



REVISED 1997 NATIONAL RESOURCES INVENTORY: CHANGES IN LAND COVER/USE

ABSTRACT

The National Resources Inventory (NRI) is the most comprehensive natural resource database in the United States. Historically, the USDA Natural Resources Conservation Service (NRCS) conducted the NRI every five years beginning in 1982. NRCS field staff collected data from 300,000 Primary Sample Units and about 800,000 sample points. Researchers at Iowa State University expanded this information to develop a national picture of natural resource conditions and trends. In addition to providing information about soil erosion, wildlife habitat, wetlands and conservation practices, the NRI is the best source for agricultural land conversion data. The 1997 NRI originally was released on December 7, 1999. Revised 1997 data, dated December 2000, were released on January 9, 2001, and continue to show accelerated conversion of productive agricultural land to developed uses. In 2001, NRCS began switching to an annual or continuous NRI to provide more timely information. This transition is expected to take several years.

During this period, annual NRIs will continue to improve providing a broader spectrum of results at additional geographic levels (regional, then state, and eventually sub-state). The statistical reliability of results from the 2005 Annual NRI, which will be released in early 2007, should approach that of the 1997 NRI. This fact sheet provides general information about the 1997 NRI the most complete NRI data currently available and a more detailed discussion of changes in land cover/use.

HIGHLIGHTS

Revised 1997 NRI data show that between 1992 and 1997 more than 11 million acres were converted to developed uses. Of this amount, more than 6 million acres were agricultural land (crop, pasture, range and land enrolled in the Conservation Reserve Program). This translates to an average annual agricultural land conversion rate of roughly 1.2 million acres per year between 1992 and 1997 a 51 percent increase above the average annual rate reported for 1982 to 1992.

DESCRIPTION

The NRI is a statistically valid survey of the nation's non-federal lands. It documents natural resource conditions and trends, including the conversion of agricultural land to developed uses. Important data elements include, but are not limited to:

- Land cover and land use (e.g., developed areas, water areas, cropland and forest land);
- Soil erosion;
- Selected conservation practices;
- Wildlife habitat; and
- Wetlands.

Historically, the NRI has been conducted every five years by the NRCS in cooperation with Iowa State University's statistical laboratory. National resource inventories were performed in 1977, 1982, 1987, 1992 and 1997. Data elements were consistent for the last four complete inventories and provide information on trends over 15 years. Figures are statistically significant at the national and state level. Data also may be statistically valid for some counties.

On July 11, 2003, NRCS released the first annual NRI. The annual NRIs are based on data collected from a subset of the 800,000 sample points established for previous NRIs. Statistically significant national estimates are available but state estimates are not. Background information and annual estimates are posted at <http://www.nrcs.usda.gov/technical/NRI/>. NRCS is switching to an annual or continuous NRI to provide more timely information. Annual NRIs will continue to improve providing a broader spectrum of results at additional geographic levels (regional, then state and eventually sub-state). The statistical reliability of results from the 2005 Annual NRI, which will be released in early 2007, should approach that of the 1997 NRI.

FUNCTIONS AND PURPOSE

The NRI was developed to fulfill NRCS reporting requirements and to help measure the effectiveness of conservation practices and programs. Resource inventory activities were authorized by the federal Rural Development Act of 1972. The act directed the U.S. secretary of agriculture to create a land inventory and monitoring program and to report on the conditions and trends of soil, water and related resources at regular intervals not to exceed five years. The Soil and Water Resources Conservation Act of 1977 and the Food Security Act of 1985 underlined the need for a periodic assessment of the nation's natural resources.

DATA COLLECTION

NRCS field staff collect data from 300,000 Primary Sample Units (PSUs) and about 800,000 sample points. PSUs are blocks of land that range in size from 40 to 640 acres. Sample points are specific locations within PSUs identified by map coordinates.

