

1.2 Land Tenure

While most U.S. land was once held by the Federal Government, 60 percent (including virtually all farmland) is now privately owned. Most farms and most farmland are held by individuals or families, but leased land represents an increasing share of their operations as farm numbers decline and average farm size increases. Partial interests in land play a growing role in the conservation efforts of public agencies and private organizations.

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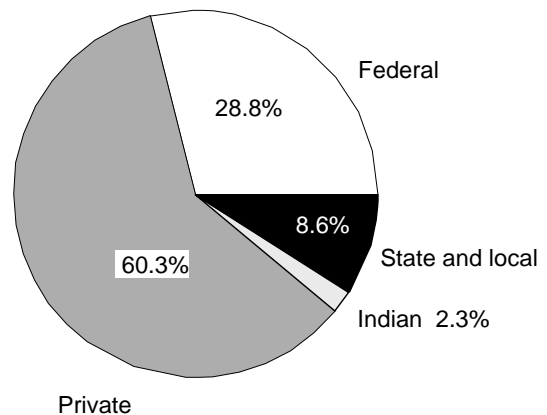
Land tenure is the system of rights and institutions that shapes access to land. Ownership and leasing are common features of land tenure in the United States. Less frequently recognized are zoning ordinances, subsurface mineral rights, conservation easements, and other instruments that arise out of law, custom, and the operation of private markets. Land tenure influences decisions about how land and other resources are used. These decisions, in turn, have important economic and environmental consequences for landowners and for other members of society.

Ownership of U.S. Land

The land surface of the United States covers 2.3 billion acres. Sixty percent (1.4 billion acres) is privately owned, 29 percent is owned by the Federal Government, 9 percent is owned by State and local governments, and 2 percent is on Indian reservations (fig. 1.2.1). Virtually all cropland is privately owned, as is over half of grassland pasture and range and forest land (table 1.2.1; cropland and other terms are defined in the Glossary, p. 38). Federal, State, and local government holdings consist primarily of forest land and other land.

While 60 percent of U.S. land is privately owned today, land tenure patterns were significantly different in the first century after independence. Between 1781 and 1867, through purchase, cession, and treaty, the Federal Government acquired lands totaling 81 percent of current U.S. area—the original “public domain” (table 1.2.2). The largest acquisition, the Louisiana Purchase, added 530 million acres in 1803.

Figure 1.2.1--Land ownership in the United States, 1992



Note: Includes all 50 States for a total of 2.3 billion acres.
Source: USDA, ERS, based on Daugherty, 1995.

Table 1.2.1—Ownership of land by major use, United States, 1992

| Ownership | Crop-land | Grass-land pasture & range | Forest land ¹ | Other ² | Total ⁴ |
|--------------------------|------------|----------------------------|--------------------------|--------------------|--------------------|
| <i>Million acres</i> | | | | | |
| Federal | -- | 146 | 249 | 256 | 651 |
| State & local | 3 | 41 | 78 | 73 | 195 |
| Indian ³ | 2 | 33 | 13 | 5 | 53 |
| Private | 455 | 371 | 397 | 141 | 1,364 |
| Total⁴ | 460 | 591 | 737 | 475 | 2,263 |

-- = less than 500,000 acres.

¹ Includes reserved forest land in parks and other special uses.

² Includes urban land, highways, and other miscellaneous uses; excludes an estimated 83 million acres in special uses that have forest cover and, therefore, are included with forest land.

³ Managed in trust by the Bureau of Indian Affairs, U.S. Department of the Interior.

⁴ Totals represent all 50 States.

Source: USDA, ERS, based on Daugherty, 1995.

Other large acquisitions included cessions from the original 13 States and from Mexico, as well as the Alaska Purchase. Acquisitions after 1867, including purchase of degraded forest and farmlands, added most of the Eastern United States' national forests (45 million acres) as well as 4 million acres of national grasslands (National Research Council, 1993; U.S. Department of Agriculture, Forest Service, 1993).

As of 1995, 1.1 billion acres of the original public domain (51 percent of total U.S. area) had been granted or sold by the Federal Government to States, corporations, and individuals (table 1.2.3). Grants to States totaled 329 million acres, including 65 million acres of wetlands granted on condition that proceeds from their subsequent sale to individuals be used to convert those acres to agricultural production. Another 288 million acres were granted or sold directly to homesteaders on condition that the land be settled and cultivated. Disposition of Federal lands had slowed by the 1930's, and in 1976 the Federal Land Policy and Management Act explicitly directed that most remaining Federal lands be retained in Federal ownership (National Research Council, 1993). Remaining Federal lands totaled 650 million acres in 1993 (table 1.2.4).

Most lands in Federal ownership are managed by four agencies: USDA's Forest Service; and the Department of the Interior's Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), and National Park Service (NPS) (table 1.2.5). Federal lands are concentrated in Alaska and the West (fig. 1.2.2, table 1.2.6). Forest Service and BLM lands are managed for a variety of uses, including grazing, timber harvest, and wilderness preservation, while FWS and NPS lands are managed primarily for preservation and recreation. Controversies over public lands, for example with regard to grazing and timber harvests, have prompted proposals to transfer management, if not ownership, of some of these lands to States and

Table 1.2.2—Acquisition of the original public domain, 1781-1867

| Acquisition | Year(s) | Land area | Water area | Total area | Percent of total U.S. land | Cost |
|---------------------------------|------------------|--------------------------------|-------------|----------------|----------------------------|-------------------------------|
| | | <i>-----Million acres-----</i> | | | <i>Percent</i> | <i>\$ million³</i> |
| State cessions | 1781-1802 | 233.4 | 3.4 | 236.8 | 10.5 | 6.2 |
| Louisiana Purchase ¹ | 1803 | 523.4 | 6.5 | 529.9 | 23.4 | 23.2 |
| Red River Basin | 1782-1817 | 29.1 | 0.5 | 29.6 | 1.3 | -- |
| Cession from Spain | 1819 | 43.3 | 2.8 | 46.1 | 2.0 | 6.7 |
| Oregon Compromise | 1846 | 180.6 | 2.7 | 183.4 | 8.1 | -- |
| Mexican Cession | 1848 | 334.5 | 4.2 | 338.7 | 15.0 | 16.3 |
| Purchase from Texas | 1850 | 78.8 | 0.1 | 78.9 | 3.5 | 15.5 |
| Gadsden Purchase | 1853 | 19.0 | 0.0 | 19.0 | 0.8 | 10.0 |
| Alaska Purchase ² | 1867 | 365.3 | 12.9 | 378.2 | 16.7 | 7.2 |
| Total | 1781-1867 | 1,807.5 | 33.2 | 1,840.7 | 81.3 | 85.1 |

¹ Excludes areas eliminated by the treaty of 1819 with Spain.

