

How Was the Study Conducted?

Using data from the Census of Agriculture, the authors tracked long-term trends for women farm operators and their farms from 1978 (or from 1982 for data items not available from the 1978 census) through 2007, the most recent year available. To examine current characteristics of women-operated farms, the authors used data from the 2007 census. The other major data source for the analysis was the Agricultural Resource Management Survey (ARMS), an annual USDA survey jointly conducted by the National Agricultural Statistical Service (NASS) and the Economic Research Service (ERS). The ARMS provides information not included in the Census of Agriculture about farm finances and the operator's household income and educational attainment.

Introduction

Farms and ranches operated by women have more than doubled in the last 30 years. Since 1978, the first year the Census of Agriculture collected data on the gender of farmers, the share of women-operated farms has grown from 5 percent of U.S. farms to 14 percent (fig. 1). The number of women-operated farms increased in all sales classes (based on annual sales, with adjustments for price changes). In contrast, farms operated by men declined substantially, with only the largest and smallest sales classes ($500,000 or more and less than $1,000) increasing.

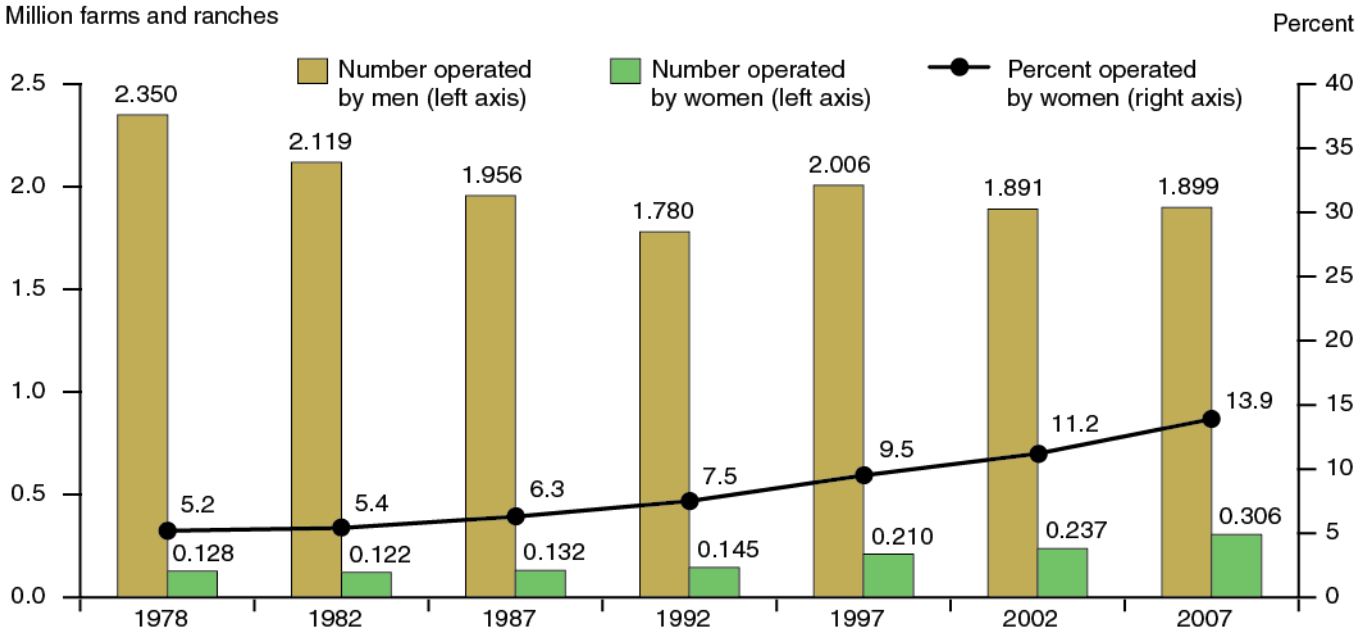
Women-operated farms are those whose principal operator—the individual most responsible for day-to-day management of the farm—is a woman (see the appendix for a more detailed definition). Unless otherwise qualified, the term "women operators" refers to principal operators only. The term "farm," when used by itself in the report, includes ranches.

This report examines various characteristics of women farm operators and their farms, including:

- Changes in the distribution of women-operated farms and ranches by sales class (with sales measured in constant 2007 dollars).
- Age, education, and off-farm work and income of women principal farm operators.

Figure 1
U.S. farms and ranches by gender of the principal operator, 1978-2007 censuses

The share of farms and ranches operated by women has grown to 14 percent



Source: USDA, Economic Research Service, compiled from Census of Agriculture data, various years.

- Financial performance of women-operated farms.
- Farm and operator characteristics by commodity specialization.
- Characteristics of women-operated farms selling at least $100,000 in farm products.
- Trends in women's farmland holdings (average acreage per farm, percentage of U.S. farmland, and tenure).
- Sources of Government payments to women-operated farms.

The report also discusses women who are secondary operators of farms. According to the 2007 Census of Agriculture—the latest census—women operated more than 300,000 farms and ranches as the principal operator. (There is one principal operator for each farming operation, by definition). Many farms, however, have more than one operator involved in daily decisions. When both principal and secondary operators are tallied for the 2007 census, about 1 million women are counted as U.S. farmers.

Data Sources

Most data used in the study are from various Censuses of Agriculture. The 2007 census is used to analyze current conditions, while earlier censuses, back to 1978, add historical perspective. In some cases, we can follow trends for women farmers only from 1982 forward because the 1978 census provides less data on women farmers than later censuses.

While we use publicly available census data, we also use confidential farm-level census records for 1982-2007, accessed under an agreement with the USDA's National Agricultural Statistics Service (NASS), which administers the census. The agreement is designed to protect data security and confidentiality. Access to individual observations allows more analyses than are possible from published tables or public-use data files.

In addition, we use the Agricultural Resource Management Survey (ARMS), an annual survey conducted jointly by USDA's National Agricultural Statistical Service (NASS) and Economic Research Service (ERS) agencies. ARMS data are used to fill gaps in the 2007 census data for statistics on farm finances and farm operators' household income and educational attainment. (For more information about the data sources, see the appendix.)

Both the Census of Agriculture and ARMS use the USDA definition of a farm: Any place that produced and sold, or *normally* would have produced and sold, at least $1,000 of agricultural products during a given year. In determining whether an establishment is a farm, Government payments count as sales. If a place has sales less than $1,000, a "point system" assigns points for acres of various crops and head of livestock—1 point equals $1 in potential sales—to estimate normal sales. "Point farms" are those that have actual sales and Government payments totaling less than $1,000 but points plus actual sales and Government payments worth $1,000 or more.

Previous ERS Research

ERS has a history of examining the characteristics of women-operated farms and following changes in the number of these farms. For example, the *Family Farm Report* series periodically estimates women's share of all principal farm operators (e.g., Hoppe et al., 2007). Some *Family Farm Reports* have also devoted a major section to women-operated farms. For example, Korb (2005) examined growth in the number of women-operated farms and changes in their characteristics over time. She also found that women-operated farms were more likely to be new entrants to agriculture than men-operated farms. An *Amber Waves* article documented the growing involvement of women in horse farming (Offutt and Korb, 2006). More recently, a report on changes in farm structure over the past 30 years discussed the growing share of U.S. farms operated by women since 1982 (O'Donoghue et al., 2011, p. 8).

Other ERS reports have examined issues in agriculture that have a bearing on women-operated farms. For example, Nickerson and Hand (2009) examined enrollment in conservation programs by specific groups of farmers, including women. In addition, a report on the organization of broiler production found that women made up a larger share of operators on broiler farms than on other farms (MacDonald, 2008, pp. 19-20).

The current report updates the previous reports by publishing the latest available information. In addition, it provides more detailed information for a variety of topics related to women-operated farms, including increases in their number by constant dollar sales class, farm characteristics by specialization, financial performance by sales class, and receipt of Government payments, along with information on secondary women operators. Our access to both individual census observations and the ARMS made these detailed analyses possible.

Shifts in the Size Distribution of Farms, 1982-2007

Sales are arguably a better general measure of a farm's size than its acreage. Farmland can be of varying quality, it can be farmed at different levels of intensity, and it can produce a variety of commodities. As a result, production per acre can vary widely from farm to farm. Sales measure production in dollars rather than the level of a single input (land).

When sales class is used to measure trends in farm size over time, it is important to adjust the sales for changes in agricultural prices. Price variations can change revenue without any change in the physical volume of production. Accordingly, in this report, we adjust sales of agricultural products for price changes using the Producer Price Index (PPI) for farm products, which is the same as the NASS index of prices received by farmers for all farm products. The distribution of farms by sales class is expressed in 2007 constant dollars for both 1982 and 2007 in table 1.[1] Therefore, changes in the number of farms by constant dollar sales classes reflect changes in the quantity of products sold, not the 43-percent increase in agricultural prices between 1982 and 2007.

More Women-Operated Farms in All Sales Classes

The total number of women-operated farms grew by 152 percent between 1982 and 2007, and each sales class experienced a gain. The rate of increase was particularly large for farms with no sales, which grew twelvefold. Rapid growth also occurred at the other end of the size distribution. Women-operated farms with sales of $500,000 to $999,999 grew by 277 percent, while those with sales of $1 million or more grew by 714 percent, from less than 300 in 1982 to nearly 2,000 in 2007. Most of the million-dollar farms operated by women in 2007 specialized in poultry and eggs (46 percent) or specialty crops (21 percent).

In contrast to the substantial growth in the number of women-operated farms, the number of men-operated farms declined by 10 percent. Men-operated farms increased in only three sales classes—sales less than $1,000 (point farms, defined on page 2), $500,000 to $999,999, and $1,000,000 or more. The trends for the number of men-operated farms by sales class were similar to those for all U.S. farms, as one would expect, given their 86-percent share of all farms (see box, "Shifts in the Sales Class of U.S. Farms: An Explanation," p. 6).

A Growing Share of Women-Operated Farms

Since the number of women-operated farms grew more rapidly than that of men-operated farms in each sales class, women principal operators increased their share of farms in every sales class during the past 25 years (fig. 2). Women operators accounted for 14 percent of all farms, but their share of farms with no sales and sales of $1 to $999 were even larger, 22 and 20 percent, respectively. For sales exceeding $100,000, however, women's share of farms remained small, in the 4- to 5-percent range.

[1]Adjusting sales for price changes automatically adjusts sales classes for price changes. If the sales for 1982 are expressed in 2007 dollars for individual farms, so are the sales classes when individual farms are sorted by the level of their sales.

Table 1

Number of farms or ranches by gender of principal operator and constant-dollar sales class,[1] 1982 and 2007

Sales class[1] (2007 constant dollars)	1982		2007		
	Farms or ranches	Distribution	Farms or ranches	Distribution	Change, 1982-2007
	Number	*Percent*	*Number*	*Percent*	
All farms:					
Point farms[2]	254,097	11.3	688,833	31.2	171.1
No sales	99,576	4.4	521,208	23.6	423.4
$1-999	154,521	6.9	167,625	7.6	8.5
$1,000-$9,999	700,252	31.2	630,327	28.6	-10.0
$10,000-$99,999	855,083	38.2	528,473	24.0	-38.2
$100,000-$249,000	282,809	12.6	147,500	6.7	-47.8
$250,000-$499,999	97,894	4.4	93,373	4.2	-4.6
$500,000-$999,999	34,650	1.5	60,777	2.8	75.4
$1,000,000 or more	16,191	0.7	55,509	2.5	242.8
Total	2,240,976	100.0	2,204,792	100.0	-1.6
Men-operated farms:					
Point farms[2]	231,974	10.9	541,417	28.5	133.4
No sales	90,190	4.3	406,431	21.4	350.6
$1-999	141,784	6.7	134,986	7.1	-4.8
$1,000-$9,999	646,812	30.5	538,575	28.4	-16.7
$10,000-$99,999	817,785	38.6	476,809	25.1	-41.7
$100,000-$249,000	276,906	13.1	140,002	7.4	-49.4
$250,000-$499,999	95,921	4.5	89,807	4.7	-6.4
$500,000-$999,999	34,031	1.6	58,442	3.1	71.7
$1,000,000 or more	15,948	0.8	53,531	2.8	235.7
Total	2,119,377	100.0	1,898,583	100.0	-10.4
Women-operated farms:					
Point farms[2]	22,123	18.2	147,416	48.1	566.3
No sales	9,386	7.7	114,777	37.5	1,122.9
$1-999	12,737	10.5	32,639	10.7	156.3
$1,000-$9,999	53,440	43.9	91,752	30.0	71.7
$10,000-$99,999	37,298	30.7	51,664	16.9	38.5
$100,000-$249,000	5,903	4.9	7,498	2.4	27.0
$250,000-$499,999	1,973	1.6	3,566	1.2	80.7
$500,000-$999,999	619	0.5	2,335	0.8	277.2
$1,000,000 or more	243	0.2	1,978	0.6	714.0
Total	121,599	100.0	306,209	100.0	151.8

Note: Constant-dollar sales classes cannot be prepared before 1982 due to missing weights in the census computer files. See the appendix for more information.

[1]Sales classes are defined in 2007 dollars, using the Producer Price Index for farm products to adjust for price changes. Point farms are identified using current dollars—with no adjustment for price changes—because the minimal level of sales in the farm definition is not adjusted for price changes.

[2]Point farms have sales of less than $1,000 (current dollars) but are still considered farms because they would be expected to normally sell at least $1,000 of agricultural products.

Source: USDA, Economic Research Service, compiled from 1982 and 2007 Census of Agriculture data.

