

Trends in Major Uses of Land

The most consistent trends in major uses of land (1945-2002) have been an upward trend in **special-use** and **urban** areas and a downward trend in total grazing lands (table 2; see Appendix for detailed descriptions of terms in **bold**).⁴ **Forest-use** area generally declined from 1949 to 1997 but increased by about 1 percent in the latest period (1997-2002). Total **cropland** area has declined over this 57-year period, but has not done so consistently. Total cropland area increased in the late 1940s, declined from 1949 to 1964, increased from 1964 to 1978, and then declined again from 1978 to 2002. Total cropland area in 2002 was 442 million acres, its lowest level since the Major Land Uses series began in 1945, but only 2 million acres (less than 1 percent) below the previous low in 1964. From 1997 to 2002, cropland area declined by almost 14 million acres (3 percent), including a 6-million-acre decline in **cropland pasture**. These changes were more than offset by an increase in **grassland pasture and range** and by an increase in forest and special-use areas. Land classed under **miscellaneous other** uses also declined by more than 7 million acres (3 percent) from 1997 to 2002.

⁴ Major land-use estimates for the 48 contiguous States began in 1945, but estimation for the entire United States did not begin until 1949. Estimates for 1945 are indicative of total acreages in cropland, grassland pasture and range, and urban areas, which are concentrated in the contiguous 48 States, but not of forest, special uses, and other miscellaneous uses, which account for 99 percent of Alaska's land area. Estimates for special uses do not include all 50 States until 1959.

Table 2

Major uses of land, United States, 1945-2002

Land use	1945 ¹	1949	1959	1964	1969	1974	1978	1982	1987	1992	1997	2002 ²
	-----Million acres-----											
Cropland	451	478	458	444	472	465	471	469	464	460	455	442
Cropland used for crops	363	383	359	335	333	361	369	383	331	338	349	340
Idle cropland	40	26	34	52	51	21	26	21	68	56	39	40
Cropland pasture	47	69	66	57	88	83	76	65	65	67	68	62
Grassland pasture and range ³	659	632	633	640	604	598	587	597	591	591	580	587
Forest-use land ⁴	602	760	745	732	723	718	703	655	648	648	641	651
Grazed forest-use land	345	320	245	225	198	179	172	158	155	145	141	134
Other forest-use land	257	440	501	507	525	539	531	497	493	503	501	517
Special-use areas ⁵	85	87	115	144	143	147	158	270	279	281	286	297
Urban areas ²	15	18	27	29	31	35	45	50	57	59	66	60
Miscellaneous other land ⁶	93	298	293	277	291	301	301	224	227	224	236	228
Total land area ^{1,7}	1,905	2,273	2,271	2,266	2,264	2,264	2,264	2,265	2,265	2,263	2,263	2,264

¹ The estimates for 1945, and for special uses until 1959, only account for the 48 contiguous States. The estimates for all other years include all 50 States.

² The 2002 urban acreage estimate is not directly comparable to estimates in prior years due to a change in the definition of urban areas in the 2000 Census of Population and Housing. The change in Major Land Uses "urban" acreage between 1997 and 2002 reflects a definitional change, rather than a decline in acreage. A full description of the new Census definition of urban areas can be found in the *Federal Register* (HUD/BOC, 2002).

³ Other grassland pasture and nonforested range (excludes cropland used only for pasture and grazed forest land).

⁴ Excludes an estimated 98 million forest acres in parks and other special uses of land.

⁵ Includes land specified in table 9. Data for all 50 States are not available until 1959.

⁶ Includes areas in miscellaneous uses not inventoried, marshes, open swamps, bare rock areas, desert, tundra, and other land generally having low value for agricultural purposes.

⁷ Totals differ over time due to remeasurement of the land area. Distribution of land uses may not add to totals due to rounding.

Sources: DOI/BLM, 2003; DOT/BTS, 2004; DOT/FAA, 2002; DOT/FHWA, 2002; DOT/FRA, 2004; USDA/FS 1989, 1998; DOI/FWS, 2001; GSA, 2001; GDT, 2000; USDA/NASS, 2004a, 2004b, 2005; DOI/NPS, 2002; HUD/BOC, 1992, 2002, 2003; USDA/NRCS, 2000, 2004a; and WI, 2002. Estimates prior to 2002 are from Vesterby and Krupa, 2001; Daugherty, 1991, 1995; Frey, 1973, 1979, 1982; Frey and Hexem, 1985; Frey et al., 1968; and Wooten et al., 1962. The estimates are not strictly comparable.

In maintaining the Major Land Uses series, ERS attempts to use a consistent methodology for measuring land use, but tradeoffs are sometimes necessary between consistency and accuracy. As new and improved data become available and are incorporated into the estimates, some of the land-use estimates may change relative to previous years, and it may not be possible to revise all of the historical estimates accordingly. Some of the changes in estimates between 1997 and 2002 reflect differences on paper rather than differences in actual land use. Most strikingly, land in urban areas is estimated at 60 million acres in 2002, compared with an estimated 66 million acres in 1997. This decline is due to a change in the criteria used to define urban areas in the 2000 Census (see “Urban and Rural Residential Uses,” p. 28). After adjusting earlier estimates for the new criteria, the estimated urban area increased by about 13 percent between 1990 and 2002. Similarly, some of the 11-million-acre increase in the estimates for special-use areas from 1997 to 2002 reflects changes in data on transportation lands and farmsteads, rather than actual changes in land use.