² Adjusted for the recomputation of the areas of the United States that was made for the 1980 decennial census.

³ Nominal dollars.

Source: USDA, ERS, based on U.S. Department of the Interior, Bureau of Land Management, 1996.

Table 1.2.3—Disposition of the original public domain, 1781-1995

| Disposition | Acres | Percent of total disposition |
|---|----------------|------------------------------|
| | <i>Million</i> | <i>Percent</i> |
| Granted to States for: | | |
| Support of common schools | 77.6 | 6.8 |
| Reclamation of swampland | 64.9 | 5.7 |
| Construction of railroads | 37.1 | 3.2 |
| Support of miscellaneous institutions ¹ | 21.7 | 1.9 |
| Canals and rivers | 6.1 | 0.5 |
| Construction of wagon roads | 3.4 | 0.3 |
| Other ² | 117.6 | 10.3 |
| Total granted to States | 328.5 | 28.7 |
| Granted or sold to homesteaders ³ | 287.5 | 25.1 |
| Granted to railroad corporations | 94.4 | 8.2 |
| Granted to veterans as military bounties | 61.0 | 5.3 |
| Confirmed as private land claims ⁴ | 34.0 | 3.0 |
| Sold under timber and stone law ⁵ | 13.9 | 1.2 |
| Granted or sold under timber culture law ⁶ | 10.9 | 1.0 |
| Sold under desert land law ⁷ | 10.7 | 0.9 |
| Other ⁸ | 303.5 | 26.5 |
| Total dispositions, 1781-1995 | 1,144.4 | 100.0 |

¹ Universities, hospitals, asylums, etc.

² Construction of unspecified public improvements, reclamation of desert lands, etc.

³ The homestead laws generally provide for the granting of lands to homesteaders who settle upon and improve vacant agricultural public lands.

⁴ The Government has confirmed title to lands claimed under valid grants made by foreign governments prior to the acquisition of the public domain by the United States.

⁵ The timber and stone laws provided for the sale of lands valuable for timber or stone but unfit for cultivation.

⁶ The timber culture laws provided for the granting of public lands to settlers on condition that they plant and cultivate trees on the lands granted.

⁷ The desert land laws provide for sale of arid agricultural public lands to settlers who irrigate them and bring them under cultivation.

⁸ Chiefly public, private, and pre-emption sales, but includes mineral entries, strip locations, and sales of townsites and townlots.

Source: USDA, ERS, based on U.S. Department of the Interior, Bureau of Land Management, 1996.

counties. Federal land uses and conflicts are described in greater detail in chapter 1.1; Federal lands subject to conservation restrictions are discussed later in this chapter.

Even on lands remaining in Federal ownership, tenure is complicated by the fact that private individuals and corporations hold a variety of partial interests, including rights of way, mineral leases, and oil and

Table 1.2.4—Federal land acquisition, disposition, and holdings as of 1993

| Item | Million acres |
|---|---------------|
| Public domain acquisitions | 1,840.7 |
| - Public domain dispositions | 1,144.4 |
| - Water area | 33.2 |
| - Lands held in trust | 52.0 |
| + Net other Federal acquisitions ¹ | 39.2 |
| = Federal landholdings, 1993 ² | 650.3 |

¹ This figure reconciles BLM data on public domain acquisitions, dispositions, and waters with GSA data on lands held in trust and Federal landholdings in 1993. GSA reports net Federal acquisitions of 59.9 million acres as of 1993.

² This total reflects a 0.8-million acre decline in Federal ownership from the 1992 total reported in table 1.2.1.

Source: USDA, ERS, based on U.S. Department of the Interior, Bureau of Land Management, 1996; U.S. General Services Administration, 1995.

Table 1.2.5—Federal landholdings by agency, 1993

| Department/Agency | Million acres | Percent of total |
|----------------------------|---------------|------------------|
| Department of Agriculture | 184.9 | 28.4 |
| Forest Service | 184.5 | 28.4 |
| Other Agencies | 0.4 | 0.1 |
| Department of Defense | 20.8 | 3.2 |
| Department of the Interior | 443.4 | 68.2 |
| Bureau of Land Management | 271.2 | 41.7 |
| Fish and Wildlife Service | 90.4 | 13.9 |
| National Park Service | 73.2 | 11.3 |
| Other Agencies | 8.6 | 1.3 |
| Other Departments | 1.2 | 0.2 |
| Total ¹ | 650.3 | 100.0 |

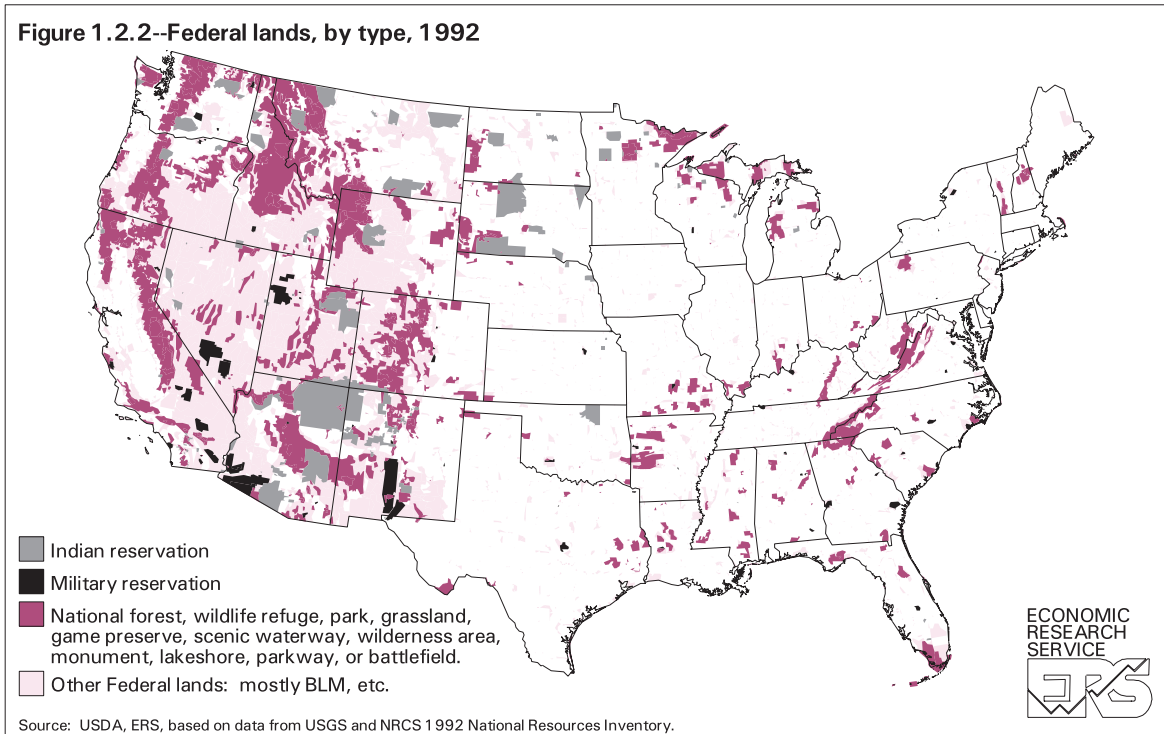
¹ Reflects a 0.8-million acre decline in Federal ownership from the 1992 total reported in table 1.2.1.