Shifts in the Sales Class of U.S. Farms: An Explanation

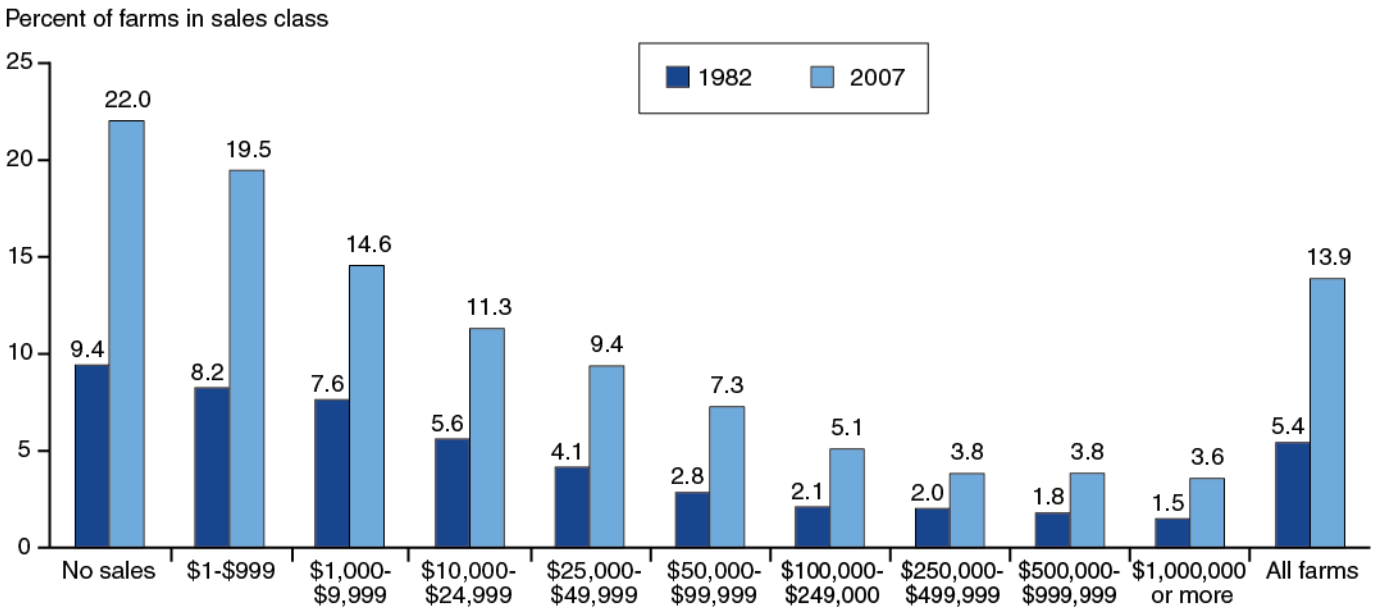
Between 1982 and 2007, the number of farms in the United States was fairly stable, declining by only 1.6 percent (table 1). This apparent stability, however, conceals a major redistribution of farms by sales class. Farms with sales of at least $1 million ("million-dollar farms") tripled in number, and the number of farms with sales between $500,000 and $999,999 grew by 75 percent. At the other end of the size distribution, the number of point farms (sales less than $1,000, defined on page 2) more than doubled, largely because of a fivefold increase in the number of farms with no sales. The number of farms declined in all the other sales classes. The total farm count was stable because increases in point farms and farms with sales of $500,000 or more nearly offset the 536,000 decline in the number of farms with sales between $1,000 and $499,999.

Profitability generally increases with sales, which gives larger farms—such as those with sales above $500,000—a competitive advantage from economies of size in farming (Hoppe et al., 2008, p. 33). As a result, these larger farms have increased in number as the number of farms in most of the other sales classes declined.

Farms at the lower end of the sales class distribution, particularly point farms, can increase in number independently of the farm economy because their operators depend almost entirely on off-farm income. Their off-farm income allows them to farm—despite losses typically generated by the farm business—as long as off-farm income is large enough is to cover the losses. Many point farms actually are rural residences where the household's main reason for entering farming (on a very small scale) is the lifestyle it provides. Why farmers continue to farm despite negative returns is discussed later in the report.

Figure 2
Share of farms and ranches operated by women in each sales class, 1982 and 2007

Women operators increased their share of farms and ranches in all sales classes



Note: Sales classes are expressed in constant 2007 dollars, using the Producer Price Index (PPI) for farm products to adjust for price changes.
Source: USDA, Economic Research Service, compiled from the 1982 and 2007 Censuses of Agriculture.

Thus, most of the growth in women-operated farms was concentrated in the lower end of the size distribution (table 2). The total number of women-operated farms increased by 184,600 between 1982 and 2007, and 89 percent of the increase occurred among farms with sales less than $10,000, largely among point farms. At least some of the increase in women-operated farms with sales less than $10,000 was due to methodological changes in the Censuses of Agriculture since 1982 that increased the count of small farms (see "Changes in Census Methodology" in the appendix, p. 43). The undercoverage adjustment (to compensate for farms missed by the census), for example, had a larger impact on women-operated farms with sales under $10,000 than on larger farms. The adjustment increased the count of women-operated farms with sales less than $10,000 by 37 percent in 1997, compared with 9 percent for larger farms.[2]

Farms with sales less than $10,000 now account for 78 percent of the farms operated by women, up 16 percentage points from 1982 (table 1). The share of men's farms with sales less than $10,000 also increased—from 41 percent to 57 percent—largely as a result of a 351-percent growth rate for farms with no sales. The high share of women-operated farms with sales less than $10,000 affects women farmers' demographic characteristics, commodity specialization decisions, trade-offs between farm and off-farm work, participation in government programs, and landholdings.

Table 2
Change in the number of women-operated farms and ranches by sales class, 1982 to 2007

Sales class[1] (2007 constant dollars)	Women-operated farms and ranches			Distribution of change
	1982	2007	Change	
	Number			*Percent*
No sales	9,386	114,777	105,391	57.1
$1 to $999	12,737	32,639	19,902	10.8
$1,000 to $9,999	53,440	91,752	38,312	20.8
$10,000 to $99,999	37,298	51,664	14,366	7.8
$100,000 or more	8,738	15,377	6,639	3.6
Total	121,599	306,209	184,610	100.0

Note: This table is derived from table 1, with the sales classes condensed for ease of exposition.

[1]Sales classes are defined in 2007 dollars, using the Producer Price Index for farm products to adjust for price changes.

Source: USDA, Economic Research Service, compiled from 1982 and 2007 Census of Agriculture data.

[2]The undercoverage adjustment had a smaller effect on the count of men-operated farms. The adjustment increased the number of men-operated farms by 28 percent for farms with sales less than $10,000 and by 5 percent for those with sales of $10,000 or more.

Characteristics of Principal Women Farm Operators, With Gender Comparisons

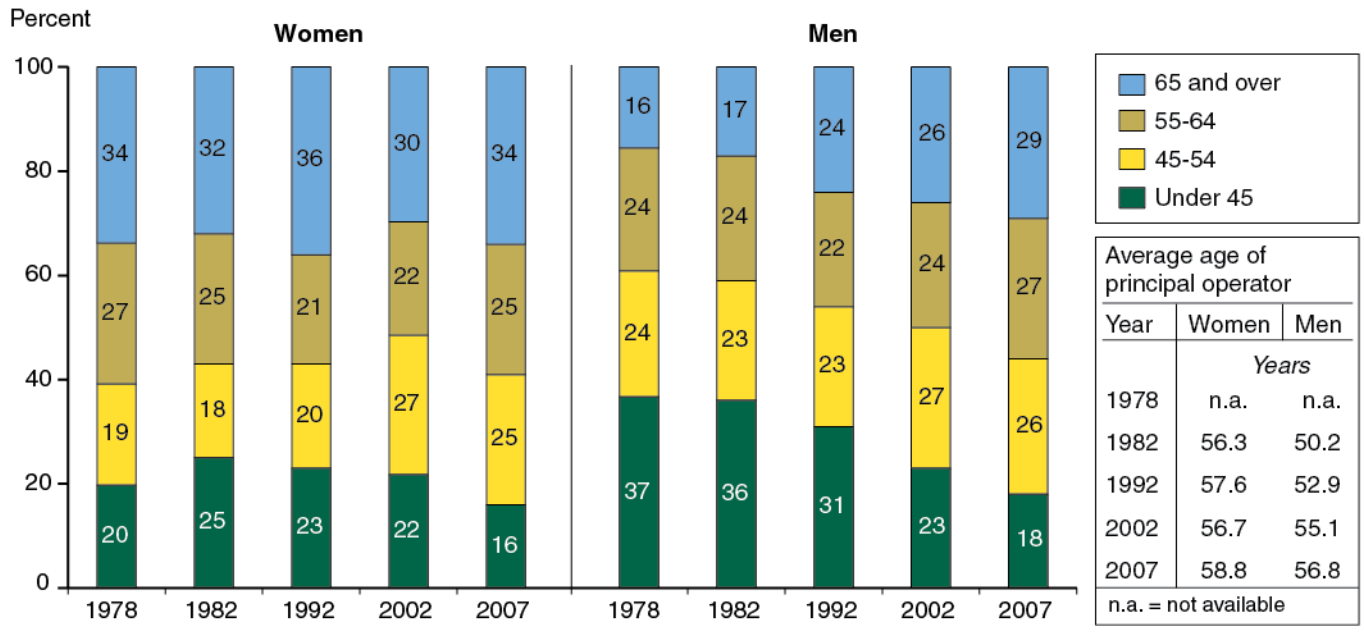
Women and men principal operators differ in age, educational attainment, and participation in the nonfarm economy. The average age of women operators is higher than that of male operators, but this difference between the genders has declined since 1982. Women farm operators also have more education than both their male counterparts and U.S. householders in general. Although fewer women than men operators report off-farm work, the gender difference has diminished since 1982.

Women Farm Operators Are Older

Women farmers are older on average than male farmers, but the gap between their ages is narrowing. The average age of women operators was 59 years in 2007, compared with 57 years for male operators (fig. 3). The average age for women, however, increased by only 3 years between 1982 and 2007, while the average for men increased by 7 years. As a result, the gap between men's and women's average ages fell from 6 years in 1982 to 2 years in 2007.

The number of men operating farms is decreasing, which means that more men are leaving farming than are entering. Few younger farmers enter farming relative to the larger population of older existing farmers, resulting in an aging population of male farmers over the study period. The aging of male farmers is apparent in figure 3 from the 7-year increase in their average age, the near-doubling of the share of those at least 65 years old, and the halving of the share of those less than 45 years old.

Figure 3
Principal operators by age and gender, selected 1978-2007 censuses
Aging trend is clearer for men operators



Average age of principal operator

Year	Women	Men
	Years	
1978	n.a.	n.a.
1982	56.3	50.2
1992	57.6	52.9
2002	56.7	55.1
2007	58.8	56.8

n.a. = not available

Source: USDA, Economic Research Service, compiled from Census of Agriculture data, various years.

In contrast, the number of women entering farming exceeds the number exiting. This dampens the effects of aging, and as a result, trends in the distribution of women operators by age class are less pronounced. Women operators' average age increased, but only by a modest amount, and the share of women operators at least 65 years old has been roughly one-third since 1978.

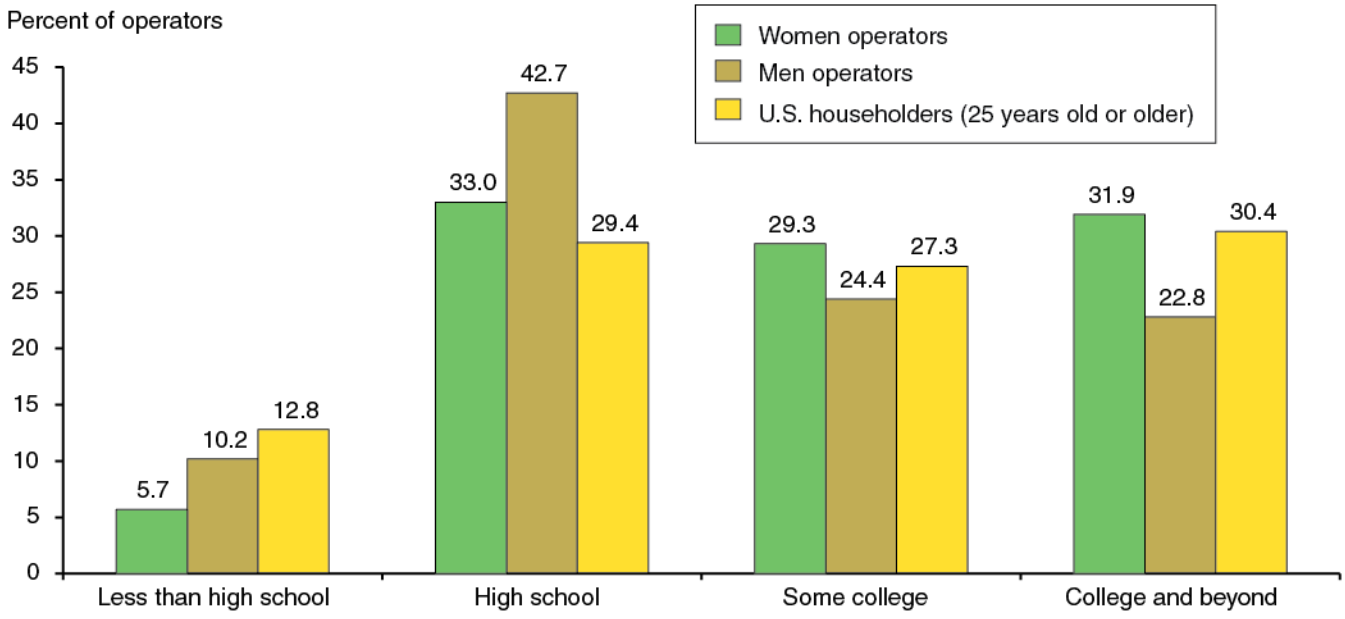
Nevertheless, farm operators, both women and men, are much older on average than their self-employed counterparts in nonagricultural industries. Only 8 percent of the nonagricultural self-employed (U.S. Department of Labor, Bureau of Labor Statistics, 2008, p. 224) are 65 years old or more, compared with 34 percent of women principal farm operators and 29 percent of men principal farm operators. The farm is the home for most farm operators, which means that farmers can phase out of the business gradually over a decade or more. Improved healthcare and advances in farm equipment have also allowed operators to continue farming later in life (Mishra et al., 2005, p. 14), as have the introduction by USDA of the Conservation Reserve Program (CRP; administered by the Farm Service Agency) and the Wetlands Reserve Program (WRP; administered by the Natural Resources Conservation Service).[3]

Women Farm Operators Are More Highly Educated

On average, women farmers and ranchers are better educated than their male counterparts (fig. 4). Approximately 61 percent of women principal operators have

Figure 4
Educational attainment of principal operators by gender, 2007

A larger share of women operators went to college than of men operators or all U.S. householders



Source: USDA, National Agricultural Statistics Service and Economic Research Service, 2007 Agricultural Resource Management Survey for farm operators, and U.S. Bureau of the Census, Current Population Survey for all U.S. households.

