Chapter 1.3

Land Ownership and Farm Structure

Robert Hoppe

Small family farms account for most land owned by farms, making them important to conservation. Leased land is a large share of farm operations, and farmers' tenure affects their use of conservation measures, particularly measures with a long payback period. The trend of concentrating livestock on fewer acres than in the past raisies environmental concerns.

Contents

Chapter 1: Land and Farm Resources
- 1.1 Land Use
- 1.2 Farm Real Estate Values
- **1.3 Land Ownership and Farm Structure**

Chapter 2: Water and Wetland Resources

Chapter 3: Knowledge Resources and Productivity

Chapter 4: Agricultural Production Management

Chapter 5: Conservation and Environmental Policies

Appendix: Data Sources

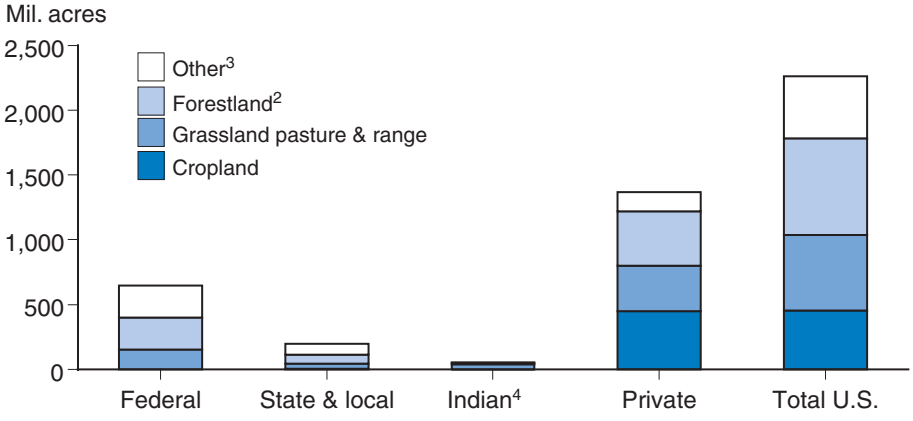
Ownership of U.S. Land

The land surface of the United States covers 2.3 billion acres. Private owners held 61 percent in 2002, the Federal Government 28 percent, State and local governments 9 percent, and Indian reservations 3 percent (fig. 1.3.1). Virtually all cropland is privately owned, as is three-fifths of grassland pasture and range and over half of forestland. Federal, State, and local government holdings consist primarily of forestland, rangeland, and other land. Most land in Federal ownership—largely in the West—is managed by the Department of the Interior (68 percent) and the Department of Agriculture (28 percent) (U.S. GSA, 2005). (For more information, see Chapter 1.1, "Land Use".)

Farm operators do not own all the land used in agriculture. According to the 1999 Agricultural Economics and Land Ownership Survey (AELOS), farmers

Figure 1.3.1

Major uses of U.S. land by ownership, 1997[1]



[1]All 50 States.
[2]Includes forestland in parks and other special uses.
[3]Includes urban land, highways, and other special or miscellaneous uses. Excludes an estimated 105 million acres in special uses that have forest cover, and therefore are included with forestland.
[4]Managed in trust by the Bureau of Indian Affairs.

Source: USDA, ERS, based on Major Land Use estimates (Lubowski et al., 2006).

held 58 percent of the land in farms in 1999 (USDA, 2001). These landowning farmers also made up 58 percent of the 3.4 million farmland owners.

Nonoperator landlords accounted for the remaining 42 percent of land in farms. Ninety-five percent of nonfarm landlords were individuals/families or partnerships. Of these unincorporated landlords, 55 percent were at least 65 years old. Many nonfarm landlords have a historic connection to farming. Among the people who have exited farming or inherited farmland since the number of farms peaked during the Great Depression, a number have retained ownership of some or all their land (Hoppe et al., 1995).