Source: USDA, ERS, based on U.S. General Services Administration, 1995.

gas leases (Laitos and Westfall, 1987). By contrast, grazing permits and livestock-use permits are revocable licenses, and “convey no right, title, or interest held by the United States in any land or resources” (U.S. Department of Agriculture, Forest Service, 1991).

The principal source of funding for Federal land acquisitions today is the Land and Water Conservation Fund (LWCF), created by Congress in 1964 (National Research Council, 1993). LWCF appropriations have fallen from about \$800 million in 1978 to \$100-\$400 million per year since the early 1980’s; appropriations for fiscal year 1997 are \$149 million (fig. 1.2.3).

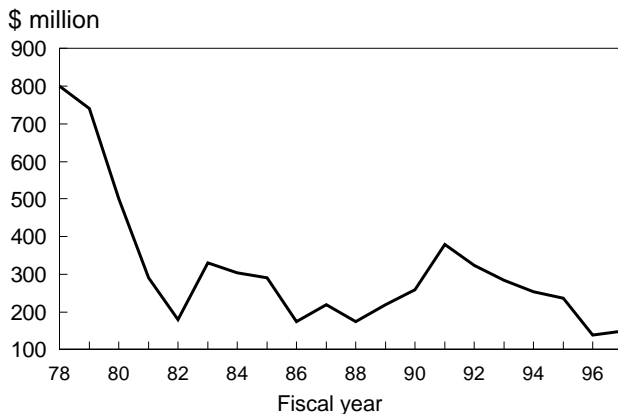
Figure 1.2.2--Federal lands, by type, 1992



As of 1992, State and local governments in the 48 contiguous States owned a total of 107 million acres (table 1.2.6), or 6 percent of the total area of the 48 States. (The differences between these data and the data in table 1.2.1 and figure 1.2.1 are accounted for primarily by Alaska, where large State holdings continue to grow as Federal land is transferred to

State ownership.) State holdings were highest in the Mountain States, and local government holdings were highest in the Lake States.

Figure 1.2.3--Land and Water Conservation Fund appropriations, 1978-97



Source: USDA, ERS, compiled from National Research Council, 1993 and "Land Letter" (various years).

Foreign individuals and corporations owned 15 million acres (or 1.2 percent) of the 1.3 billion acres of privately owned agricultural land (see Glossary, p. 38) as of December 31, 1995, over half of it in the Northeast, Mountain, and Pacific States (table 1.2.7). Foreign holdings in 1995 were up slightly over 1994 and 1981 (table 1.2.8). In 1995, foreign holdings exceeded 2 percent of privately owned agricultural land in nine States, led by Maine with 16 percent. Forest land accounted for 49 percent of all foreign holdings, pasture and other noncropped agricultural land for 32 percent, cropland for 16 percent, and nonagricultural land for 3 percent. Individuals and corporations from Canada held the largest share of foreign-owned agricultural land (32 percent), followed by owners from the United Kingdom (19 percent) and Germany (11 percent) (Krupa and others, 1996).

Farmland Tenure

On private land, decades-long trends in farm size and organizational structure continued between 1987 and 1992. Land in farms (see Glossary) totaled 946 million acres in 1992, down 19 percent from a peak

of 1.2 billion acres in 1940 (Wunderlich, 1995; fig. 1.2.4). Over about the same period, the number of farmland owners declined by half, farm numbers fell by nearly three quarters to 1.9 million, and average farm size nearly tripled, to 491 acres. Farms of 500 acres or more continue to represent an increasing percentage of total farm numbers (fig. 1.2.5). Meanwhile, the percentages represented by farms of 1-49 acres and 50-499 acres have moved in opposing directions since the turn of the century, indicating a shift from the former to the latter in the 1950's and

1960's followed by a reversal in the late 1970's and early 1980's. Of the 1.9 million farms in 1992, over half were still smaller than 180 acres (table 1.2.9). Farms of 500 acres or more, representing 19 percent of all farms, accounted for 79 percent of land in farms and 55 percent of total sales. Nearly half of all farms sold less than \$10,000 worth of agricultural products in 1992, while the 2 percent of farms with sales over \$500,000 accounted for nearly half of total sales (fig. 1.2.6).

Table 1.2.6—Land ownership by farm production region, 48 contiguous States, 1992¹

| Region | Federal | State | Local | Indian | Private | Total |
|----------------------|---------|-------|-------|--------|---------|---------|
| <i>Million acres</i> | | | | | | |
| Northeast | 2.7 | 10.5 | 2.4 | 0.1 | 94.9 | 110.6 |
| Appalachian | 8.6 | 2.5 | 0.9 | 0.1 | 110.7 | 122.7 |
| Southeast | 8.0 | 4.4 | 1.2 | 0.2 | 108.4 | 122.1 |
| Delta States | 6.2 | 2.2 | 0.9 | 0.0 | 81.1 | 90.4 |
| Corn Belt | 3.6 | 2.8 | 2.2 | 0.0 | 154.8 | 163.4 |
| Lake States | 8.4 | 6.5 | 12.7 | 1.1 | 93.4 | 122.0 |
| Northern Plains | 6.2 | 3.8 | 1.4 | 4.7 | 177.3 | 193.5 |
| Southern Plains | 4.4 | 5.1 | 1.7 | 0.3 | 199.0 | 210.5 |
| Mountain States | 267.9 | 35.4 | 1.5 | 35.7 | 206.2 | 546.8 |
| Pacific | 91.6 | 6.7 | 1.9 | 3.7 | 99.6 | 203.5 |
| Total | 407.5 | 79.8 | 26.9 | 45.9 | 1,325.3 | 1,885.5 |

¹ All land, including urban land.