Changes in land-use estimates for one category necessarily imply changes in estimates for other land uses, given the fixed amount of total land. Though all land-use categories require reconciliation among sources at the State level, some categories in the Major Land Uses series are adjusted more than others based on the residual amount of land after other uses are tabulated. These categories are miscellaneous and other land and, to some extent, grassland pasture and range. For example, the reclassification of land from urban to rural areas from 1997 to 2002 may account for the estimated 1-percent increase in grassland pasture and range areas, for which less reliable data sources are available relative to cropland and forest-use areas. Similarly, the improved measurement of transportation lands in the special-use category may account for some of the 3-percent decline in the estimated area in miscellaneous other land uses. In general, more confidence should be afforded the broader land-use trends over decades rather than any particular 5-year fluctuations.

The National Resources Inventory (NRI), conducted by USDA’s Natural Resources Conservation Service (NRCS) in cooperation with Iowa State University, is an alternative source of estimated changes in land use for the contiguous 48 States. While the NRI does not account for all land use (Federal land and Alaska are omitted) and does not use the same definitions or data gathering procedures as the Major Land Uses series, it samples individual points on the landscape and collects a range of information on soil types and other physical characteristics.⁵ Between 1982 and 1997, the NRI repeatedly sampled the same points every 5 years, allowing the construction of land-use transition matrixes. Transition matrixes specify where each inventoried change in land use came from and where it went. Since the 1997 survey, the NRI has sampled a smaller number of points on an annual basis. Based on the new annual sample, NRCS provides annual estimates of national land use and summary information on selected land-use transitions.⁶

The NRI indicates a net decline in cultivated and uncultivated cropland area of 8 million acres between 1997 and 2002 (table 3). During this period, there were larger shifts of land both into and out of the cropland category.

⁵ Information on urban land and water bodies is collected for all of the NRI’s primary sampling units, averaging 158 acres in size and covering about 2-6 percent of each county. Information on other land uses is collected on two to three sample points within each of these primary sampling units (Nusser et al., 1998).

⁶ Point-level data are publicly available for the 5-year NRI surveys, enabling the analysis of three land-use transitions for each sample point (1982-87, 1987-92, 1992-97). At the time of this study, point-level data were not publicly available for the annual surveys started in 2001.

Table 3

Land use in the 48 contiguous States: National Resources Inventory estimates

Year	Cropland	Conservation Reserve Program (CRP) ¹	Pasture land	Range land	Forest land grazed	Forest land ungrazed	Other rural land ²	Developed land ³	Water and Federal areas	Total ⁴
-----Million acres-----										
1982	419.6	0	131.0	415.5	64.6	338.4	48.0	72.8	447.7	1,937.7
1987	406.2	13.8	127.2	409.3	62.7	341.7	48.6	79.0	449.3	1,937.7
1992	381.2	34	125.1	406.6	61.7	342.3	49.3	86.5	450.9	1,937.7
1997	376.4	32.7	119.5	404.9	58.2	346.5	50.3	97.6	451.6	1,937.7
2002	368.4	31.6	117.3	405.3	55.1	349.8	50.6	107.3	452.3	1,937.7

¹ Initiated by the Farm Security Act of 1985.

² Includes small and large urban built-up land as well as rural transportation land (see Appendix for complete descriptions of the different land-use categories).

³ A National Resources Inventory (NRI) category including farmsteads and other farm structures, field windbreaks, barren land, and marshland.

⁴ Distributions may not add to totals due to rounding.

Sources: USDA/NRCS, 2003, 2004a.

Lands shifting into cropland from another use over 1997-2001 totaled 16.6 million acres, with half of the new cropland transitioning from pasture uses, 35 percent from CRP acreage, and 15 percent from all other uses. From 1997 to 2001, lands exiting the cropland category totaled 23.3 million, with 43 percent of the land shifting to pasture, 32 percent to CRP, 8 percent to **developed uses**, and the remaining 17 percent to all other use categories. Based on NRI data, the overall change in forest area from 1997 to 2001 was not statistically different than zero. However, this apparent lack of change masks larger flows of land to and from the forest category. Approximately 7.4 million acres of land transitioned to forests from 1997 to 2001, with 53 percent of the land coming from pasture, 16 percent from cropland, and 31 percent from other uses. At the same time, about 7.2 million acres of forest lands transitioned to other uses, with 57 percent of the land shifting to urban development, 17 percent to cropland, and 26 percent to other uses (USDA/NRCS, 2003).

The land-use acreage totals and net changes in land use indicated by NRI differ from the Major Land Uses estimates due to the differences in coverage and definitions (tables 2-3). The NRI estimate for **large urban and built-up areas** was 77.6 million acres in 2001. In addition, the NRI estimates 6.7 million acres of **small built-up areas**. Together, the NRI estimates 84.3 million acres of built-up land. This number is significantly less than the ERS estimate of 154 million acres of urban and **rural residential land**.

The Major Land Uses (MLU) series estimates a decline in total cropland of 20 million acres over 1982-2002, which is equivalent to the NRI estimated change in cropland for this period if CRP and cropland are combined (CRP is classed as idle cropland in MLU but as a distinct land use in NRI). MLU indicates that cropland pasture and grassland pasture and range declined by 13 million acres, compared with a decline of 24 million acres in the NRI. MLU's inclusion of Federal lands, comprising more than a quarter of grassland pasture and range lands (see "Major Uses of Land, by Class of Ownership" p. 35), may account for this difference. For forest land, NRI shows an increase of almost 2 million acres from 1982 to 2002, in contrast to a

decrease of 4 million acres in forest-use land in the MLU series. MLU includes public and Alaskan land in the forest-use category, excludes forested land in parks and other special uses, and employs different estimation procedures than NRI.

The MLU special-uses category increased by 27 million acres over 1982-2002. Much of the MLU special-use land has no similar category in the NRI, but is included in NRI's forest land, other rural land, developed land (which includes rural transportation uses), and Federal areas. These comparisons serve to emphasize that the Major Land Uses estimates include land use for all land in the United States, including Federal land and all 50 States.