Farm Numbers, Farm Types, and Conservation Programs

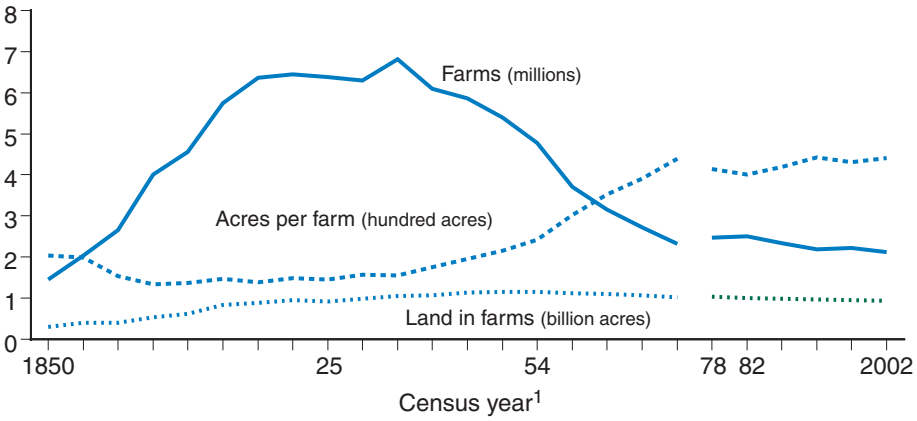
The number of farms has declined dramatically since its peak of 6.8 million in 1935, with most of the decline occurring during the 1940s, 1950s, and 1960s (fig. 1.3.2).

The decline in farm numbers has leveled off since the 1970s. By 2002, 2.1 million farms remained. The remaining farms have a much larger average acreage, but averages mask differences among farms. Today's farms range from very small retirement and residential farms to industrialized operations with sales in the millions. Part of this diversity stems from the very low sales threshold ($1,000) necessary for an operation to qualify as a farm for statistical purposes.

One way to address the diversity of farms is to categorize them into more homogeneous groups. The farm typology developed by ERS identifies five groups of small family farms (sales less than $250,000): limited-resource, retirement, residential/lifestyle, farming-occupation/low-sales, and farming-occupation/high-sales (see box, "Farm Typology Definitions"). The typology also includes large family farms, very large family farms, and

Figure 1.3.2

Farms, land in farms, and average acres per farm, 1850-2002



[1]Census years are shown for 10-year intervals from 1850 to 1920, with 4 or 5-year intervals starting in 1925. The break in the lines after 1974 reflects the introduction of an adjustment to estimates of the farm count and land in farms. Beginning in 1978, the data are adjusted to compensate for undercoverage by the census of agriculture.

Source: USDA, ERS, based on census of agriculture data.

Farm Typology Definitions

The farm typology focuses on the "family farm," or any farm organized as a sole proprietorship, partnership, or family corporation. Family farms exclude farms organized as nonfamily corporations or cooperatives, as well as farms with hired managers.

Small family farms

Limited-resource farms. Small farms with sales less than $100,000 and low operator household income (defined as less than the poverty level for a family of four in the current and previous years or less than half the county median household income both years.)

Retirement farms. Small farms whose operators report they are retired.[1]

Residential/lifestyle farms. Small farms whose operators report a major occupation other than farming.[1]

Farming-occupation farms. Small family farms whose operators report farming as their major occupation.[1]

- **Low-sales farms.** Sales less than $100,000.
- **High-sales farms.** Sales between $100,000 and $249,999.

Other family farms

Large family farms. Sales between $250,000 and $499,999.

Very large family farms. Sales of $500,000 or more.

Nonfamily farms

Nonfamily farms. Farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers.

[1] Excludes limited-resource farms whose operators report this occupation.

For more information about the farm typology, see the *2004 Family Farm Report* (Banker and MacDonald, 2005).

nonfamily farms. For more information about farm structure, see the "Farm Structure" Briefing Room on the ERS website.

Size Variation Among Typology Groups

Small family farms dominate the farm count, making up 91 percent of all U.S. farms in 2003 (table 1.3.1).

In addition, very small farms (sales less than $10,000) make up more than half of all farms. Very small farms account for a particularly large share of farms in the limited-resource (72 percent), retirement (76 percent), and residential/lifestyle (76 percent) groups. Production, however, is concentrated among larger farms; small farms account for only 27 percent of the total value of production.