Source: USDA, ERS, based on 1992 National Resources Inventory.

Table 1.2.7—U.S. agricultural landholdings of foreign owners, 1995

| Region | Acres foreign-owned | Percent of private land | Percent of total foreign holdings |
|-------------------------------|---------------------|-------------------------|-----------------------------------|
| Northeast | 3,522,260 | 4.2 | 23.3 |
| Lake States | 744,100 | 0.8 | 4.9 |
| Corn Belt | 596,338 | 0.4 | 3.9 |
| Northern Plains | 215,055 | 0.1 | 1.4 |
| Appalachian | 669,381 | 0.6 | 4.4 |
| Southeast | 1,677,943 | 1.7 | 11.1 |
| Delta States | 1,282,343 | 1.6 | 8.5 |
| Southern Plains | 1,265,983 | 0.7 | 8.4 |
| Mountain States | 2,959,690 | 1.5 | 19.6 |
| Pacific | 1,987,972 | 2.1 | 13.2 |
| Alaska, Hawaii, & Puerto Rico | 180,972 | 7.2 | 1.2 |
| U.S. total | 15,102,037 | 1.2 | 100.0 |

Source: USDA, ERS, based on Krupa and others, 1996.

Table 1.2.8—Proportion of foreign-owned to privately owned agricultural land, 1981-95¹

| Selected States ² | 1981 | 1987 | 1993 | 1994 | 1995 |
|------------------------------|------|------|------|------|------|
| <i>Percent</i> | | | | | |
| Arizona | 2.1 | 2.5 | 3.2 | 3.2 | 3.2 |
| California | 1.8 | 1.9 | 2.1 | 2.1 | 2.2 |
| Florida | 1.8 | 2.0 | 2.6 | 2.6 | 2.6 |
| Hawaii | 2.8 | 2.7 | 9.0 | 9.0 | 9.0 |
| Louisiana | 0.6 | 2.5 | 2.8 | 2.7 | 2.8 |
| Maine | 14.1 | 9.0 | 13.4 | 11.4 | 16.4 |
| Nevada | 0.7 | 0.6 | 3.5 | 3.5 | 4.7 |
| New Mexico | 1.9 | 1.6 | 2.2 | 2.2 | 2.2 |
| Oregon | 2.0 | 3.4 | 2.6 | 2.3 | 2.3 |
| Total U.S. | 1.0 | 1.0 | 1.2 | 1.1 | 1.2 |

¹ As defined by 7 USC 3508, includes both farm and forest lands.

² States with at least 2 percent foreign ownership in 1995.

Source: USDA, ERS, based on DeBral, 1993, and Krupa and others, 1996.

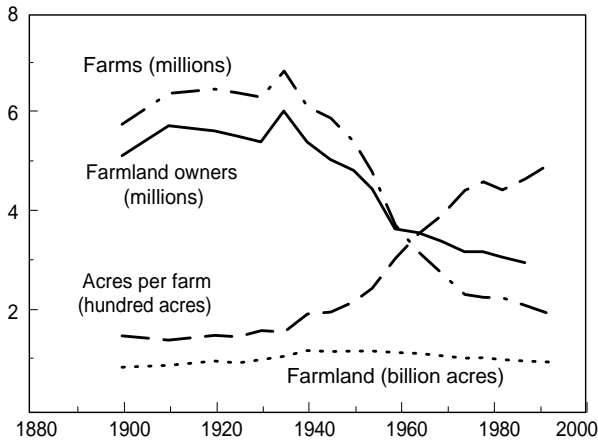
Concentration is receiving closer attention in the case of livestock production, with its associated waste management, water quality, and odor concerns (see chapter 2.2, *Water Quality*). Since 1959, for example, the number of farms on which hogs or pigs were sold has fallen by more than 85 percent (fig. 1.2.7), while the number of hogs and pigs sold has risen by 38 percent (*1992 Census of Agriculture*).

Despite the changing scale of farm operations, sole proprietorship continued to be the dominant organizational structure for farm businesses in 1992, accounting for 86 percent of farms and 64 percent of farmland, and generating 54 percent of the value of

agricultural production (table 1.2.10). Even among farm corporations, nearly 90 percent were family-held in 1992. While fewer in number and smaller in total acreage than sole proprietorships, partnerships and corporations were larger on average, in terms both of acreage and of value of production.

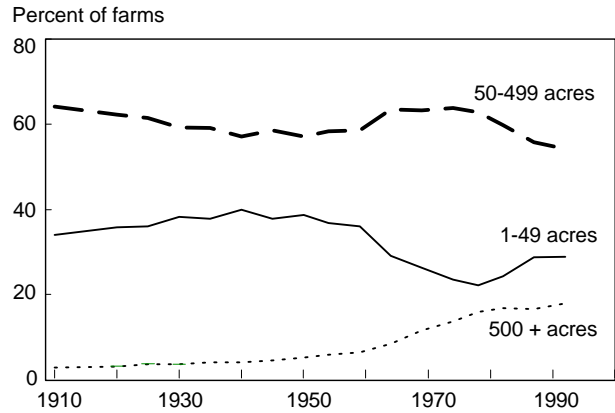
While most farm businesses are still operated as sole proprietorships, declining numbers of owners and increasing farm sizes have resulted in changing farmland ownership patterns. About 58 percent of all farms are now operated by full owners (who own all of the land they farm), 31 percent are operated by part owners (who own part of the land they farm), and 11

Figure 1.2.4--Farms, farmland, farm owners, and average acres per farm, 1900-92



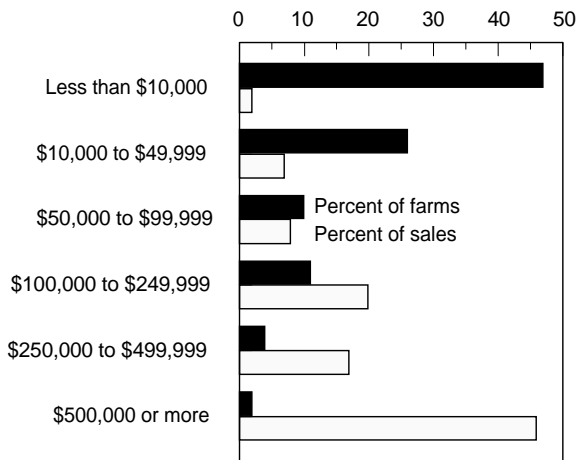
Source: USDA, ERS, based on Census of Agriculture, 1954 and 1992.