[3]Participating in land retirement programs is attractive to older operators because it gives them a guaranteed income stream with little labor or capital required. Since Government payments count as sales in the farm definition, establishments run by older operators are still counted as farms if CRP or WRP payments are at least $1,000, even if the establishment has no sales.

education beyond high school (with 32 percent having a college degree and 29 percent some college), compared with only 47 percent of male principal operators. The shares of women farmers who continued their education beyond high school also exceeded those of all U.S. householders by 4 percentage points. At the other end of the educational spectrum, only 6 percent of women operators reported not graduating from high school, compared with 10 percent of men operators and 13 percent of all U.S. householders.

The share of women primary farm operators who reported either attending or completing college was larger than for men operators, regardless of their age, occupation, or whether they were retired (table 3). The shares with college experience also differed by sales class. Women who operate farms with sales less than $250,000 were more likely than their male counterparts to have at least some college. Once sales exceeded $250,000, however, differences between male and female operators narrowed substantially.

Women Operators Often Rely on Off-Farm Work and Income

The share of women working off-farm has grown substantially, from 42 percent in 1982 to 59 percent in 2007 (fig. 5), an increase of 17 percentage points. The share of men working off-farm also increased, although the increase was less pronounced at approximately 12 percentage points. Off-farm work is most common among the

Table 3
Share of principal operators with at least some college[1] by gender of principal operator, 2007

Item	Men	Women	Total
	Percent with some college[1]		
All principal operators	47.1	61.3	48.7
Operators by age:			
Less than 45 years	53.0	71.1	54.8
45 to 54 years	50.3	78.9	53.5
55 to 64 years	49.3	56.9	50.0
65 years or more	37.9	47.7	39.2
Operators by occupation:[2]			
Farming or ranching	40.3	60.7	41.9
Work other than farming	55.5	71.5	57.2
Not in the paid labor force	39.5	44.2	40.5
Operators by retirement status:			
Retired	34.6	50.9	37.1
Not retired	49.9	64.9	51.4
Operators by sales class:			
Less than $10,000	46.2	62.2	48.5
$10,000 to $99,999	46.7	55.4	47.4
$100,000 to $249,999	46.6	74.7	47.5
$250,000 or more	53.9	57.3	54.0

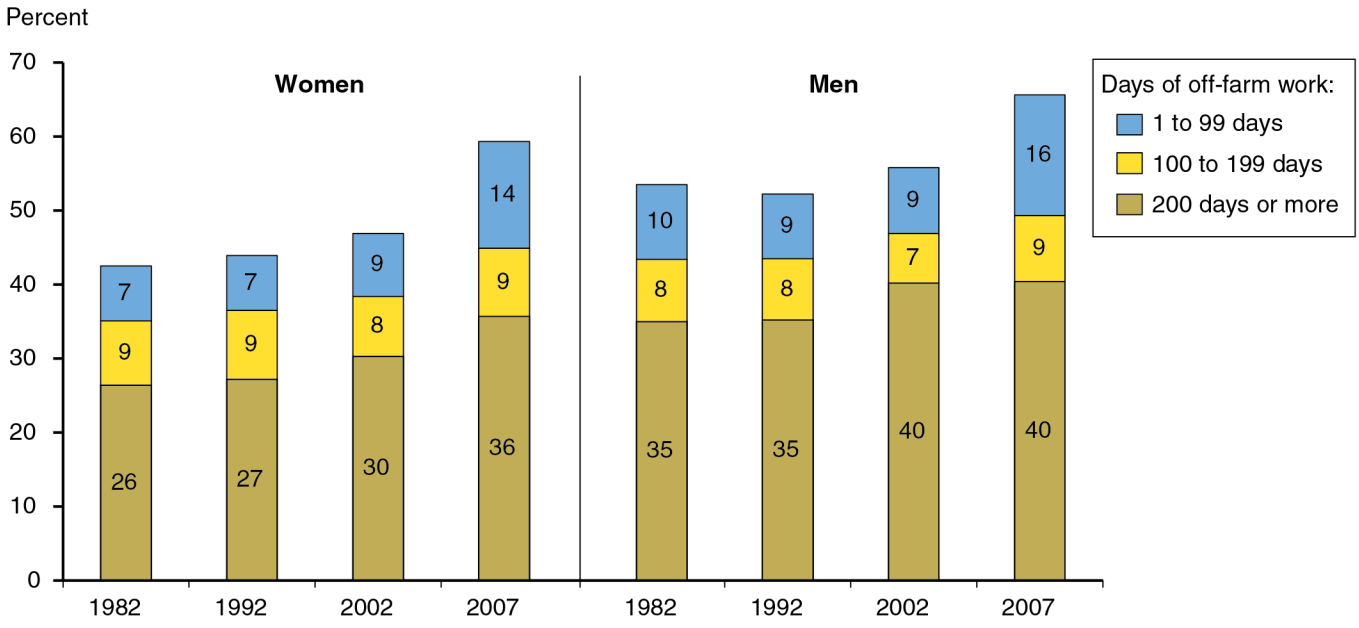
[1]Includes operators who attended or graduated from college.

[2]The occupational classification used in the Agricultural Resource Management Survey differs from that used in the Census of Agriculture. The census uses only two categories—farming and other.

Source: USDA, National Agricultural Statistics Service and Economic Research Service; 2007 Agricultural Resource Management Survey.

Figure 5
Principal operators by days of off-farm work and gender, selected 1982-2007 censuses

Women's off-farm work approaches that of men



Note: Beginning with the 2002 census, days of off-farm work are imputed if not reported.
Source: USDA, Economic Research Service, compiled from Census of Agriculture data, various years.

operators of farms with sales less than $10,000; about three-fourths of those operators worked off-farm in 2007, compared with about half of the operators of larger farms. The increase in the number of farms with sales less than $10,000 helps account for the increase in off-farm work reported by farm operators, both male and female.

However, fewer women operators reported off-farm work than men operators in 2007 (59 versus 65 percent, respectively). Most of the difference occurred in the share of operators reporting 200 or more days of off-farm work. The higher share of women operators at least 65 years old—who are less likely than younger operators to work off-farm—helps explain the lower share of off-farm work reported by women. The share of women operators working off-farm varies substantially by specialization, however, as will be discussed later.

Women's off-farm work is reflected in the sources of their income (table 4). For women operators in the aggregate, the median farm earning was -$4,200; that is, more than half of women operators lost money farming in 2007 after accounting for expenses, including depreciation. Their median household income, however, was $42,600, reflecting substantial off-farm income. Because roughly three-fourths of women-operated farms have sales less than $10,000, median household income by source is similar for all women operators and for women operating farms selling less than $10,000 of farm products. Farms with sales that low are too small to generate much income for the operator's household, so the households rely heavily on off-farm income. Their median off-farm income was $50,600, practically the same as the $50,200 median income for all U.S. households. Women who operate farms in the next sales class ($10,000 to $99,999) also relied heavily on off-farm

income, on average. Even among women with sales of $100,000 or more, median off-farm income was $36,800. (See box, "Defining Operator Household Income," for information about how operator household income is calculated.)

Table 4
Median operator household income by gender of principal operator, 2007

Item	Sales class			All farms
	Less than $10,000	$10,000 to $99,999	$100,000 or more	
	Dollar per household			
Women operators:				
Total household income	42,580	41,362	75,974	42,580
Farm earnings	-4,399	2,660	27,894	-4,212
Off-farm income	50,632	41,108	36,849	47,503
Men operators:				
Total household income	52,332	51,752	90,982	56,400
Farm earnings	-3,627	1,130	48,213	-1,744
Off-farm income	56,250	49,500	29,406	50,750

Note: Medians are not additive. Thus, farm income plus off-farm income do not add to total household income.
Source: USDA, National Agricultural Statistics Service and Economic Research Service, 2007 Agricultural Resource Management Survey.

Defining Operator Household Income

Operator household income measures the income available to the household of the principal operator. It includes any income received by household members. As measured in the Agricultural Resource Management Survey (ARMS), it has three components:

1. **Farm business income.** In the case of unincorporated businesses and S-corporations, the household's farm business income is calculated as its share of net cash income generated by the farm. Net cash income is gross cash income—the sum of the sales of commodities, other miscellaneous farm-related income, and Government payments—less cash expenses and depreciation.[1] The household of the principal operator does not necessarily receive all the business income generated by its farm. For example, business income may be shared with partners or relatives who hold an interest in the farm. In the case of C-corporations, farm business income is the dividends paid to household members. Wages paid to the operator by farms organized as S- or C-corporations are also included in farm business income.
2. **Income from other farming activities.** This component consists of net income from a farm other than the one being surveyed, wages paid to household members other than the operator, and net income from farmland rental.
3. **Off-farm income.** Off-farm income can come from earned sources—such as wages, salaries, and self-employment income—or from unearned sources, such as interest, dividends, and transfer payments such as social security.

Farm earnings—the income received from farming—is the sum of the first two components.

[1]Depreciation is not a cash expense, but it is deducted to be consistent with accounting conventions used in the Current Population Survey (CPS). The CPS is the source of official income statistics for the United States.

Returns to Women-Operated Farms

We examine farm profitability using the rate of return on equity, a commonly used profitability measure that compares net farm income with the net worth of the farm. In the case of unincorporated farms, net farm income is reduced to reflect the opportunity cost of management and of operator and unpaid labor.

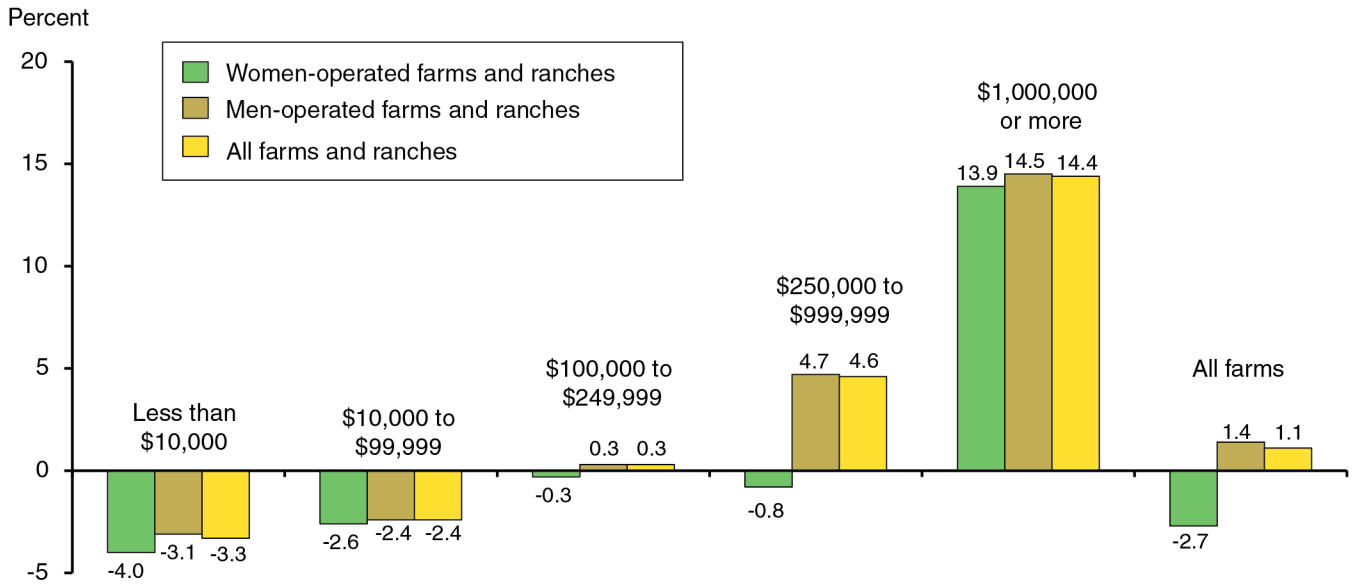
Women's Smaller Farms Lead to Lower Returns

Returns to farming typically increase with sales, as shown in figure 6, reflecting the low farm earnings for households operating farms with sales less than $100,000. The positive relationship between returns and sales is most apparent for all farms and for men-operated farms. The relationship also occurs for women-operated farms, with one exception: the rate of return for women-operated farms does not increase as sales increase to the $250,000 to $999,999 level. Most of the women-operated farms in that sales class are livestock farms—largely poultry operations—and those women-operated livestock farms collectively experienced a -3.2-percent rate of return on equity in 2007. The number of women-operated farms in the sales class is quite small, however, accounting for only 2 percent of all women-operated farms.