The smallness of most farms has implications for conservation and the environment. An ERS study found that smaller corn farms are less likely to use conservation tillage than are larger farms (Soule et al., 1999 and 2000). The practice is more practical for larger farms because they have more acres over which to spread the cost of new or retrofitted equipment necessary to adopt conservation tillage. Small farms whose operators are retired or farm part-time are also less likely to adopt conservation tillage, possibly because of hesitancy to change familiar production practices. Small farms, however, participate widely in the Conservation Reserve Program (CRP) and the

Table 1.3.1
Selected farm structural characteristics, by the farm typology, 2003

Farm typology group	Farms	Value of production	Sales less than $10,000	Tenure: Full owner	Tenure: Part owner	Tenure: Tenant[1]
Small family farms:	— *Pct. of U.S. total* —		——— *Percent of group* ———			
Limited-resource	11.1	1.4	71.8	68.8	24.3	*6.9
Retirement	14.6	1.5	75.6	79.0	19.4	1.6
Retirement/lifestyle	42.1	5.2	75.8	70.6	25.5	3.9
Farming-occupation:						
Low-sales	17.2	6.6	37.0	54.9	36.5	8.6
High-sales	6.4	12.3	na	19.1	68.2	12.7
Large family farms	4.0	14.4	na	20.9	66.4	12.6
Very large family farms	3.1	44.7	na	24.1	58.7	17.2
Nonfamily farms	1.7	13.7	31.9	65.5	23.7	10.8
All farms	100.0	100.0	57.7	62.1	31.7	6.1

na = Not applicable.
* = Standard error is between 25 and 50 percent of the estimate.
[1]Farms that rent all the land that they operate. Also includes farms owning less than 1 percent of the land they operate.

Source: USDA, ERS, 2003 Agricultural Resource Management Survey, Phase III.

Wetlands Reserve Program (WRP). (For more information about conservation tillage, see Chapter 4.2, "Soil Management and Conservation".)

Distribution of Conservation Program Payments by Type of Farm

High-sales small farms, large family farms, and very large family farms received a disproportionate share of commodity program payments relative to their small share of farms in 2003 (table 1.3.2).

These farms harvest most of the land planted to program commodities and therefore receive three-quarters of commodity program payments. However, CRP and WRP—the two major conservation programs—are targeted at particular types of land, not commodities. Since small farms own 70 percent of the land held by farms, they play a large role in natural resource and environmental policy. (For more information about CRP and WRP, see Chapter 5.2, "Land Retirement Programs".)

Retirement, residential/lifestyle, and low-sales farms account for nearly two-thirds of conservation payments and a similar share of the land farmers enrolled in the CRP and WRP. Participating farmers in each of the three groups tend to enroll large shares of their land in these programs: 46 percent of the land operated on retirement farms, 28 percent on residential/lifestyle farms, and 23 percent on low-sales farms. In contrast, enrollment ranges from 5 to 9 percent for participating high-sales, large, and very large farms.

Because their main job is off-farm, residential/lifestyle operators are limited in the amount of time they can spend farming. As a result, residential/lifestyle farmers find CRP and WRP attractive, since these programs require little time. Given their life-cycle position, many retired farmers have land available to put into conservation uses. The same forces

Table 1.3.2
Share of government payments and related items, by the farm typology, 2003

Farm typology group	Government payments: Commodity programs[1]	Government payments: Conservation programs[2]	Harvested acres of program crops[3]	Land enrolled in CRP and WRP
	Percent of U.S. total			
Small family farms:				
Limited-resource	2.1	6.6	2.4	5.7
Retirement	2.1	19.9	1.8	22.5
Residential/lifestyle	6.3	26.4	6.4	25.7
Farming-occupation:				
Low-sales	10.1	17.6	9.9	18.7
High-sales	22.3	9.6	23.3	9.5
Large family farms	22.6	8.5	23.9	8.5
Very large family farms	31.8	7.2	29.8	5.4
Nonfamily farms	2.7	4.2	2.6	4.0
All farms	100.0	100.0	100.0	100.0

[1]Direct payments, countercyclical payments, loan deficiency payments, marketing loan gains, net value of commodity certificates, peanut quota buyout, milk income loss contract payments, etc.

[2]Payments from the Conservation Reserve Program (CRP), the Wetlands Reserve Program (WRP), and the Environmental Quality Incentives Program (EQIP).

[3]Food and feed grains, soybeans, other oilseeds, sugar beets, and sugar cane.

Source: USDA, ERS, 2003 Agricultural Resource Management Survey, Phase III.

may also be acting on low-sales operators, who average 57 years of age and may be scaling down their operations.