Figure 1.2.5--Changing size and concentration in U.S. agriculture, 1900-92



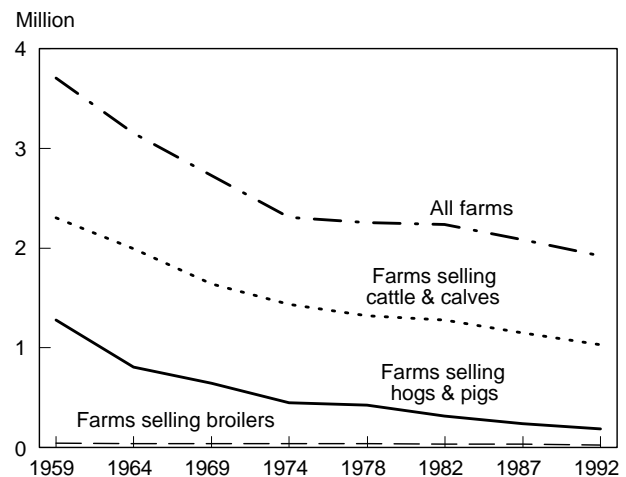
Source: USDA, ERS, based on Census of Agriculture, 1954 and 1992.

Figure 1.2.6--Distribution of farms by sales, 1992



Source: USDA, ERS, based on 1992 Census of Agriculture.

Figure 1.2.7--Livestock farm numbers, 1959-92



Source: USDA, ERS, based on 1992 Census of Agriculture.

Table 1.2.9—Size structure of U.S. farms, 1992

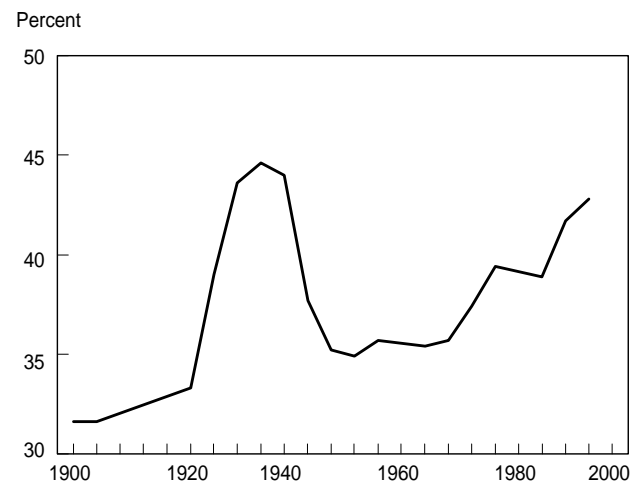
| | Number of farms operated by | | | | Land in farms (acres) | Total sales (\$ billion) |
|-------------------|-----------------------------|-------------|---------|-----------|--------------------------|-----------------------------|
| | Full owners | Part owners | Tenants | Total | | |
| Total | 1,111,738 | 596,657 | 216,905 | 1,925,300 | 945,531,506 | 162.6 |
| | <i>Percent of total</i> | | | | | |
| 1-9 acres | 7.2 | 0.4 | 1.0 | 8.6 | 0.1 | 3.0 |
| 10-49 acres | 15.9 | 2.6 | 1.7 | 20.1 | 1.1 | 6.8 |
| 50-99 acres | 10.6 | 2.8 | 1.3 | 14.7 | 2.2 | 5.6 |
| 100-179 acres | 9.9 | 3.9 | 1.7 | 15.6 | 4.3 | 7.8 |
| 180-259 acres | 4.6 | 3.2 | 1.1 | 8.9 | 3.9 | 6.2 |
| 260-499 acres | 5.2 | 6.3 | 1.8 | 13.3 | 9.7 | 15.2 |
| 500-999 acres | 2.5 | 5.8 | 1.4 | 9.7 | 13.7 | 19.8 |
| 1,000-1,999 acres | 1.0 | 3.5 | 0.7 | 5.3 | 14.7 | 16.3 |
| 2,000+ acres | 0.8 | 2.4 | 0.5 | 3.7 | 50.4 | 19.3 |
| All farms | 57.7 | 31.0 | 11.3 | 100.0 | 100.0 | 100.0 |

Source: ERS, USDA, based on 1992 Census of Agriculture.

percent are operated by tenants (who rent all of the land they farm) (table 1.2.9). While full owners outnumbered part owners and tenants in 1992, part owners operated larger farms on average (883 acres) than either full owners (266 acres) or tenants (566 acres) (*1992 Census of Agriculture*). Three-quarters of full owners operate farms smaller than 180 acres, while two-thirds of part owners operate farms of 180 acres or more. Between 1987 and 1992, part owners increased both as a share of total farm operators (29 to 31 percent) and in terms of the share of total land in farms they operated (54 to 56 percent).

The growth in part ownership reflects the increasing importance of leasing as a means of access to farmland. Farmland may be rented *out* for a variety of reasons, for example, as an investment by a nonoperating owner or as a reduction in the scale of operation by a farmer approaching retirement. Farmland may also be rented *in* for a variety of reasons. For example, it allows farmers to avoid tying up equity capital in land, reduces risk associated with asset depreciation, increases management flexibility in overall size of operation and combination of land types, and provides a means of entering agriculture (Rogers, 1991). Of the 946 million acres of farmland in 1992, nearly 43 percent (405 million acres) were rented by farm operators, up from 35 percent in 1954 and the highest proportion since 1940 (Wunderlich, 1995; fig. 1.2.8). About 282 million acres were rented by part owners, and 123 million acres were rented by tenants.

The increase in farmland leasing has occurred alongside an increase in land ownership by nonfarmers. Land owned by nonfarming landlords increased to 37 percent of all farmland in 1992, or 350 million acres, up from 36 percent in 1987 (Wunderlich, 1995). The importance of nonfarming landlords is evident in the nature of lease arrangements: nonfarming landlords may be less involved in farming decisions than are landlords who are farmers themselves, and this lesser degree of

Figure 1.2.8--Leased farmland as a percentage of total farmland, 1900-92

Source: USDA, ERS, based on Wunderlich, 1995.