For the 1997 NRI, NRCS staff primarily interpreted aerial photographs and used other remote sensing techniques to monitor natural resource conditions and trends. They supplemented this information with on-site visits and ancillary materials, such as field office records and NRCS soil surveys. Data were compiled from July 1997 through October 1998.

Some data elements are collected for entire PSUs; others are collected only at sample points. Estimates for land converted to developed uses are based on changes observed over the entire PSU. NRCS field staff use a set of standard, detailed guidelines to make their determinations. For example, to qualify as built-up, strip development must occur at a specified density five structures per half mile along one side of the road or five structures per quarter mile along both sides of the road. For this reason, the NRI does not capture low-density development.

Researchers at Iowa State University expand data gathered from PSUs and sample points to develop a picture of natural resource conditions and trends. Information collected prior to 1997 was reviewed and adjusted during the most recent inventory to correct past reporting errors and update figures obtained from other sources. Additionally, in March 2000, the NRCS discovered a programming error in the statistical software used to calculate estimates for the inventory. Revised data, dated December 2000,

were released in January 2001. All figures, including those from earlier reporting periods, have changed. For these reasons, comparisons between two reporting periods must be based on the data released with the revised 1997 NRI.

USES

The NRI is the most comprehensive natural resource database in the United States. In addition to providing information about soil erosion, wildlife habitat, wetlands and selected conservation practices, the NRI is the best source for agricultural land conversion data. The NRI reports on all land use changes over a given time period. In particular, the NRI documents the amount of crop, CRP, range and pasture land converted to developed uses over a given time period.

Many individuals use the Census of Agriculture to try to understand agricultural land conversion. However, the census only captures *net* changes in land in farms and does not explain what happened to land taken out of production or where additional acres came from. Decreases in land in farms do not necessarily equal the amount of farmland developed. In addition, recent reporting changes, like the expansion of land in farms to include short woody crops and entire farms enrolled in the CRP, have inflated farmland figures in many regions and make it difficult to compare statistics over time. The census supplies a wealth of information about agricultural production and operator characteristics, but it does not provide a complete picture of land use trends.

LIMITATIONS

- NRI figures are estimates based on a statistically valid sample, not absolute values based on a census;
- Although county-level figures may be available, users must be aware that statistical reliability can be low; and
- The NRI may under-report low-density residential development.

AVAILABILITY

The revised 1997 NRI, dated December 2000, was released on January 9, 2001. Information about data collection, statistical reliability and national results are available at: http://www.nrcs.usda.gov/technical/NRI/1997/summary_report. Statistics are presented in maps, other graphics, the 1997 NRI Highlights and 1997 NRI Summary Report. The summary report provides a good overview. It contains



background information about the NRI and a series of figures and tables that portray the data. Selected state data tables are posted on NRCS state office Web pages. The directory for NRCS state offices is located at: <http://www.nrcs.usda.gov/about/organization/regions.html>. Additional statistics not included in the summary tables can be obtained by contacting NRCS NRI specialists. NRI specialists are typically stationed in NRCS state headquarters.

HOW TO READ THE TABLES

Tables 5, 6, 7 and 8 of the summary report (Table 8 is attached here) depict changes in land cover/use for four different reporting periods. The numbers represent thousands of acres. Row headings refer to land cover/use at the beginning of the reporting period; column headings refer to the land cover/use at the end of the reporting period. Read the table horizontally to determine how a land use was distributed at the end of the reporting period. Read vertically to find out where land cover/use reported at the end of the reporting period came from. Instructions are provided at the bottom of each table.

For example, to determine how much agricultural land was developed between 1992 and 1997, read down the **Developed Land** column in Table 8. The table shows that 2,902,100 acres of cropland; 7,700 acres of CRP land; 1,979,800 acres of pasture; and 1,283,200 acres of rangeland were converted to developed uses over five years.

To calculate the net change in land cover/use categories, subtract the total acres reported at the beginning of the reporting period (displayed in the last column of Tables 5, 6, 7 and 8) from the total acres reported at the end of the reporting period (displayed in the last row of Tables 5, 6, 7 and 8). For instance, between 1992 and 1997, developed land increased by 11,217,000 acres.