If an off-farm job and advanced age are major determinants of land going into conservation uses, it may be relatively easy to get smaller farms to enroll land in the programs. Getting larger farms to enroll more of their land might require higher payments, if the opportunity cost of idling their land is higher.

Land Tenure

Farm operators leased 38 percent of their total farmland in 2002, down from 40 percent in 1997 and 43 percent in 1992, according to the census of agriculture. This decline may reflect increasing rental costs as parcels of land become smaller. Parcels of farmland available to rent tend to become subdivided with time due to division among heirs (Raup, 2003). Smaller parcels increase transaction costs to operators assembling land to expand their operations. Still, rented land as a share of total farmland is higher than the 35-percent rate that prevailed in the 1950s and 1960s.

About 38 percent of all farms rented land in 2003, 32 percent as part owners and 6 percent as tenants (table 1.3.1). Land leasing has changed from a way for beginning farmers to enter agriculture to a way for established farmers to access additional land. Renting allows farms to expand without the debt and commitment of capital associated with ownership (Reimund and Gale, 1992). In fact, about 17 percent of very large family farms are tenants, a larger percentage than in any other group.

Conventional wisdom holds that farmland owners have a long-term interest in their land and thus are more likely than renters to adopt conservation practices. Soule and others (1999 and 2000) found this to be true among corn farmers, at least in the adoption of conservation practices that provide only long-term benefits, such as grassed waterways and strip cropping.

The situation was different for conservation tillage, which can increase profits in the short run by maintaining or increasing yields while reducing machinery, fuel, and labor costs (Magleby, 2003). Cash-renters are less likely than owner-operators to use conservation tillage, but share-renters appear to act like owner-operators in adopting conservation tillage. Share-renters may have an incentive to adopt conservation tillage, if the landlord bears some of the costs that may increase under conservation tillage, such as herbicide expenditures. Share-landlords are also more likely to be involved in management decisions than cash-landlords, which may make share-renters act more like owners.

Concentration of Production

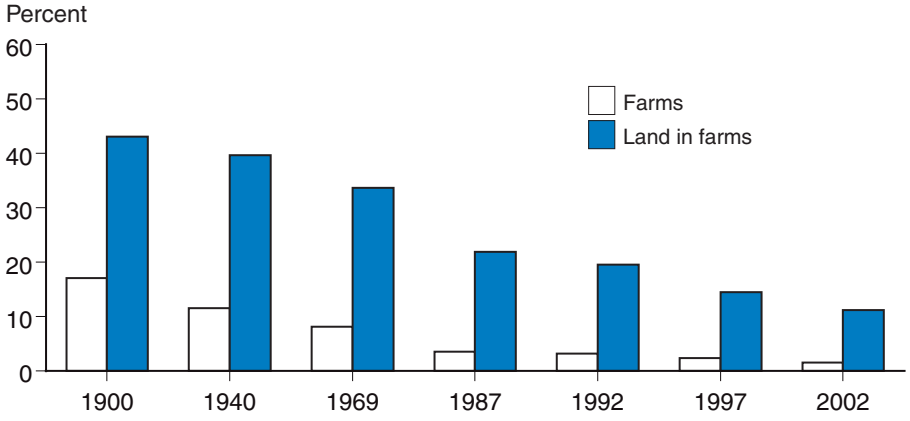
Concentration of agricultural production on fewer farms and fewer acres has grown since the beginning of the 20th century. In 1900, half of farm sales came from approximately 17 percent of farms and 43 percent of the land in farms (fig. 1.3.3).

By 2002, half of farm sales came from 2 percent of U.S. farms and 11 percent of the land in farms. This reflects both a growing diversity in farm size and an increasing number of very large farms.

The concentration of agricultural production raises concerns about potential harm to the environment, especially from livestock operations. Data from the

Figure 1.3.3

Share of U.S. farms and land in farms producing half of the Nation's agricultural sales



Note: The share of sales in 1900, 1949, and 1969 was calculated by summing sales by sales class from census publications and totaled slightly more than 50 percent. The share of sales in 1987, 1992, 1997, and 2002 was calculated from farm-level data and therefore totaled exactly 50 percent.