Overall, the rate of return on equity is lower for women (-2.7 percent) than for men (1.4 percent). This is largely the result of the heavy concentration of women on farms with sales less than $10,000, which have the lowest rates of return. Approximately 80 percent of women operate farms that small, compared with only

Figure 6
Average rate of return on equity by gender and sales class, 2007

For women-operated farms, return on equity turns positive when sales exceed $1 million



Note: The rate of return on equity is an index of profitability, calculated as:
Return on equity = 100% X (net farm income – charge for operator and unpaid labor – charge for management)/net worth.
Source: USDA, National Agricultural Statistics Service and Economic Research Service, 2007 Agricultural Resource Management Survey.

60 percent of men. The rate of return is actually similar for women- and men-operated farms in each sales class, except for the $250,000 to $999,999 class.

Farming Despite Negative Returns

The rate of return on equity can be used to value alternative investments. For example, consider the -4.0 percent rate of return on equity for women who operate farms with sales less than $10,000. From the perspective of current income generation, it would seem more rational for these operators to sell the farm and place the proceeds in certificates of deposit paying low—but positive—interest. The rate of return on equity may be particularly important for older operators, those 65 or older, since they may be less able to increase their off-farm income.

Nevertheless, the number of women-operated farms has grown over the years. There are benefits from farming that are not included in measures like current net farm income and return on equity (Hoppe et al., 2005). Farming provides the opportunity for capital gains in the long run, as well as the opportunity to leave a bequest to heirs. It also allows farm households to use losses from farming as writeoffs against off-farm income (Durst, 2009, pp. 4-6). Farmers may also value the lifestyle that farming provides. Farmers—male or female—may accept low or negative current returns from farming if they value benefits from farming other than the net income the farm currently generates. Of course, operators must have enough off-farm income to absorb any negative cash flow from the farming business, even if long-term prospects for capital gains are promising.

Farms and Sales by Specialization

A farm is said to specialize in a commodity if that commodity, or commodity group, accounts for at least half the farm's market value of sales. In some cases, we combined similar specializations—such as various types of grains and oilseeds—for ease in presentation and to provide a larger number of farms in a specialization category for analysis. For more information about the specializations used here, see box "Commodity Specializations," p. 16.

About 45 percent of women operators specialize in grazing livestock, namely, beef cattle not in feedlots, horses, and—to a much lesser extent—sheep and goats (fig. 7). These three specializations, however, make up only 16 percent of sales by women-operated farms. Farms specializing in poultry, specialty crops, grains and oilseeds, or dairy account for the bulk of sales by women-operated farms (72 percent), although these farms make up only a 21-percent share of all women-operated farms.

Although the largest share of women farmers specialized in beef cattle farming, only 11 percent of the U.S. farms with that specialization were operated by women in 2007 (fig. 8). In contrast, women operated a particularly high share of horse farms, 31 percent in 2007, up from 17 percent in 1982. Between 1982 and 2007, the number of horse farms in the United States tripled, but those operated by women increased sixfold.

Commodity Specializations

Commodity specializations used in this report are outlined in the table below. The commodity (or commodity group) for each specialization accounts for at least 50 percent of the farm's sales.

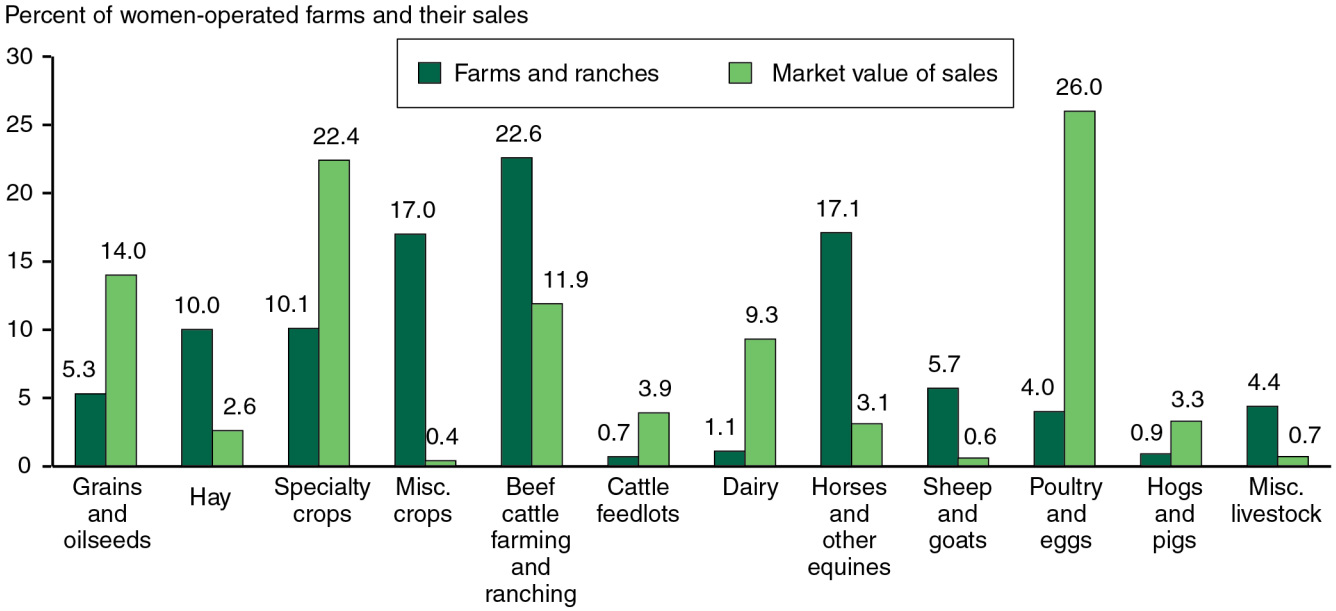
Each specialization must have at least 2,000 farms operated by women to be discussed in this report. Excluding specializations with fewer farms avoids disclosure issues and limits the number of specializations for ease in presentation. Specializations not meeting this criterion include: tobacco, cotton, sugarcane, sugarbeets, peanuts, aquaculture, apiaries, and rabbits and other fur-bearing animals. The excluded specializations accounted for 1 percent of farms operated by women and 2 percent of their sales. Tables and graphs include these specializations in the totals but do not show them separately.

Specializations included	Description
Grains and oilseeds	Farms primarily engaged in producing grains or oilseeds as a crop, seeds for oilseed or grain production, or corn or grain silage.
Hay	Farms primarily engaged in producing hay of various types.
Specialty crops	Farms primarily engaged in producing vegetables and melons, fruits and tree nuts, or greenhouse, nursery, and floriculture products.
Miscellaneous crops	This specialization consists of: • Farms specializing in miscellaneous crops not mentioned above, such as grass seed, herbs, hops, maple sap gathering, or tea. • Farms growing a mixture of crops where no crop or group of crops—such as grains and oilseeds—accounts for half of sales. • Government-payments-only farms, whose only agricultural activity is receiving Government payments.
Beef cattle farming and ranching	Farms primarily engaged in raising cattle, including cows for dairy herd replacement.
Cattle feedlots	Farms primarily engaged in fattening cattle for slaughter.
Dairy	Farms primarily engaged in milking dairy cows.
Horses and other equines	Farms primarily engaged in raising horses, ponies, mules, or donkeys.
Sheep and goats	Farms primarily engaged in raising sheep, lambs, or goats or fattening lambs for slaughter. Also includes farms primarily engaged in milking dairy goats.
Poultry and eggs	Farms primarily engaged in breeding, hatching, or raising poultry for meat or eggs.
Hogs and pigs	Farms primarily engaged in raising hogs and pigs.
Miscellaneous livestock	This specialization consists of: • Farms specializing in livestock not mentioned above, such as alpacas, bison, elk, or laboratory animals. • Farms growing a mixture of livestock in which no species or group of species accounts for half of sales. • Farms with only 100 acres or more of pasture or rangeland but no grazing livestock. (These are point farms, with 10 points assigned for each acre.)

For more information, see the documentation for the 2007 Census of Agriculture (U.S. Dept. of Agriculture, National Agricultural Statistics Service, 2009, pp. B-9 to B-11) or the Census Bureau's Web Page on the North American Industry Classifications System (http://www.census.gov/eos/www/naics/).

Figure 7
Women-operated farms and ranches by specialization, 2007

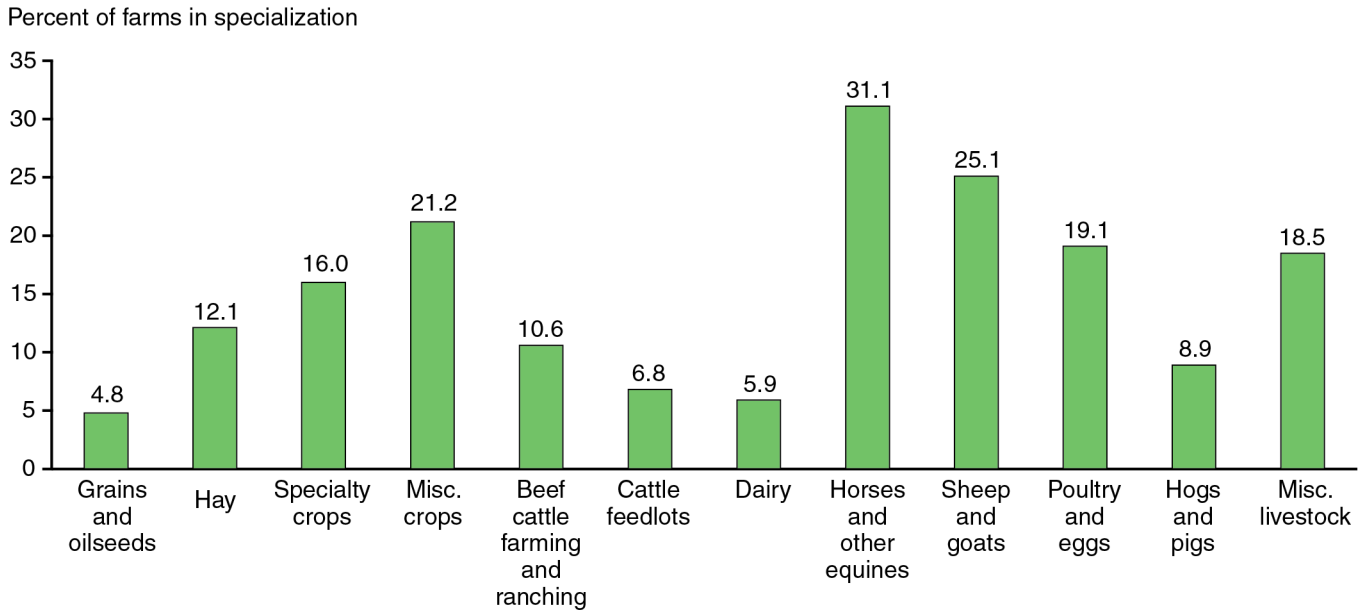
Farms specializing in poultry, specialty crops, grains, or dairy account for only 21 percent of women's farms, but 72 percent of their sales



Note: See box "Commodity Specializations," p. 16 of the report, for definitions of the specializations.
Source: USDA, Economic Research Service, compiled from the 2007 Census of Agriculture.

Figure 8
Share of farms and ranches operated by women for each specialization, 2007

Women run one-third of U.S. horse operations and one-fourth of sheep and goat operations



Note: See box "Commodity Specializations," p. 16 of the report, for definitions of the specializations.
Source: USDA, Economic Research Service, compiled from the 2007 Census of Agriculture.

Farm and Operator Characteristics Vary by Specialization

To assess the diversity of farms and ranches operated by women, we examined variation in farm and farm operator characteristics by commodity specialization.

Grains and Oilseeds

The distribution of women-operated grain farms by sales class is unique (table 5). Nearly half of these farms (47 percent) have sales between $10,000 and $99,999, substantially more than any other specialization. The share of women's grain farms selling less than $10,000 is only 31 percent, substantially lower than any other specialization except dairy. At the other end of the size spectrum, 22 percent of women-operated grain farms have sales above $100,000—more than any other specialization, with the exceptions of dairy and poultry.

Fewer economies of scale exist for field crops than for livestock operations (O'Donoghue et al., 2011, pp. 48-49), so these economies are less of a factor in encouraging grain farmers to become larger or downsize to a residential farm. However, technological factors—including larger and faster equipment—have increased the acreage that operators can manage. The ability of operators to manage more acres may help explain the relatively large 59-percent share of women's grain farms with only one operator. The corresponding estimates of a single operator for other high-sales specializations—those reporting sales per farm above the $58,400 average for all women-operated farms—are lower, ranging from 45 to 51 percent.[4]

Alternatively, the large share of one-operator farms among women's grain farms may reflect the presence of older widows. Women operators of grain farms tend to be older than other women operators. Forty-eight percent are at least 65 years old, a higher percentage than any other specialization except miscellaneous crops (56 percent).