Table 1.2.10—Farms, land in farms, and value of production by type of business organization, 1992

| Type of organization | Farms | | Land in farms | | | Value of production | | |
|----------------------|-----------|---------|-----------------|---------|----------------|--------------------------|---------|--------------------------|
| | Number | Percent | Acres (million) | Percent | Acres per farm | Total sales (\$ billion) | Percent | Sales per farm (\$1,000) |
| Sole proprietorship | 1,653,491 | 85.9 | 604.3 | 63.9 | 365 | 87.9 | 54.0 | 53.2 |
| Partnership | 186,806 | 9.7 | 152.8 | 16.2 | 818 | 29.3 | 18.0 | 157.0 |
| Corporation | 72,567 | 3.8 | 122.7 | 13.0 | 1,692 | 44.2 | 27.1 | 608.8 |
| Family-held | 64,528 | 3.4 | 110.8 | 11.7 | 1,718 | 34.4 | 21.1 | 533.0 |
| Other | 8,039 | 0.4 | 11.9 | 1.3 | 1,484 | 9.8 | 6.0 | 1217.7 |
| Other | 12,436 | 0.6 | 65.7 | 6.9 | 5,280 | 1.2 | 0.7 | 97.7 |
| Total | 1,925,300 | 100.0 | 945.5 | 100.0 | 491 | 162.8 | 100.0 | 84.5 |

Source: USDA, ERS, based on 1992 Census of Agriculture.

involvement may favor cash leases rather than crop-share leases. In 1992, cash rents were paid on 65 percent of rented farms, or 27 percent of all farms.

The simultaneous growth in farm size, farmland leasing, and part ownership—particularly the predominance of part ownership among larger farms—suggests that tenure arrangements may be evolving to accommodate larger operational holdings necessary for viable farming. The resulting decline in landowner participation in farming decisions may have important implications for conservation since owner-operators may differ from renter-operators in their incentives to use and conserve land.

Research on the relationship between tenure and adoption of conservation practices has produced mixed findings. Conventional expectations that owner-operators are more likely than renter-operators to adopt conservation practices are supported in some circumstances but not in others. Recent Cropping Practices Survey data show that the impact of tenure on adoption varies with the nature of particular conservation practices as well as by crop, HEL (highly erodible land) designation, and farm program participation (table 1.2.11).

Table 1.2.11—Adoption of selected conservation practices in major producing States, 1994¹

| Practice | Corn (10 States) | | Soybeans (8 States) | | Seven crops (28 States) | |
|---------------------------------------|--------------------------------|-----------------|---------------------|-----------------|-------------------------|-----------------|
| | Owner-operator | Renter-operator | Owner-operator | Renter-operator | Owner-operator | Renter-operator |
| Number of observations | 2,084 | 2,612 | 1,246 | 1,891 | 5,296 | 6,812 |
| | <i>Percent of observations</i> | | | | | |
| Highly erodible land | 20.3 | 18.1 | 18.7 | 16.8 | 24.0 | 21.0 |
| Mulch tillage, 30% residue | 22.0 | 23.2 | 27.7 | 23.1 | 21.7 | 19.9 |
| No till | 14.9 | 18.8 | 23.8 | 24.3 | 12.6 | 15.0 |
| Ridge till | 2.2 | 2.7 | 0.5 | 0.5 | 0.9 | 1.1 |
| Row crops & small grains ² | 4.5 | 3.8 | 4.6 | 4.9 | 9.6 | 8.3 |
| Hay, pasture, other ¹ | 10.1 | 4.5 | 2.5 | 3.3 | 5.5 | 3.1 |

¹ For States and crops included, see "Cropping Practices Survey" in the appendix.

² As part of a 3-year crop rotation.

Source: USDA, ERS, 1994 Cropping Practices Survey data.

Federal Restrictions on the Use of Public and Private Land

Land tenure involves more than land ownership. To balance landowners' rights with the rights of other members of society, rights to use land may be limited by government regulations, zoning ordinances, conservation easements, contracts, or other instruments that arise out of law, custom, and the operation of private markets (see box, "The Private Property Rights Issue"). This holds true whether the landowner is a private individual or the Federal Government.

For example, as of 1993, 96 million acres of Forest Service, BLM, FWS, and NPS land had been designated as wilderness by Congress, restricting the use of motorized equipment, construction of buildings and roads, development of commercial enterprises, and other activities (U.S. General Accounting Office, 1995). Another 33 million acres had been designated as wilderness study areas, providing interim protection until Congress makes a final decision on their status. In all, 44 percent of Federal lands (271 million acres, including all 164 million acres managed by FWS and NPS) are encumbered for conservation purposes by legislative or administrative restrictions.

Federal programs also seek to encourage conservation on privately owned land through both regulatory and nonregulatory means. Through Conservation Reserve Program (CRP) contracts and Wetlands Reserve Program (WRP) easements, the Federal Government acquires cultivation rights from willing farmers and farmland owners in an effort to reduce soil erosion, protect wildlife habitat, and improve water quality. The Endangered Species Act and the Clean Water Act regulate the ways in which landowners may use their land. (These instruments, as well as other policy tools, are discussed further in chapters 6.1-6.5) Most CRP contract holders own the land on which they hold CRP contracts. In 1993, 72 percent of CRP contract holders (controlling 70 percent of CRP acres) were owner-operators, 16 percent (controlling 15 percent of CRP acres) were owner-nonoperators, and 5 percent (controlling 7 percent of CRP acres) were renter-operators (Osborn, Schnepf, and Keim, 1994). WRP participation is limited to landowners. In addition, Federal tax code provides income and estate tax benefits for landowners who donate interests in environmentally valuable land to qualified conservation organizations.

The Private Property Rights Issue

Property rights are the building blocks of land tenure. Property rights may be held publicly, as in federally owned national forests; held privately, as in most U.S. farmland; or held in combination, as when a government agency acquires a conservation easement on private land. A particular landowner may hold the rights to use his or her property for various purposes and to receive benefits or profits from those uses. Those rights generate value. Because a landowner's actions on his or her land may also generate adverse effects beyond the parcel's boundaries, however, the rights of each landowner are generally limited by the rights of other landowners and the rights of other members of society. These limitations take the form of local, State, and Federal restrictions on land use.

Private property is protected by the Constitution's Fifth Amendment, which states that private property shall not be taken for public use without just compensation. Only physical appropriations of property were viewed as "takings" until 1922, when the Supreme Court ruled that regulation could also be considered a taking if it went "too far" (*Pennsylvania Coal Company v. Mahon*). Even so, the courts have considered a regulation's impact on a property's value as only one among several criteria—such as the nature of the public purpose accomplished by the regulation—in determining whether a taking has occurred.