The state-level tables may break out data into additional land cover/use categories. Specifically, **Developed Land** may be reported in state tables as **Urban Built-Up** and **Rural Transportation**; **Cropland** may be expressed as **Cultivated Cropland** and **Non-Cultivated Cropland**; and **Water Areas and Federal Land** may be reported as **Small Water**, **Census Water** and **Federal**. These combinations are referenced in the glossary that accompanies the NRI summary report.

GLOSSARY OF SELECTED TERMS

Developed Land: A land cover/use category equal to the sum of urban built-up areas and rural transportation land.

Land Cover/Use: General categories used to present NRI data that account for all the surface area of the United States. Land cover is the vegetation or other kind of material that covers the land surface. Land use is the purpose of or human activity on the land.

Other Rural Land: A land cover/use category that includes farmsteads and ranch headquarters, other farm structures, field windbreaks, barren land and marshland.

Rural Transportation Land: A land cover/use category that includes highways, roads, railroads and associated rights-of-way outside urban and built-up areas. This category includes private roads to farmsteads or ranch headquarters, logging roads and other private roads.

Urban Built-Up Areas: A land cover/use category that includes residential, industrial, commercial and institutional land, construction sites, public administrative sites, railroad yards, cemeteries, airports, golf courses, landfills, sewage treatment plants, dams and spillways, small parks within urban and built-up areas, and highways, railroads and other transportation facilities if they are surrounded by urban areas. Parcels less than 10 acres that are surrounded by urban built-up land also are included.

A complete glossary of terms is available at:

http://www.nrcs.usda.gov/technical/NRI/1997/summary_report/glossary.html

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FARMLAND INFORMATION CENTER
 One Short Street, Suite 2
 Northampton, MA 01060
 (800) 370-4879
www.farmlandinfo.org

NATIONAL OFFICE
 1200 18th Street, NW, Suite 800
 Washington, DC 20036
 (202) 331-7300
www.farmland.org



Summary Report
1997 National Resources Inventory
Revised December 2000



Table 8— Changes in land cover/use between 1992 and 1997

Land cover/use in 1992	Land cover/use in 1997								1992 total
	Cropland	CRP land	Pastureland	Rangeland	Forest land	Other rural land	Developed land	Water areas & federal land	
	1,000 acres								
Cropland	362,606.3	2,062.6	9,210.5	1,555.5	1,937.1	1,722.2	2,902.1	318.9	382,315.2
CRP land	2,250.8	30,464.9	796.6	297.2	184.4	40.2	7.7	0.3	34,042.1
Pastureland	8,523.5	96.6	106,543.2	1,562.3	6,272.3	897.1	1,979.8	172.7	126,047.5
Rangeland	1,977.8	21.1	696.4	400,770.5	1,600.8	779.0	1,283.2	250.9	407,379.7
Forest land	759.9	22.9	1,887.7	1,170.0	395,273.0	950.2	4,771.1	372.2	405,207.0
Other rural land	707.7	27.9	753.5	474.0	1,447.4	46,744.4	448.5	22.4	50,625.8
Developed land	27.9	0.0	24.0	53.7	76.0	2.8	86,850.3	0.0	87,034.7
Water areas and federal land	144.0	0.0	80.0	94.0	164.2	5.6	9.0	450,980.9	451,477.7
1997 total	376,997.9	32,696.0	119,991.9	405,977.2	406,955.2	51,141.5	98,251.7	452,118.3	1,944,129.7

1992 land cover/use totals are listed in the right-hand vertical column, titled 1992 total. 1997 land cover/use totals are listed in the bottom horizontal row, titled 1997 total. The number at the intersection of rows and columns with the same land cover/use designation represents acres that did not change from 1992 to 1997. Reading to the right or left of this number are the acres that were lost to another cover/use by 1997. Reading up or down from this number are the acres that were gained from another cover/use by 1997.