Hay

Hay farms grow hay for their own livestock enterprises or provide feed for livestock production on other farms. A high percentage of women-operated farms specializing in hay (82 percent) have sales less than $10,000. Hay farms also average only 132 acres per farm, or roughly 80 acres less than average for all farms operated by women. Transportation is a major consideration in selling hay, which tends to limit sales to high-quality hay suitable for dairy cows or horses, whose owners can afford to pay more for the hay if transport costs are involved. Hauling costs are a limiting factor to buyers of hay for beef cattle (Stordahl, 2007). Difficulty in transporting hay may limit the sales of hay farms and help explain their small size, regardless of the gender of the operator.

[4]An even larger share of grain farms has one operator when both men- and women-operated farms are considered. About 65 percent of all grain farms have one operator, compared with 44 to 54 percent for other high-sales specializations. (High-sales specializations—as defined here—include grains and oilseeds, specialty crops, cattle feedlots, dairy, poultry and eggs, and hogs and pigs.)

Table 5

Selected characteristics of women-operated crop farms, 2007

Item	Crop specialization				All women-operated farms[1]
	Grains & oilseeds	Hay	Specialty crops	Miscellaneous crops	
			Number		
Farms and ranches	16,345	30,660	30,966	52,025	306,209
			Dollars per farm		
Average sales per farm with sales[2]	96,006	10,657	86,600	52,507	58,381
			Percent of farms		
Farms by sales class:					
No sales	0.7	11.5	6.5	98.3	37.5
$1 to $999	3.4	20.9	6.5	0.3	10.7
$1,000 to $9,999	26.9	49.9	39.5	0.8	30.0
$10,000 to $99,999	47.1	16.4	36.8	0.6	16.9
$100,000 or more	21.9	1.2	10.7	0.1	5.0
			Acres per farm		
Land in farms	467	132	50	198	210
			Years		
Average age of operator	63	60	57	66	59
			Percent of principal operators		
Operator is 65 years old or more	48.2	35.6	27.6	55.5	33.8
Operator is retired	36.8	36.6	27.5	55.3	33.2
Operator occupation:					
Farming	45.0	36.0	47.2	16.2	39.8
Something else	55.0	64.0	52.8	83.8	60.2
Days operator worked off farm:					
None	47.7	38.6	36.7	53.7	40.7
1 to 199 days	23.8	25.8	32.4	17.0	23.5
200 days or more	28.5	35.6	30.8	29.3	35.7

Note: See box “Commodity Specializations,” p. 16 of the report, for definitions of the specializations.

[1]Includes all women-operated farms in the United States, not just crop farms.

[2]Sales exclude Government payments. The calculation of average sales excludes farms with no sales.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Specialty Crops

Women-operated specialty crop farms average only 50 acres—a lower average acreage than for any specialization other than horses—since only a few acres are necessary to produce substantial amounts of these crops (vegetables and melons; fruits and tree nuts; greenhouse, nursery, and floriculture products). For example, $100,000 of sales could have been generated in 2007 by 3 acres of strawberries or 9

acres of tomatoes. In contrast, it would have required 158 acres of field corn, a traditional row crop, to generate sales that high.[5]

Only 11 percent of women's specialty crop farms, however, have sales of $100,000 or more, and a majority (53 percent) have sales less than $10,000. The substantial share of specialty crop farms generating less than $10,000 in sales is reflected in the 63-percent share of women operators working off-farm, including 31 percent with at least 200 days of off-farm work. Despite the 63-percent share of operators working off-farm, however, nearly half consider farming to be their major occupation.

Miscellaneous Crops

Virtually all miscellaneous crop farms (98 percent) have no sales (see box, "Commodity Specializations," on p. 16 for a definition of the category). The farms with no sales satisfy the farm definition's sales criterion through a combination of Government payments and points that total $1,000 or more. Most farms in the miscellaneous crop category (85 percent) receive Government payments, especially land retirement payments from programs like CRP and WRP. (Government payments will be discussed in greater detail in a later section.)

The average age of women operators who specialize in miscellaneous crops is 66 years or 7 years older than the average for all women farmers. More than half (56 percent) are at least 65 years old. Women in this category typically are not heavily engaged in farming; only 16 percent give farming as their main occupation. A much larger share (55 percent) state that they are retired. Most of these women farm alone: 74 percent of the miscellaneous crop farms have only one operator. The predominance of women one-operator farms—combined with the advanced age of the operators—suggests that many may be widows who continue to run a farm formerly operated with their husbands.

Beef Cattle Farming and Ranching

Most women-operated beef operations are small. Nearly three-fourths of beef cattle farms and ranches (72 percent) have sales less than $10,000, and only 3 percent have sales greater than $100,000 (table 6). These beef operations use land extensively for grazing, however, and average 414 acres per farm, roughly double the average for all farms operated by women. Small beef cattle operations are typically cow-calf enterprises, which produce and sell calves. The calves are purchased by stocker operations that pasture calves to gain weight and then either finish the cattle themselves on grain or sell them to feedlots as yearlings (Cash, 2002, p. 21).

[5]The average yield for tomatoes for the fresh market was 311 hundredweights per acre and the average price was $34.80 per hundredweight. The average yield for strawberries for the fresh market and for processing was 469 hundredweights per acre and the average price was $71.60 per hundredweight. Finally, the average yield for corn for grain was 150.7 bushels per acre and the average price was $4.20 per bushel. Yields and prices are U.S. averages for 2007 from *Agricultural Statistics 2010* (USDA, NASS, 2010).

Cow-calf enterprises offer three advantages to operators of small farms. First, beef cows are less labor-intensive than many other enterprises (except when calving), which may be attractive to retired operators or operators who hold a full-time job off the farm. Second, cow-calf enterprises tend to be low cost, which limits cash requirements. Third, cow-calf operations can use land that is less suited for crops (Cash, 2002, p. 21).

Table 6

Selected characteristics of women-operated livestock farms, 2007

Item	Livestock specialization								All women-operated farms[1]
	Beef cattle farming & ranching	Cattle feedlots	Dairy	Horses & other equines	Sheep & goats	Poultry & eggs	Hogs & pigs	Miscellaneous livestock	
	Number								
Farms and ranches	69,327	2,126	3,363	52,453	17,551	12,363	2,723	13,381	306,209
	Dollars per farm								
Average sales per farm with sales[2]	24,905	205,917	311,716	15,972	4,152	236,380	138,326	17,948	58,381
	Percent of farms								
Farms by sales class:									
No sales	22.7	0.0	0.7	58.5	12.8	0.8	2.4	67.6	37.5
$1 to $999	5.3	3.5	0.1	5.7	43.2	53.1	40.6	7.0	10.7
$1,000 to $9,999	43.7	60.9	19.0	26.0	38.4	20.7	36.0	16.6	30.0
$10,000 to $99,999	25.2	27.6	36.5	9.1	5.2	2.3	7.7	7.8	16.9
$100,000 or more	3.1	8.0	43.7	0.8	0.4	23.2	13.3	1.0	5.0
	Acres per farm								
Land in farms	414	287	227	42	84	58	73	407	210
	Years								
Average age of operator	60	58	55	52	55	53	51	58	59
	Percent of principal operators								
Operator is 65 years old or more	39.7	33.3	27.1	13.4	22.7	15.9	14.1	30.3	33.8
Operator is retired	37.2	30.9	19.8	18.1	21.9	19.3	16.0	31.1	33.2
Operator occupation:									
Farming	44.7	46.9	70.4	46.0	46.3	51.1	43.3	37.0	39.8
Something else	55.3	53.1	29.6	54.0	53.7	48.9	56.7	63.0	60.2
Days operator worked off farm:									
None	41.8	38.9	57.7	30.1	35.6	39.4	31.5	38.9	40.7
1 to 199 days	24.5	23.6	17.5	22.5	24.6	21.9	24.9	22.7	23.5
200 days or more	33.8	37.5	24.8	47.4	39.7	38.6	43.6	38.5	35.7

Note: See box "Commodity Specializations," p. 16 of the report, for definitions of the specializations.

[1]Includes all women-operated farms in the United States, not just livestock farms.

[2]Sales exclude Government payments. The calculation of average sales excludes farms with no sales.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Many women raising beef cattle are older or work extensively off-farm—two groups that may be interested in less than full-time farming. About 40 percent of women operating cattle farms and ranches are at least 65 years old; a similar 37-percent share of the operators report they are retired. Thirty-four percent of women beef producers work off-farm at least 200 days a year, essentially fulltime.

Cattle Feedlots

Only 8 percent of women-operated feedlots have sales of $100,000 or more. Among that 8 percent, however, are operations with enough sales to bring the average sales for feedlots to just above $200,000. Feedlots average 287 acres per farm, about one-third higher than the average for all women-operated farms. Feedlots often grow at least some of their feed, and some may also have a stocker operation, putting calves to pasture to gain weight before finishing. Either of these activities would tend to be associated with higher average acreages.

Dairy

Of all the specializations, dairy farms have the highest average sales of farm products—over $300,000 per year—and 44 percent have sales of at least $100,000. Less than 1 percent of dairy farms report that they have no sales, and only 20 percent report sales less than $10,000. Despite their high sales, women-operated dairy farms average 227 acres per farm, about the same as the average for all women-operated farms. A large amount of land is not necessarily required for dairy farming, particularly if feed is purchased rather than grown.

Milk production is labor-intensive, so a majority (58 percent) of the women operating these farms report no off-farm work. In addition, about 70 percent of women operating dairy farms report farming as their major occupation, well above the 40-percent rate for all women operators or the rate for operators with other specializations. The average age of a woman dairy farmer is 55, or 4 years less than the average for all women farmers—which may also reflect the labor-intensive nature of dairying. Older operators may not be able to provide the level of labor required.

Horses and Other Equines

A majority of horse farms operated by women (59 percent) have no sales, and most of the remaining horse farms sell less than $10,000 annually. These low sales levels are largely due to the nature of the horse business—it can take years to bring a horse to a marketable stage. A race horse might race at as early as 2 years old, but most recreational equine activities require a horse with more maturity and training, extending the time to produce a marketable animal. There may also be some years when no horses are ready to sell, so the farm's sales may be sporadic. Some operations may own five or more horses for recreational purposes with no plans for a sale but still be classified as a farm through the point system.

Women's horse farms are small in acreage as well as sales, averaging just 42 acres, or one-fifth the average for all farms operated by women; it does not necessarily take a lot of land to raise horses. Given the small average acreage and low sales of their farms, it is not surprising that 70 percent of women with horse farms work off-

farm, including 47 percent who do so at least 200 days per year. Nevertheless, 46 percent of women horse farmers still consider farming to be their main occupation.

Women operating horse farms tend to be younger than other women operators, with an average age of 52 years, 7 years less than the average for all women operators. Compared with women operators in general, fewer horse farm operators are 65 years or older.

Sheep and Goats

Women-operated sheep and goat farms typically have low sales: 13 percent had no sales and 94 percent had sales less than $10,000. They are also small in acreage, averaging 84 acres or less than half the average for all women-operated farms.

Some aspects of sheep and goat production are attractive to small-scale producers. Like cow-calf enterprises, sheep or goats raised for meat—and wool in the case of sheep—require relatively small amounts of labor, except when lambing, shearing, or kidding. In addition, the animals are smaller than cattle and easier to handle. The cost of breeding stock is less than for cattle, and the returns from breeding stock purchases are realized sooner. On the other hand, sheep and goats need more expensive fencing than cattle and are subject to predation and parasites (Wright, 2005; Machen and Lyons, 2000). Dairy goats are a special case and require much more labor, as well as an emphasis on sanitary milking procedures (Coffey et al., 2004, pp. 2-3 and 5-7).

Women who operate sheep or goat farms have similar characteristics to those who operate horse farms. Like women horse farmers, over half of women with sheep or goat farms report an occupation other than farming. About two-thirds of both groups work off-farm, although sheep or goat farmers are less likely to work fulltime. Both groups tend to be younger than average. Women sheep and goat producers average 55 years of age, midway between the averages for all women farmers (59 years) and women horse farmers (52 years).

Poultry and Eggs

Women's poultry farms fall into two clusters: 75 percent had sales less than $10,000, while another 23 percent had sales of $100,000 or more. Farms averaged 58 acres for the specialization, roughly one-fourth the average acreage for all women-operated farms. A limited amount of land is necessary for the small flocks on farms with sales less than $10,000, where poultry or eggs may be produced for home consumption, for local sales, or for exhibition at poultry shows. Even for larger operations, little land may be necessary. The largest operations—those with sales of $100,000 or more—usually have production contracts. Production contractors typically provide feed to producers, so farmers with contracts do not need large acreages to grow their own feed.

Overall, only 23 percent of women-operated poultry and egg farms had production contracts, compared with 40 percent of their men-operated counterparts. However, more than 90 percent of poultry farms with sales of at least $100,000 had production contracts—generally for broilers—regardless of gender. In contrast, only 1 percent

of poultry farms with sales less than $100,000 had production contracts, again regardless of gender. The smaller overall rate of contract use for women-operated farms reflects the smaller share of their farms with sales greater than $100,000.[6]

Women poultry farmers are nearly evenly divided between those who report farming as their major occupation (51 percent) and those who report another occupation (49 percent), and about 40 percent report working off-farm at least 200 days per year. Even on commercially oriented farms with contracts, poultry or eggs can be produced by farmers who combine off-farm employment with a limited number of hours spent on the farm. For example, average off-farm income for households of commercial broiler producers was fairly high in 2006, ranging from $36,500 to $45,200 (considering the households of both women- and men-operated farms), depending on the size of the operation (MacDonald, 2008, p. 24).