Source: USDA, ERS, compiled from census of agriculture data and Peterson and Brooks (1993).

census of agriculture show that the number of U.S. farms selling hogs decreased by 94 percent between 1959 and 2002, while hog sales more than doubled. Similar trends have occurred among farms selling dairy products, cattle, and broilers. As livestock producers expand, they are more likely to buy feed grown elsewhere, reducing the amount of land they have available for manure application, the predominant method of disposal (Ribaudo et al. 2003).

More livestock production on fewer farms may not pose a problem if farms with livestock have enough land to absorb the manure produced. In fact, most farms currently have adequate land to safely use the manure that their livestock produce. Many livestock producers, however, do not apply manure to all their land (Ribaudo, 2003). Manure is expensive to haul, so many producers spread more manure than crops need on the fields nearest the livestock facility. In addition, adequate farmland for manure disposal may not exist in some areas with large concentrations of livestock. For example, there are 68 counties where nitrogen in manure from confined livestock and poultry farms is estimated to exceed the county's nitrogen needs. Excess phosphorus is even more common, occurring in 152 counties. (For more information, see Chapter 4.5, "Animal Agriculture and the Environment".)

References

Banker, David E., and James M. MacDonald (2005). *Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report.* AIB-797. U.S. Dept. Agr., Econ. Res. Serv. March.

Hoppe, Bob, Bob Green, and Gene Wunderlich (1995). "Farmland Rentals: Central to Farming," *Agricultural Outlook.* AO-220. U.S. Dept. Agr., Econ. Res. Serv. July.

Lubowski, Ruben N., Marlow Vesterby, Shawn Bucholtz, Alba Baez, and Michael J. Roberts (2006). *Major Uses of Land in the United States, 2002.* EIB-14. U.S. Dept. Agr., Econ Res. Serv., May.

Magleby, Richard (2003). "Chapter 4.2 Soil Management and Conservation," *Agricultural Resource and Economic Indicators, 2003.* Ralph Heimlich (ed.). AH-722. U.S. Dept. Agr., Econ. Res. Serv. Feb.

Peterson, R. Neal, and Nora L. Brooks (1993). *The Changing Concentration of U.S. Agricultural Production During the 20th Century: 14th Annual Report to the Congress on the Status of the Family Farm.* AIB-671. U.S. Dept. Agr., Econ. Res. Serv. July.

Raup, Philip M. (2003). "Disaggregating Farmland Markets," *Government Policy and Farmland Markets: The Maintenance of Farmer Wealth.* Charles B. Moss and Andrew Schmitz (eds.). Ames, IA: Iowa State Press.

Reimund, Donn A., and Fred Gale (1992). *Structural Change in the U.S. Farm Sector, 1974-87: 13th Annual Family Farm Report to Congress.* AIB-647. U.S. Dept. Agr., Econ. Res. Serv. May.

Ribaudo, Marc (2003). "Managing Manure: New Clean Water Act Regulations Create Imperative for Livestock Producers," *Amber Waves*. Vol. 1, No. 1, Feb.

Ribaudo, Marc, Noel Gollehon, Marcel Aillery, Jonathan Kapland, Robert Johansson, Jean Agapoff, Lee Christensen, Vince Breneman, and Mark Peters (2003). *Manure Management for Water Quality: Cost to Animal Feeding Operations of Applying Manure Nutrients to Land.* AER-824. U.S. Dept. Agr., Econ. Res. Serv. June.

Soule, Meredith, Abebayehu Tegene, and Keith Wiebe (1999). "Conservation on Rented Farmland: A Focus on U.S. Corn Production," *Agricultural Outlook.* AGO-258. U.S. Dept. Agr., Econ. Res. Serv. Jan.-Feb.

Soule, Meredith J., Abebayehu Tegene, and Keith D. Wiebe (2000). "Land Tenure and the Adoption of Conservation Practices," *American Journal of Agricultural Economics,* Vol. 82, No. 4, Nov.

U.S. Department of Agriculture, National Agricultural Statistics Service (2001). *1997 Census of Agriculture.* Vol. 3, Special Studies; Part IV: Agricultural Economics and Land Ownership Survey (1999). AC97-SP-4. Dec.

U.S. General Services Administration, Office of Governmentwide Policy (2005). *Federal Real Property Profile as of September 30, 2004.*