Legislation recently considered by Congress would require the Federal Government to compensate landowners whenever Federal restrictions on land use cause property values to fall by more than a threshold percentage (Wiebe, Tegene, and Kuhn, 1995). Such legislation would have established diminution in value as a sufficient criterion by which takings could be determined, regardless of other economic and legal criteria. Most States have also considered takings legislation in recent years, and 20 States have now enacted takings bills. Most of the bills passed by State legislatures require "takings impact assessments" rather than compensation for diminished property values, but six States (Florida, Louisiana, Mississippi, Oregon, Texas, and Washington) passed compensation bills in 1995 (*Land Use Law Report*, 1995). Oregon's bill was vetoed by the Governor in July 1995, and Washington's was defeated in a referendum in November 1995, a year after voters defeated a similar measure in Arizona (American Resources Information Network, 1997).

Table 1.2.12—State farmland preservation programs, 1996

| State | Year established | Acres preserved | Number of farms | Average cost per acre ² |
|----------------------------|------------------|-----------------|-----------------|------------------------------------|
| Maryland | 1977 | 122,068 | 837 | \$877 |
| Massachusetts | 1977 | 37,445 | 409 | \$2,718 |
| Connecticut | 1978 | 25,192 | 165 | \$2,951 |
| New Hampshire ¹ | 1979 | 8,469 | 127 | n.a. |
| Rhode Island ¹ | 1982 | 2,428 | 30 | \$5,766 |
| New Jersey | 1983 | 28,713 | 195 | \$3,236 |
| Pennsylvania | 1988 | 76,360 | 611 | \$2,113 |
| Vermont | 1988 | 36,580 | 111 | \$598 |
| Maine ¹ | 1990 | 307 | 1 | \$1,238 |
| Delaware | 1991 | 8,500 | 31 | n.a. |
| Kentucky | 1994 | 0 | 0 | -- |
| Total | 1977-94 | 346,062 | 2,517 | n.a. |

n.a. means not available; -- means not applicable.

¹ Data as of July 1995.

² Current dollars.

Apart from its treatment of conservation easements in the tax code, the Federal Government's role in farmland preservation consists of three pieces of legislation. The Farmland Protection Policy Act, part of the 1980 Farm Act, requires Federal agencies to identify and minimize adverse effects of their programs on farmland preservation and to ensure compatibility with State, local, and private farmland preservation programs. The Farms for the Future Act, part of the 1990 Farm Act, authorizes the establishment of an Agricultural Resource Conservation Demonstration Project, which provides Federal loan guarantees and interest rate assistance for State trust funds through the Farmers Home Administration. So far only Vermont has been given authority to participate. In 1996, the Federal Agriculture Improvement and Reform Act increased direct Federal participation in farmland protection by establishing a Farmland Protection Program at the Federal level. This program is to protect 170,000-340,000 acres of prime, unique, or other farmland through USDA acquisition of easements or other interests in farmland, with funding of up to \$35 million from the Commodity Credit Corporation. About \$14 million has been spent so far to help acquire easements on 76,000 acres in 17 States.

Non-Federal Programs to Preserve Land

State and local government agencies and nongovernmental organizations also acquire partial interests in private land for conservation purposes, including the preservation of farmland, wetlands, and wildlife habitat. Farmland preservation programs,

which seek to retain land in agricultural use when land values rise due to urban pressure, operate primarily at the State and local levels.

One method used by State governments is to tax agricultural, forest, and open lands based on their current-use value rather than on their market value (which might reflect development pressure). Beginning with Maryland in 1956, all 50 States have now established programs that provide preferential property tax treatment for agricultural land (Malme, 1993; Aiken, 1989). Twenty States have "pure preferential programs," which provide special treatment while land remains in agricultural use but extract no penalty when land use changes. Other States impose deferred or "roll-back" taxes plus penalties when land is converted in order to recover at least a portion of the difference between the taxes paid and the taxes that would have been due without preferential treatment. Preferential property tax treatment programs have generally had a limited effect in preventing conversion of farmland to more intensive uses because the tax benefits offered have not matched the profits available from conversion in areas experiencing development pressure (Malme, 1993).

In addition to property, income, and estate tax incentives for farmland preservation, public and private agencies also prevent farmland conversion through acquisition of agricultural conservation easements. Conservation easements are restrictions on land use voluntarily negotiated between landowners and conservation organizations (both

Table 1.2.13—County farmland preservation programs, 1995¹

| County | Farms preserved to date | Acres preserved to date |
|-------------------|-------------------------|-------------------------|
| Montgomery (MD) | n.a. | 46,813 |
| Marin (CA) | 38 | 25,504 |
| Carroll (MD) | 184 | 24,604 |
| Lancaster (PA) | 260 | 22,000 |
| Sonoma (CA) | 48 | 21,000 |
| Howard (MD) | 142 | 20,119 |
| Caroline (MD) | 131 | 18,350 |
| Harford (MD) | n.a. | 16,861 |
| Baltimore (MD) | 107 | 11,714 |
| Queen Anne's (MD) | 53 | 10,411 |

n.a. means not available.

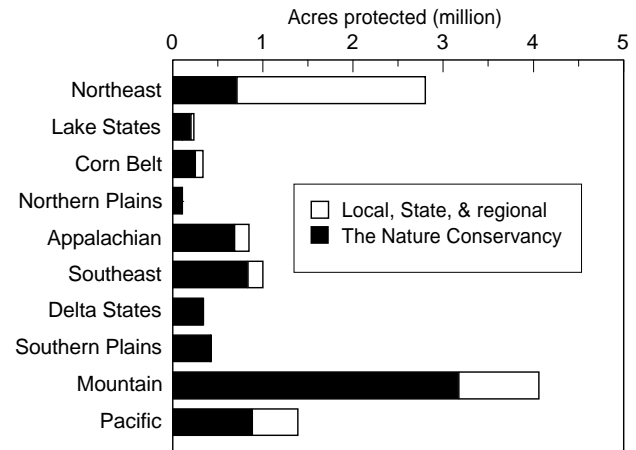
¹ These data overlap to an undetermined extent with the State data in table 1.2.12.

Source: USDA, ERS, based on *Farmland Preservation Report*, 1996.

public and private) that are binding on current and future landowners over a specified period of time. State and county programs generally acquire farmland preservation easements at fair market value, defined as the difference between the fair market value of the land unencumbered by an easement and the value of the land in agricultural use (Wiebe, Tegene, and Kuhn, 1996). Farmland preservation programs using easement acquisition have been established in 11 States to date, beginning with Maryland in 1977 (table 1.2.12). Maryland's is the largest program, protecting over 122,000 acres on over 800 farms so far. The State programs together have protected over 346,000 acres on over 2,500 farms, at average costs ranging from \$598 per acre in Vermont to \$5,766 per acre in Rhode Island. County farmland preservation programs are also active in many States, although the Nation's 10 largest county programs are concentrated in Maryland, California, and Pennsylvania (table 1.2.13).