Hogs and Pigs

In some respects, women farmers specializing in hogs are similar to their counterparts specializing in poultry. For example, both groups are relatively young, with an average age of just over 50 years, and both groups have small shares of women at least 65 years old—14 percent of women specializing in hogs and 16 percent of those specializing in poultry. Both groups of women-operated farms use contracts—at least among the larger farms—although hog farms use production contracts at a much lower rate (8 percent) than poultry farms (23 percent).

The share of women operators working off-farm, however, is higher for hog farmers (69 percent) than for poultry farmers (61 percent), and the share of operators who report an occupation other than farming is 8 percentage points higher for women specializing in hogs. This may reflect lower sales for hog farmers and their lower share with sales of $100,000 or more, which could result in their heavier reliance on off-farm work.

Miscellaneous Livestock

Only 9 percent of the farms with this specialization (see box, "Commodity Specializations," on p. 16 for a definition) have sales greater than $10,000, about half the rate for women-operated farms in general. Nevertheless, farms specializing in miscellaneous livestock average 407 acres, or double the average for all women-operated farms. Some of the miscellaneous livestock farms may be large operations producing minor grazing species, such as bison, or a combination of more common grazing species in which no single species predominates. In addition, the miscellaneous livestock category includes any point farms whose only indicator of farming activity is 100 acres or more of pasture or rangeland—another factor that might push average acreage upwards and also contribute to the 68 percent of miscellaneous livestock farms with no sales.

[6] This report uses the market value of agricultural products sold—a measure used in the Census of Agriculture—to gauge sales. It includes the share of production received by production contractors, but excludes production contract fees. For more information, see the appendix.

Women's Commercial Farms

The report so far has emphasized the small size of women-operated farms, because three-fourths of these farms have sales of less than $10,000. However, women also operate larger, more commercially oriented farms. Selecting a minimum sales level to identify commercial farms is somewhat arbitrary: we use $100,000 as the minimum for a farm to be classified as commercial. That level of sales includes the top 5 percent of women-operated farms, or 15,400 operations. The farms with sales of at least $100,000 are subdivided into an additional four sales classes to allow alternative analyses based on different definitions of commercial farms.

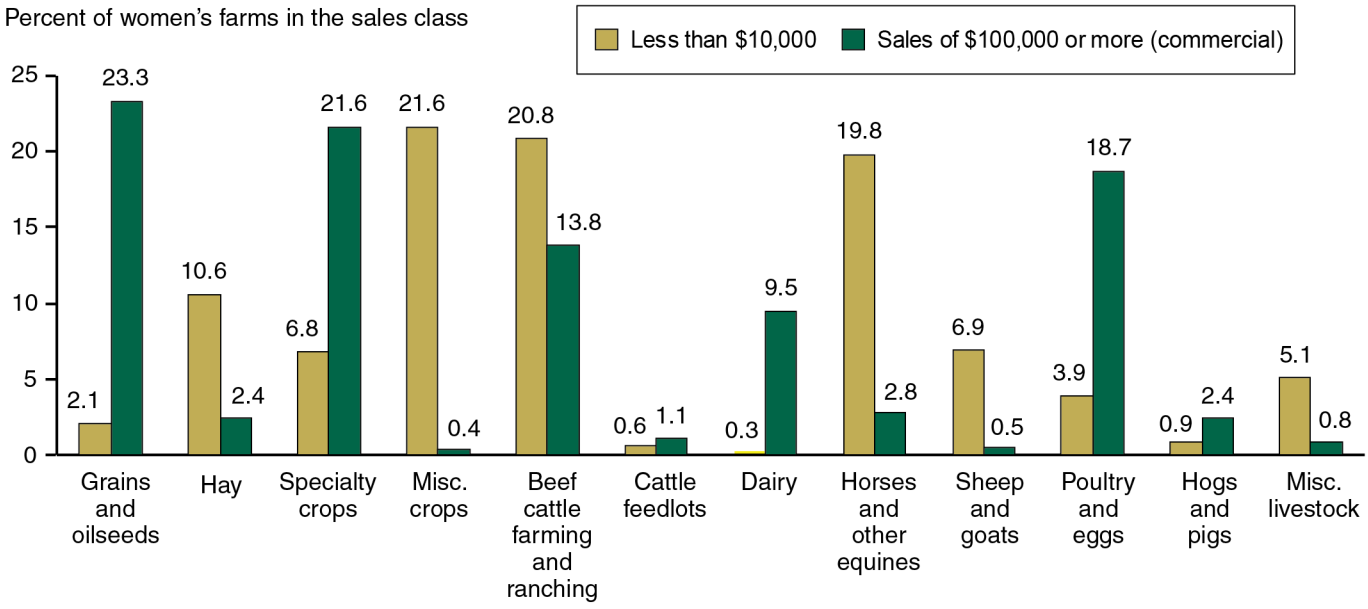
Five Major Specializations

Five specializations accounted for nearly 90 percent of the commercial farms operated by women: grains and oilseeds, specialty crops, poultry and eggs, beef cattle farming and ranching, and dairy (fig. 9). Cattle feedlots and hogs together accounted for only 4 percent of women-operated commercial farms, despite average sales of $205,900 and $138,300, respectively (table 6). The total number of women-operated farms with these two specializations was very small, however. There were only 4,800 feedlots and hog farms operated by women in all the sales classes, and they make up a small share of each sales class.

The share of all women's beef cattle farms and ranches with sales of $100,000 or more (3 percent) was actually small when compared with the shares for feedlots (8

Figure 9
Women-operated farms and ranches by sales class and specialization, 2007

Nearly 90 percent of women-operated commercial farms specialize in grains and oilseeds, specialty crops, poultry and eggs, beef cattle farming and ranching, and dairy



Note: See box "Commodity Specializations," p. 16 of the report, for definitions of the specializations.
Source: USDA, Economic Research Service, compiled from the 2007 Census of Agriculture.

percent) and hogs (13 percent), but beef farms are the single largest specialization among women farm operators. Three percent of the 69,300 women-operated beef operations amount to 14 percent of all commercial farms operated by women (fig. 9). Interestingly, beef cattle was the only specialization accounting for more than a tenth of women-operated farms with sales less than $10,000 and also for farms with sales of $100,000 or more.

Specialization among commercial farms varies by farm size (table 7). For example, the poultry and egg specialization starts at 4 percent of farms with sales between $100,000 and $249,999 and climbs rapidly to 46 percent of million-dollar farms. Million-dollar farms average 1,440 acres per farm, but this high average reflects large beef and grain operations using land extensively. The average acreage of million-dollar poultry farms is only 178 acres.

Characteristics of Women Commercial Farm Operators

Characteristics of women operating commercial farms vary by sales class. Average age declines as sales increase, which is a common pattern among farmers: older operators tend to scale back their operations, even at a high level of sales. In addition, the share of commercial operators reporting farming as their major occupation increases with sales, as does the share reporting no off-farm work, since larger farms typically require more labor and management.

Women operators of commercial farms are more involved in farming than women operators in general. Only 18 percent of women operators on commercial farms are retired, about half the 33-percent rate reported by all women operators. Also, 73 percent of commercial operators report farming as their main occupation, and 58 percent report no off-farm work. In contrast, only 40 percent of all women operators report farming as their major occupation, and only 41 percent report no off-farm work.

Table 7

Selected characteristics of women-operated commercial farms and ranches (sales of $100,000 or more), 2007

Item	Farms selling $100,000 or more					All women-operated farms
	$100,000-$249,999	$250,000-$499,999	$500,000-$999,999	$1,000,000 or more	Total	
			Number			
Farms and ranches	7,498	3,566	2,335	1,978	15,377	306,209
			Percent of farms			
Farms by specialization:[1]						
Grains and oilseeds	27.5	26.6	17.3	8.6	23.3	5.3
Hay	3.6	1.6	0.9	0.8	2.4	10.0
Specialty crops	24.2	18.8	18.0	20.5	21.6	10.1
Beef cattle farming and ranching	18.8	12.3	7.8	4.4	13.8	22.6
Cattle feedlots	1.1	1.1	1.0	1.3	1.1	0.7
Dairy	10.6	10.2	5.7	9.0	9.5	1.1
Horses	3.6	2.4	2.0	1.5	2.8	17.1
Poultry and eggs	4.4	20.3	39.0	45.9	18.7	4.0
Hogs and pigs	1.2	1.7	4.1	5.8	2.4	0.9
Other	5.0	5.0	4.1	2.1	4.5	28.2
			Acres per farm			
Land in farms	1,121	1,565	1,465	1,443	1,318	210
			Percent of land in farms			
Land in beef cattle farming and ranching or grains and oilseeds specializations	85.7	84.3	81.6	72.4	82.8	56.6
			Years			
Average age of operator	59	58	57	55	58	59
			Percent of principal operators			
Operator is 65 years old or more	36.8	31.0	26.3	21.5	31.9	33.8
Operator is retired	20.8	16.4	13.8	11.1	17.5	33.2
Operator occupation:						
Farming	68.1	74.9	77.6	79.4	72.6	39.8
Something else	31.9	25.1	22.4	20.6	27.4	60.2
Days operator worked off farm:						
None	54.1	57.8	62.8	64.9	57.6	40.7
1 to 199 days	21.2	18.9	15.2	12.1	18.6	23.5
200 days or more	24.7	23.2	22.1	23.0	23.8	35.7

Note: See box “Commodity Specializations,” p. 16 of the report, for definitions of the specializations.

[1]Only specializations accounting for least 1 percent of farms with sales of $100,000 or more are shown separately.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Land in Farms and Ranches

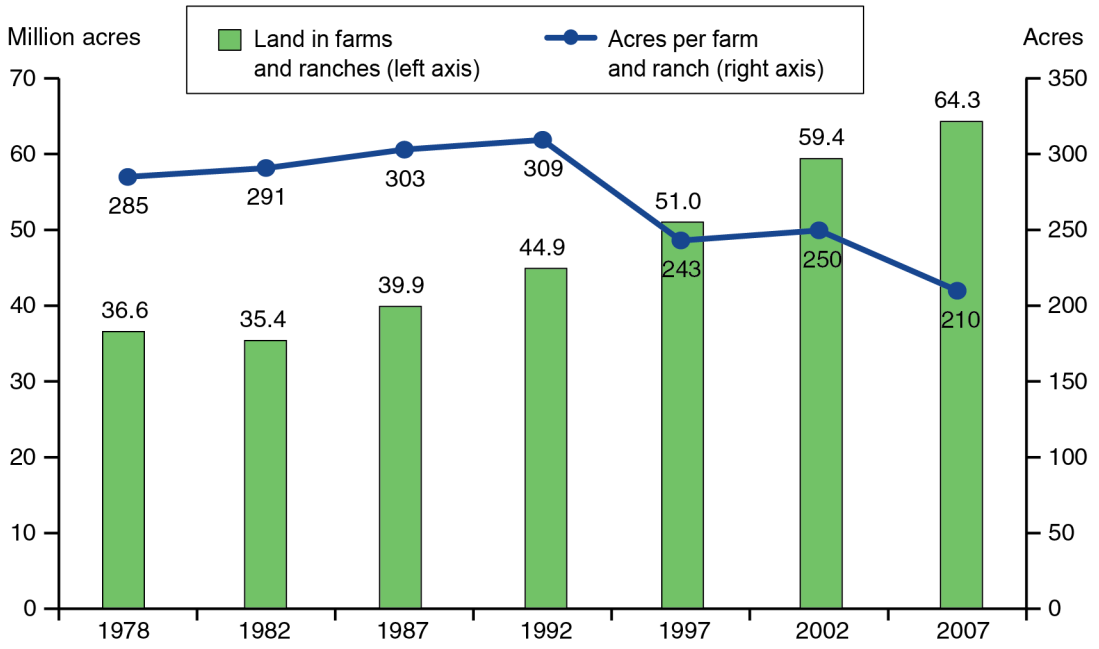
Although women farmed substantially more land in 2007 than they did in 1978—76 percent more—their share of total land in farms remains small (fig. 10). Only 7 percent of the land in farms was operated by women by 2007. Average acres per farm for women-operated farms also declined from roughly 300 acres between 1978 and 1992 to 210 acres by 2007. The decline in average acreage is consistent with the large increase in women-operated farms with sales less than $10,000. The decline in average acreage also coincides with the introduction of methodological changes that increase the number of small farms, beginning in the 1997 Census of Agriculture (see "Changes in Census Methodology" in the appendix, p. 43).

Women's average acreage, however, differs substantially by specialization from the 210-acre U.S. average in 2007. For example—as shown in tables 5 and 6—five specializations average between 40 and 90 acres (horses and other equines, specialty crops, poultry and eggs, hogs and pigs, and sheep and goats), while three specializations average more than 400 acres (grains and oilseeds, beef cattle farming and ranching, and miscellaneous livestock). Farms with sales of $100,000 or more average 1,320 acres (table 7).

Women own more than three-fourths of the land they operate and are less likely to rent land than male operators (table 8). As of 2007, about 85 percent of women were full owners, compared with 66 percent of their male counterparts. This 20-percentage-point difference in the full-ownership rate has persisted since 1978. Full-ownership

Figure 10
Land in farms and ranches operated by women, 1978-2007 censuses

Total farmland of women operators increased, but acres per operation declined



Year	Women's share of total acres
1978	3.6
1982	3.6
1987	4.1
1992	4.7
1997	5.3
2002	6.3
2007	7.0

Source: USDA, Economic Research Service, compiled from Census of Agriculture data, various years.

declines as farm size increases, helping to explain why women are more likely to be full owners than men. Renting is a way to expand by controlling more land without debt and the commitment of capital associated with land ownership.

More of women operators' land is in pasture and range than in crops—63 versus 26 percent, consistent with their specializations. Fifty-one percent of the land used by women operators is on farms and ranches specializing in grazing livestock (mostly beef cattle, but also horses and sheep and goats), which often use pasture and rangeland extensively.

Table 8

Land in farms and ranches by gender of principal operator, 2007

Item	Operated by: Women	Men	All farms & ranches
		Million acres	
Land in farms and ranches	64.3	857.8	922.1
		Percent of land	
Land in farms			
Owned and operated[1]	78.0	60.8	62.0
Rented from others	22.0	39.2	38.0
Total	100.0	100.0	100.0
		Percent of farms	
Tenure:			
Full owner	85.1	66.4	69.0
Part owner	10.5	26.9	24.6
Tenant	4.5	6.7	6.4
Total	100.0	100.0	100.0
		Percent of land	
Land use:			
Cropland	26.0	41.3	40.2
Pasture and rangeland[2]	62.5	50.5	51.3
Woodland	7.3	4.9	5.0
Other	4.3	3.4	3.4
Total	100.0	100.0	100.0

[1]Land rented to others is netted out of owned land. The net acreage is land owned by the farm business that is actually used for production on the farm. Land in farms and ranches is the sum of owned and operated land plus land rented from others for agricultural production.

[2]Includes cropland used only for pasture or grazing and pastured woodland.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Government Payments: Important to Grain and Miscellaneous Crop Farms

Large shares of both grain farms and miscellaneous crop farms receive Government payments, 83 and 85 percent, respectively (table 9). However, the types of payments each group receives are different (see box, "Government Payments in the Census of Agriculture," p. 31). Land retirement programs account for more than 80 percent of all payments received by miscellaneous crop farms. In contrast, grain and oilseed farms receive 79 percent of their Government payments from "other programs," which include programs targeted at food grains, feed grains, and soybeans.

CRP, which accounts for most of the land enrolled in land retirement programs, has several characteristics appealing to older operators, like many of the women operating miscellaneous crop farms. It requires little labor or capital investment and also provides a guaranteed income stream, since CRP contracts have a term of 10 or 15 years. Finally, older operators may have land available to enroll in CRP as they scale back their operations and reduce the size of their crop enterprises.

Table 9

Government payments received by women-operated farms and ranches, by specialization, 2007

Specialization	Receive Government payments	Average payment[1]	Share of payments from: Land retirement programs[2]	Other programs[2]
	Percent	*Dollars per farm or ranch*	—— *Percent* ——	
All women-operated farms and ranches	28.4	5,877	55.5	44.5
Crop specializations:				
Grains and oilseeds	83.2	8,555	21.3	78.7
Hay	20.9	3,481	45.9	54.1
Specialty crops	5.8	6,160	13.5	86.5
Miscellaneous crops	84.8	6,013	83.8	16.2
Livestock specializations:				
Beef cattle farming and ranching	17.7	4,222	33.4	66.6
Cattle feedlots	24.6	4,267	26.8	73.2
Dairy	53.0	5,687	3.0	97.0
Horses and other equine	4.2	2,435	45.8	54.2
Sheep and goats	9.5	1,853	26.6	73.4
Hog and pigs	13.4	6,615	15.6	84.4
Poultry and eggs	8.3	3,719	28.7	71.3
Miscellaneous livestock	3.7	3,096	33.4	66.6

Note: See box "Commodity Specializations," p. 16 of the report, for definitions of the specializations.

[1]Average payment for farms and ranches receiving Government payments. Nonrecipient operations are excluded.

[2]See box, "Government Payments in the Census of Agriculture," p. 31 of the report, for programs included in land retirement and other programs.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Land retirement programs account for a much larger share of payments for farms operated by women than for those operated by men, 56 versus 20 percent. Miscellaneous crop farms, however, account for 78 percent of the land retirement payments received by all women-operated farms, reflecting the high average age of the operators of these farms.

Government Payments in the Census of Agriculture

The Census of Agriculture asks about the receipt of Government payments from various programs:

Land retirement programs. This category includes the Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), Farmable Wetlands Program (FWP), and Conservation Reserve Enhancement Program (CREP). These programs remove environmentally sensitive land from production for at least 10 years, or in some cases permanently.

Other programs:

- **Direct payments.** These payments are based on the producer's historic production levels, at rates set in farm legislation.
- **Marketing loan benefits (MLBs) and countercyclical payments.** MLBs include loan deficiency payments (LDPs), marketing loan gains, and the net value of commodity certificates.
- **Other Federal agricultural program payments.** This category includes a variety of programs: disaster payments, market loss payments, national dairy market loss payments, Noninsured Assistance Program, Environmental Quality Incentives Program (EQIP), Conservation Security Program (CSP), and any other Federal programs.

Women as Secondary Operators

Up to this point, we have focused on the principal operators of farms. Considering secondary operators as well as principal operators, however, gives a much more complete picture of the involvement of women in farming. Including the second and third operators more than triples the count of women farmers, from 306,200 to 985,200, and increases their share of farm operators from 14 to 30 percent (table 10).[7] Including secondary operators has less of an effect on the number of men farmers, increasing their count by only 21 percent, from 1.9 to 2.3 million.

Women secondary operators tend to be less involved in farming than women primary operators. About 32 percent of women second and third operators report farming as their major occupation, compared with 40 percent of women primary operators. Roughly 40 percent of secondary women operators work off-farm at least 200 days per year, slightly higher than the corresponding 36-percent estimate for women principal operators.

Table 10
Principal, second, and third operators by gender, 2007

Gender	Principal operator	Secondary operators		All operators
		Second operator	Third operator	
		Number		
Total	2,204,792	931,670	145,072	3,281,534
Male	1,898,583	310,592	87,167	2,296,342
Female	306,209	621,078	57,905	985,192
		Percent		
Total	100.0	100.0	100.0	100.0
Male	86.1	33.3	60.1	70.0
Female	13.9	66.7	39.9	30.0

Note: Detailed statistics were collected for a maximum of three operators per farm.
Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

[7]Detailed data, including gender, were collected for up to three operators in the Census of Agriculture. We used these records for our analysis of secondary operators because they provide more detailed information about the operators. This means, however, that the counts of secondary operators in the tables exclude 23,751 female operators and 32,165 male operators on farms with 4 or more operators. The number of farms with four or more operators is fairly small—32,800 farms, or less than 2 percent of all U.S. farms.

The relatively low percentage of secondary women operators reporting farming as their major occupation reflects the small size of their farms. About two-thirds are on farms selling less than $10,000, too small to provide a living (table 11). Most of the secondary women operators with sales that low are on farms specializing in beef cattle farming, horses, hay, and miscellaneous crops—common small-farm specializations. As the level of sales increases and farms become more commercially oriented, specializations gradually change. By the time sales exceed $1 million, the most common specializations are poultry and eggs, grains and oilseeds, specialty crops, and dairy. Nevertheless, the overall rankings (the last row of table 11) are affected the most by the specializations of secondary operators on farms with sales less than $10,000, due to the large number of those operators.

Table 11
The four largest specializations of women secondary operators by sales class, 2007

Sales class:	Women secondary operators[1]	Commodity specialization and its share of women secondary operators[2]			
		1	2	3	4
	Number	*Percent (in parentheses)*			
Less than $10,000	428,831	Beef cattle farming (30.7)	Horses (15.4)	Hay (14.0)	Misc. crops (12.4)
$10,000-$24,999	74,825	Beef cattle farming (47.6)	Specialty crops (15.2)	Hay (12.8)	Grains & oilseeds (9.6)
$25,000-$49,999	42,781	Beef cattle farming (41.1)	Grains & oilseeds (18.3)	Specialty crops (16.8)	Hay (9.6)
$50,000-$99,999	33,020	Beef cattle farming (32.2)	Grains & oilseeds (28.8)	Specialty crops (15.8)	Hay (6.7)
$100,000-$249,999	40,286	Grains & oilseeds (34.7)	Beef cattle farming (20.5)	Dairy (18.1)	Specialty crops (12.7)
$250,000-$499,999	26,107	Grains & oilseeds (40.7)	Dairy (18.5)	Beef cattle farming (12.7)	Specialty crops (9.9)
$500,000-$999,999	17,148	Grains & oilseeds (39.6)	Poultry & eggs (15.9)	Dairy (10.9)	Specialty crops (10.5)
$1,000,000 or more	15,985	Poultry & eggs (26.2)	Grains & oilseeds (24.3)	Specialty crops (13.5)	Dairy (11.2)
All	678,983	Beef cattle (30.8)	Hay (11.5)	Horses (10.8)	Grains & oilseeds (10.4)

Note: Twelve specialization groups were used in this analysis—grains and oilseeds, hay, specialty crops, miscellaneous crops, beef cattle farming and ranching, cattle feedlots, dairy, horses and other equines, sheep and goats, hogs and pigs, poultry and eggs, and miscellaneous livestock. See box "Commodity Specializations, p. 16 of the report, for definitions of the specializations.

[1]Includes second and third women farm operators.

[2]Ranked in order of largest to smallest, by the commodity's share of women secondary operators in the sales class.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Joint Operations by Men and Women

Most women farm operators—considering both principal and secondary operators—are on farms operated by men. Sixty-one percent of women operators are second operators on farms operated by men, and another 5 percent work as third operators on men-operated farms (table 12). Only 3 percent are the second or third operator on women-operated farms. In contrast, the overwhelming majority of male operators, 83 percent, are principal operators. Male operators on women-operated farms account for only 6 percent of all male operators.

Many farms are actually run as joint operations by a married couple, with both spouses serving as an operator. The census does not collect information on the marital status of operators, but ARMS does.[8] According to the 2007 ARMS, the spouse of the principal operator is an operator on about one-third of farms, and spouses account for two-thirds of all secondary operators (Hoppe and Banker, 2010,

Table 12
Farm operators by gender and type, 2007

Type of operator	Gender		Total
	Female	Male	
		Number	
Total operators[1]	985,192	2,296,342	3,281,534
Principal operators	306,209	1,898,583	2,204,792
Second operators on:			
Women-operated farms	19,751	111,051	130,802
Men-operated farms	601,327	199,541	800,868
Third operators on:			
Women-operated farms	7,802	15,035	22,837
Men-operated farms	50,103	72,132	122,235
		Percent of total	
Total operators[1]	100.0	100.0	100.0
Principal operators	31.1	82.7	67.2
Second operators on:			
Women-operated farms	2.0	4.8	4.0
Men-operated farms	61.0	8.7	24.4
Third operators on:			
Women-operated farms	0.8	0.7	0.7
Men-operated farms	5.1	3.1	3.7

Note: Detailed statistics were collected for a maximum of three operators per farm.

[1]Includes principal, second, and third operators.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

[8]The ARMS questionnaire collects detailed information on up to three operators. It asks if the principal operator is married. If so, the questionnaire then asks if the spouse is also an operator. If the spouse is also an operator, the questionnaire classifies the spouse-operator as the second operator. The census questionnaire, in contrast, does not ask if the principal operator is married or if the spouse is also an operator.

pp. 21-22). Joint operations by a couple are likely to report the husband as the principal operator. In many cases, the husband may actually be the principal operator, with the most responsibility for day-to-day decisions. Even in truly joint operations, however, where both spouses are equally involved in decisions, the husband may be listed as the principal operator more often than the wife.

Joint Operations on Men-Operated Farms

Census data for men-operated farms are generally consistent with the ARMS data (table 13) and suggest that most two-operator farms with a man as the principal operator and a woman as second operator are married couple farms. Roughly a third of all men-operated farms in the census have two operators, usually with a woman secondary operator. The man principal operator is, on average, 3 years older than the woman second operator, 55 versus 52 years, with little variation by sales class (table 14). This age difference is consistent with ARMS data for women second operators working on farms operated by couples, since husbands tend to be slightly older than wives. In the 2007 ARMS, for example, men principal operators average 56 years of age on married couple farms compared with 53 years for their wives. [9]

Although joint operations are common, roughly three-fifths of all men-operated farms have only one operator (table 13). After sales exceed $250,000, however, the one-operator share falls from the 60-percent level and an increasing share of farms have two or more operators, but with a diminishing role for women second operators. In fact, two-operator farms with a male principal operator and a female second operator decline steadily from 33 percent of all men-operated farms to 18 percent as sales increase from less than $10,000 to $1 million or more.

As farms increase in size, they often require more management and labor. Additional operators can provide this, and possibly other resources such as farmland or capital. ARMS data show that the share of secondary operators who are spouses falls as sales class increases and additional operators are added (Hoppe et al., 2008, p. 20).

Joint Operations on Women-Operated Farms

The situation is somewhat different for women-operated farms. About one-third of women-operated farms have two operators (as was the case with men-operated farms), mostly with male second operators. On average, the woman principal operator is 54 years old, compared with 52 years for the male second operator (table 14). This age gap—with the woman older than the man—reaches to 6 or 7 years for farms selling between $50,000 and $499,999.

In contrast, the 2007 ARMS reports husbands as slightly older than their wives—averaging 55 and 53 years of age, respectively—on married couple farms with a woman principal operator. The higher average age for the woman principal opera-

[9]Nearly all married couple farms in the 2007 ARMS were based on a traditional husband and wife marriage. Same-gender couples accounted for only 1.4 percent of married couple farms in the 2007 ARMS. Same-gender couples were excluded from the ARMS data when calculating the average ages of husbands and wives. Detailed analysis of same-gender couples is not possible due to their small sample size in ARMS.

tors in the census data suggests that many of the male second operators in the census data are younger relatives or hired managers, rather than spouses.