Farmland preservation is also a goal of many land trusts, nonprofit conservation organizations that protect land from more intensive uses through direct involvement in voluntary land transaction activities (Wiebe, 1995). Over 1,000 land trusts operate at the local, State, or regional level, protecting 4 million acres through land ownership, conservation easements, and land transfers to government agencies. A few land trusts operate nationwide. The largest of these, The Nature Conservancy, specializes in the preservation of biodiversity, protecting 8 million acres in the United States. Other national land trusts had protected 2 million acres as of 1994. Acreage

Figure 1.2.9--Land protected by land trusts as of 1994



Source: Compiled by ERS from Wiebe (1995).

protected by The Nature Conservancy was highest in the Mountain States, at 3.2 million acres (fig. 1.2.9). Acreage protected by local, State, and regional land trusts was highest in the Northeast, at 2.1 million acres.

The number of local, State, and regional land trusts grew by 30 percent between 1990 and 1994, to 1,145. Acreage protected grew by 49 percent over the same period. About 0.6 million acres were owned by such land trusts, 0.9 million acres were transferred to other private or government conservation agencies, 0.8 million acres were protected by conservation easements, and 1.8 million acres were protected by other means. Acreage protected by The Nature Conservancy increased by 51 percent between 1990 and 1994. About 0.7 million acres were owned, 2.6 million acres had been transferred to other conservation agencies, 0.6 million acres were protected by conservation easements, 1.8 million acres were protected under lease or management agreements, and 2.1 million acres were protected by other means.

The ultimate success of public agencies and private organizations in using easements and other partial interests in land to protect environmentally sensitive areas depends on the specific land-use restrictions that individual agreements contain. These restrictions may vary widely from one agreement to the next. Program success also depends on the strictness with which these restrictions are monitored and enforced.

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Glossary

Cropland—Farmland in crop rotations, including cropland used for crops, idle cropland, and cropland used for pasture only, totaling 460 million acres in 1992 (Daugherty, 1995; table 1.2.1).

Family farm—A variety of characteristics have been used to describe family farms, but none has gained widespread acceptance. Among these characteristics are the extent to which a single family owns or controls farm assets, provides management and labor, and accepts risk, as well as the extent to which the farm business is the family's principal source of income. The relative emphasis placed on each criterion varies widely and has been the subject of some controversy (for example, in debates over who should receive farm program benefits). Only the Farmers Home Administration currently uses a family farm definition as a qualifier for a government program, based very broadly on farm income and family contributions to management and labor (*Code of Federal Regulations*, §1941.4).

Farm—The *Census of Agriculture* defines a farm as any place from which \$1,000 or more of agricultural products were sold or normally would have been sold during a year. There were 1.9 million such farms in 1992 (1992 *Census of Agriculture*, 1994; table 1.2.9; fig. 1.2.4).

Farmland—Land in farms (see above) as determined by the *Census of Agriculture*, totaling 946 million acres in 1992 (table 1.2.9; fig. 1.2.4).

Land in farms is used interchangeably with farmland (see above).

Privately owned agricultural land—All private lands (table 1.2.1) less transportation and urban lands (Krupa and others, 1996). Includes cropland, pastureland, forest land, and rangeland, and totaled 1.3 billion acres in 1995.

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Recent ERS Reports on Land Tenure Issues

Partial Interests in Land: Policy Tools for Resource Use and Conservation. AER-744, Nov. 1996 (Keith Wiebe, Ababayehu Tegene, and Betsey Kuhn). Partial interests in land, such as conservation easements, are increasingly used by public and private agencies to balance resource use and conservation objectives on environmentally sensitive land without incurring the political costs of regulation or the financial costs of outright land acquisition. Examples described in this report include the Conservation Reserve Program, the Wetlands Reserve Program, and State and local farmland protection programs.

Land Trusts Protected 14 Million Acres as of 1994, AREI Update, 1995, No. 13 (Keith Wiebe). The Nature Conservancy and other national land trusts protected about 10 million acres as of 1994 through ownership, easements, and other means. Local, State, and regional land trusts protected an additional 4 million acres. Data are reported by State and region.

Foreign Ownership of U.S. Agricultural Land Through December 31, 1995, SB-931, Oct. 1996 (Kenneth Krupa, Charles Barnard, and Jacqueline Ross). Foreign persons or U.S. corporations in which foreigners held a significant interest owned 15.1 million acres of U.S. agricultural land in 1995, about 1 percent of all privately owned agricultural land in the United States. Data are reported by State and by foreign country.

"Farmland Rentals: Central to Farming," *Agricultural Outlook*, July 1995 (Bob Hoppe, Bob Green, and Gene Wunderlich). Data from the 1992 Farm Costs and Returns Survey indicate that about 40 percent of land in farms is rented, most through cash leases. Renting helps young farmers gain access to land and helps spread some of the risks of farming.

1992 Census Documents More Farmland Leasing, AREI Update, 1995, No. 7 (Gene Wunderlich). Data from the 1992 Census of Agriculture indicate that farmers leased 43 percent of the land they operated in 1992, the highest proportion since 1940. Most leased land was rented from nonfarmers, and cash rents were paid on 65 percent of leased farms.

Purchase of Development Rights and the Economics of Easements, AER-718, June 1995 (Henry Buist, Carolyn Fischer, John Michos, and Ababayehu Tegene). By the end of 1992, State or county governments in 15 States had developed programs to purchase development rights from farmland owners, primarily in the Northeast. Program goals, procedures, and achievements are discussed, along with the role of private land trusts and of Federal tax incentives for donation of conservation easements.

Structural and Financial Characteristics of U.S. Farms, 1991: 16th Annual Family Farm Report to Congress, AIB-712, June 1995 (Judith Kalbacher, Victor Oliveira, Susan Bentley). Farmers operated 854 million acres in the 48 contiguous States in 1991, according to Farm Costs and Returns Survey data. The average farm generated sales of \$69,298, of which 44 percent came from crop sales, 42 percent from livestock sales, and 5 percent from government payments.

"Farm Numbers Continue to Drop," *Agricultural Outlook*, Jan.-Feb. 1995 (Fred Gale). The 1992 Census of Agriculture reports a total of 1.9 million farms in 1992, down from 2.1 million in 1987 and 6.8 million in 1935. Exits from farming exceeded entries in all regions, but productivity and sales continued to grow. Farms averaged 491 acres in 1992, with sales of \$84,459 per farm.

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