One-operator farms account for about three-fifths of women-operated farms, the same share as for men-operated farms (table 13). In contrast to men-operated farms, the one-operator share of women-operated farms begins to decline immediately after the smallest sales class (sales less than $10,000). The increasing share of farms with multiple operators is driven by increases in the share of farms with male second operators and farms with three or more operators. The additional male operators could be husbands, partners, or hired managers providing more labor and management.

Table 13

Farms and ranches by number of operators, sales class, and gender of the principal operator, 2007

Item	Sales class								All farms
	Less than $10,000	$10,000-$24,999	$25,000-$49,999	$50,000-$99,999	$100,000-$249,999	$250,000-$499,999	$500,000-$999,999	$1,000,000 or more	
	Number								
Men-operated farms:									
Number of farms and ranches	1,079,992	220,226	140,238	116,345	140,002	89,807	58,442	53,531	1,898,583
	Percent of farms								
Farms by number of operators:									
One	58.1	59.9	61.2	61.2	59.1	54.6	48.6	39.5	57.8
Two	37.2	34.3	32.5	32.1	32.6	34.7	37.1	37.0	35.7
Woman for second operator	33.1	27.7	24.3	22.5	22.0	21.3	20.6	18.4	29.0
Three or more	4.7	5.8	6.3	6.7	8.3	10.7	14.3	23.6	6.4
	Number								
Women-operated farms:									
Number of farms and ranches	239,168	28,059	14,494	9,111	7,498	3,566	2,335	1,978	306,209
	Percent of farms								
Farms by number of operators:									
One	59.4	52.6	51.2	49.2	45.4	42.5	41.0	36.6	57.3
Two	34.2	38.6	38.5	39.6	39.7	41.0	41.6	40.3	35.3
Man for second operator	29.8	34.7	34.1	35.0	34.9	36.3	37.9	35.8	30.9
Three or more	6.4	8.8	10.3	11.2	14.9	16.6	17.4	23.1	7.5

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data.

Table 14

Average age of operators on two-operator farms with operators of the opposite gender, by sales class, 2007

Item	Men-operated farms			Women-operated farms		
	Average age			Average age		
	Principal operator (man)	Secondary operator (woman)	Difference (man - woman)	Principal operator (woman)	Secondary operator (man)	Difference[1] (man - woman)
	Years					
From the Census of Agriculture:[2]						
Operators, by sales class	55	52	3	54	52	-2
Less than $10,000	55	52	3	54	52	-2
$10,000 to $24,999	57	54	3	57	53	-4
$25,000 to $49,999	57	54	3	58	53	-5
$50,000-$99,999	56	54	2	58	52	-6
$100,000-$249,999	55	52	3	58	51	-7
$250,000-$499,999	54	51	3	56	50	-6
$500,000-$999,999	53	50	3	54	50	-4
$1,000,000 or more	53	49	4	53	49	-4
From ARMS:[3]						
Operators	55	52	3	53	55	2

[1]A negative sign indicates that the woman principal operator is older than the male second operator.

[2]Includes all two-operator farms where the operators are of the opposite gender.

[3]Includes all married couple, two-operator farms. Same-gender couples are excluded.

Source: USDA, Economic Research Service, compiled from 2007 Census of Agriculture data, and USDA, National Agricultural Statistics Service and Economic Research Service, 2007 Agricultural Resource Management Survey.

Summary and Discussion

This report uses data from the Census of Agriculture and ARMS to analyze the characteristics of women farm operators and their farms. Some of the key findings are summarized below. They should be useful to anyone interested in women farmers or changes in farm structure, to firms doing business with farmers, and to Federal and State agencies serving farmers.

In the 25 years between 1982 and 2007, the number of women-operated farms more than doubled, with increases in all sales classes. The number of men-operated farms, in contrast, declined by 10 percent, with declines in most sales classes. Some of the increase in women-operated farms, however, was due to changes in the Census of Agriculture designed to include more small farms.

On average, women principal operators are older than their male counterparts. The gap between the average age of women and men principal operators has narrowed, as the difference between their average ages fell from 6 years in 1982 to 2 years by 2007. The number of younger women entering farming exceeds the number of older women leaving, which dampens the effects of aging.

Farms with sales less than $10,000 now account for 78 percent of women-operated farms. Most growth in women-operated farms after 1982 came from operations of that sales class, despite the negative rate of return on equity for farms of that size. Yet, about 5 percent of women-operated farms had sales of $100,000 or more in 2007.

Nearly half of women-operated farms specialize in grazing livestock: beef cattle, horses and other equines, or sheep and goats. Most of these livestock farms are very small, accounting for only 16 percent of sales generated by women-operated farms. Another 21 percent of women-operated farms specialize in poultry, specialty crops, grains, or dairy, but they generated 72 percent of the sales from women-operated farms.

Fifty-six percent of payments received by women-operated farms in 2007 came from land retirement programs such as the CRP and WRP, compared with only 20 percent for farms operated by men. Miscellaneous crop farms receive nearly 80 percent of the land retirement payments made to women operators, reflecting their advanced age.

Many farms are actually joint operations run by married couples, where both spouses act as operators. The 2007 Census of Agriculture found that about three-fifths of all women operators—considering both principal and secondary operators—are listed as the second operator on farms operated by men, most likely their husband. Joint operations by a couple are likely to report the husband as the principal operator.

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Appendix: Data and Definitions

The data used here are largely from the Census of Agriculture for various years. The 2007 Census of Agriculture is used to analyze current conditions, while earlier censuses—back to 1978—add historical perspective. In some cases, we can follow trends for women farmers only from 1982 forward because the 1978 census provided less data on them than later censuses. Going back to the 1978 computer files to generate estimates is not an option, because the surviving 1978 census files for individual farms do not contain the weights necessary to estimate the characteristics of representative U.S. farms (Hoppe and Korb, 2006, pp. 35-36).

Another data resource for the report is the Agricultural Resource Management Survey (ARMS), an annual USDA survey conducted by the National Agricultural Statistical Service (NASS) and the Economic Research Service (ERS). The 2007 ARMS is used to fill gaps in the 2007 census data, particularly information about farm finances and farm operators' household income and educational attainment. Because ARMS is a sample survey, the amount of detail that can be presented for small groups—such as women farmers—is often restricted because of sample size considerations.

Differences in ARMS estimates are generally discussed in this report only when the estimates are significantly different at a 95-percent confidence level or higher. No significance tests were performed for differences based on data from the Census of Agriculture; significance testing is not relevant when data are from a complete census rather than a sample survey. Some census data collected prior to the 2007 census were based on a sample of farms, but those data are not used in this report.

Defining Farms

Both the census and ARMS use the USDA definition of a farm: any place that produced and sold—or *normally* would have produced and sold—at least $1,000 of agricultural products during a given year, with Government payments counting towards the $1,000 minimum (O'Donoghue et al., 2009, pp. 3-5). If a place does not have sales of at least $1,000 a "point system" assigns points for acres of various crops and head of livestock (where 1 point equals $1 in potential sales) to estimate normal sales. "Point farms" are places with actual sales and Government payments less than $1,000 but points plus actual sales and Government payments worth $1,000 or more. The amount of crops and livestock necessary to generate points worth $1,000 is small. To qualify as a farm by points alone, an establishment would only need, for example, 4 acres of corn, three head of beef cattle, or five horses or ponies.

Note that census data on Government payments were not collected until the 1987 Census of Agriculture and thus are not available for previous censuses. To ensure comparability between 1982 and later years in this report, we use the point-farm definition in effect in 1982, which was based on sales without considering Government payments. In other words, a point farm in our report is any place with sales less than $1,000 but points plus actual sales worth $1,000.

Defining Farm Operators

Each farm has at least one operator who makes day-to-day decisions about the farm business. Some farms—particularly larger ones—have more than one. Beginning in 2002, all operators are counted in the census and ARMS, and the questionnaires ask for detailed information for up to three operators. Both the census and ARMS designate one principal operator—the one most responsible for running the farm—and designate the others as secondary operators. Sole operators on one-operator farms are counted as principal operators.

In this report, a "woman-operated farm" is defined as a farm with a woman as the principal operator. Secondary operators on women-operated farms, if any, may be male or female. Similarly, men-operated farms are any farms where the principal operator is a man, but secondary operators may be of either gender. Joint operations—when a married couple runs a farm together—are likely to report the husband as the principal operator.

Until 2002, the Census of Agriculture and ARMS collected data for only one, principal operator, although ARMS generally asked whether the principal operator's spouse was also an operator. Thus, long-term trends in the number of secondary women operators cannot be traced. Discussion of long-run trends in women farmers by necessity focuses on principal women farmers and the farms they operate.

Most analysts use "farmer" and "farm operator" interchangeably. In this report, the term "farmer" may refer to principal operators, secondary operators, or both; in each instance, the operators under discussion should be clear from the context. Principal operators are discussed first in this report, and the discussion of secondary operators occurs towards the end.

Women also participate in agriculture in ways other than as a principal or secondary operator. They may be landlords or work as farm laborers or as farm managers who hold a management position on a large commercial farm. They may work for firms performing custom work. They can also work as consultants or advisors, moving among farms to provide advice. Some of the specialties covered by consultants and advisors include agronomy, animal science, soil science, veterinary science, and accounting. Farm-level data do not include information on women in these nonoperator occupations, but it is likely the number of women has increased in these positions and will continue to do so over time.

Defining Sales

This report uses the *market value of agricultural products sold*—a measure used in the Census of Agriculture—to gauge sales (U.S. Dept. of Agriculture, NASS, 2009, p. B-15). The market value of agricultural products sold is gross market value (before production expenses and taxes) of farm products sold or removed under contract from the farm in a given year. It is equal to total sales by the operators of the farm plus the value of any shares received by partners, landlords, contractors, or other entities associated with the farm. It includes the value of commodities placed in the Commodity Credit Corporation (CCC) loan program, but excludes any other Government payments. In addition, it excludes receipts of farm-related income the

operation may receive, such as payments for custom work performed or production contract fees.

In ARMS data, the level of sales is generally gauged by a similar measure, *gross farm sales* (Hoppe et al., 2010, p. 3). To be consistent with the census data used in this report, gross farms sales from ARMS were converted to the market value of sales by subtracting Government payments received by the farm business and its landlords.

Changes in Census Methodology

The Bureau of the Census was responsible for conducting the agricultural census from its inception in 1840 until 1996 (U.S. Dept. of Agriculture, NASS, 2009, pp. VII). Responsibility for the census was moved to NASS by the 1997 Appropriations Act, and NASS has conducted the last three censuses (for 1997, 2002, and 2007). After taking over the Census of Agriculture, NASS instituted some methodological changes. Beginning with the 2002 census, NASS began adjusting census estimates to compensate for undercoverage. In addition, NASS increased its efforts to contact all small farms for the census. For more information about these and other changes, see box, “Counting Small Farms—Methodological Changes,” p. 44.

These methodological changes improved the quality of census data, especially for small farms, but complicated the analysis of trends. For example, adjusting for undercoverage and more actively seeking out small farms missed in previous censuses gives a more accurate count of smaller farms. The improved count, however, is not fully comparable with counts from previous censuses—analysts cannot know how much of the increase in small farms is due to methodological changes and how much to the actual entry of new farms.

Counting Small Farms: Methodological Changes

Four methodological changes introduced in recent Censuses of Agriculture have increased the count of U.S. small farms:

1. Data for the 2002 and 2007 Censuses of Agriculture were adjusted for undercoverage, or farms that the census missed, predominantly farms with sales less than $2,500 (U.S. Dept. of Agriculture, National Agricultural Statistics Service, 2004, pp. X and C-11). For most of the other censuses used in this report, gross adjustment factors were published but not applied to the published estimates or the data in electronic files.[1] Nevertheless, we can estimate the effect of the adjustment by comparing adjusted and unadjusted estimates in 1997, since both estimates can be generated for that year. The adjusted count of women-operated farms in 1997 was 209,800, or 27 percent higher than the 165,100 estimate without the adjustment. For men-operated farms, the corresponding adjusted estimate was 15 percent larger than the unadjusted estimate.

2. The 2007 Census of Agriculture counted more farms in the lowest sales categories, due to extensive mailing-list-building efforts (U.S. Dept. of Agriculture, NASS, 2011, pp. 26-27).

3. Beginning with the 1997 Census of Agriculture, the farm count was expanded to include farms that enroll all of their cropland in the Conservation Reserve Program (CRP) or Wetlands Reserve Program (WRP). Counting these CRP/WRP farms led to a 30-percent increase in the number of farms with less than $1,000 in sales of agricultural products between 1992 and 1997 (Hoppe and Korb, 2002, p. 25).

4. Also beginning in 1997, the census asked the respondent for each Indian reservation to report the number of American Indians operating farms or ranches on the reservation (U.S. Dept. of Agriculture, NASS, 1999, p. VIII). Prior to 1997, the census counted only one operator per reservation.

In addition to the four methodological changes introduced deliberately, a more subtle factor contributed to the increase in small farms. The $1,000 cutoff for qualifying as a farm is stated in nominal dollars rather than constant dollars and has not changed since the current definition was introduced in 1974. When agricultural prices increase substantially, less physical production is required to qualify as a farm. Price increases lead to increases in the count of farms with sales at and just above the cutoff. The most recent large increase in agricultural prices occurred between 2002 and 2007, when the Producer Price Index (PPI) for farm products increased by 45 percent.

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[1]The 1978 census was adjusted for undercoverage, but the adjustment was not performed in subsequent censuses—until 2002—due to cost considerations (Allen, 2004). Because the 1978, 2002, and 2007 censuses were adjusted using similar procedures, the coverage adjustment does not affect long-run comparisons between the 1978 and the 2002 or 2007 censuses.