Grazing Lands

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Did you know ...

...that nearly half of the lower 48 states is grazing land: range, pasture, hay, and grazed forest?

...that range, pasture, hay, and grazed forest land are located where they are primarily because of climate or topography and by landowners' decisions about land use?

...that properly managed grazing is one of the most energy-efficient ways of producing food and fiber?

...that grazing lands help improve water supplies for residential, commercial, agricultural, and recreational uses?

...that many wildlife species rely on grazing lands for habitat and food?

...that carbon sequestration (absorption of atmospheric carbon by soil and plants) occurs when farmers and ranchers practice good grazing land management? And that carbon sequestration is a key to mitigating climate change?

...that grazing lands could be developed by farmers and ranchers as a source of biomass energy and raw materials, which could reduce U.S. reliance on imported products?

Where are the U.S. grazing lands?

Grazing lands exist in every state, but the amounts and kinds of land and the uses, products, and values from grazing lands vary from state to state. Examples of grazing land include—

- annual grasslands of California;
- *hot* deserts in the southwestern states and *cold* deserts in the Great Basin;
- shrub-grasslands throughout the western states;
- prairie grasslands of the Great Plains and Corn Belt;
- humid grasslands of the eastern United States and Hawaii;
- tundra rangelands of Alaska;
- improved pasture and hay lands throughout the Intermountain West, Northern Great Plains, Great Lakes, Northeast, and South;
- wetlands and riparian areas in every state; and
- grazed forests in all states adjacent to and east of the Mississippi River and in the mountain states of the West.

Although some pasture and hay lands are managed as a monoculture, others—particularly rangelands—are complex mixes of species that offer increased plant, animal, and landscape diversity. Many eastern forests used for timber production are also grazed, particularly if the forest land type is suitable for livestock grazing and other forage, such as pasture or hay, is available.

How grazing lands have changed

During the first half of this century, most agricultural operations included both cropland and grazing land. Cattle, sheep, and goats often grazed land that could not or should not have been cultivated or otherwise used intensively. New technology and new marketing opportunities in the 1970's, however, encouraged farmers to plow lands that had not been previously cultivated. The result, in many places, was increased erosion on lands that formerly had been protected by grasses, legumes, and shrubs.

Although some runoff and erosion are natural, accelerated erosion on degraded land reduces the land's production potential and causes offsite damage from sedimentation in streams, rivers, lakes, and reservoirs. Accelerated erosion is a concern not only where grazing lands have been plowed, but also on lands that are grazed improperly. Improper grazing can lead to other detrimental environmental impacts. Twenty-five percent of the Nation's grazing lands need some form of conservation treatment to reduce erosion.

Why are grazing lands important?

Energy savings—Grazing animals eat plants that cannot be digested by humans and many other animals, and have the advantage of producing food and fiber with little expenditure of fossil fuel energy. On properly managed grazing land—including pastureland and hayland—only 1 calorie of fossil-fuel energy is needed to produce up to 2 calories of food and fiber energy. Many crops require from 5 to 10 calories of fossil-fuel energy for every calorie

of food or fiber produced. Improving the efficiency of grazing land production can increase landowners' income, improve environmental quality, and help reduce the Nation's dependence on imported fossil fuel.

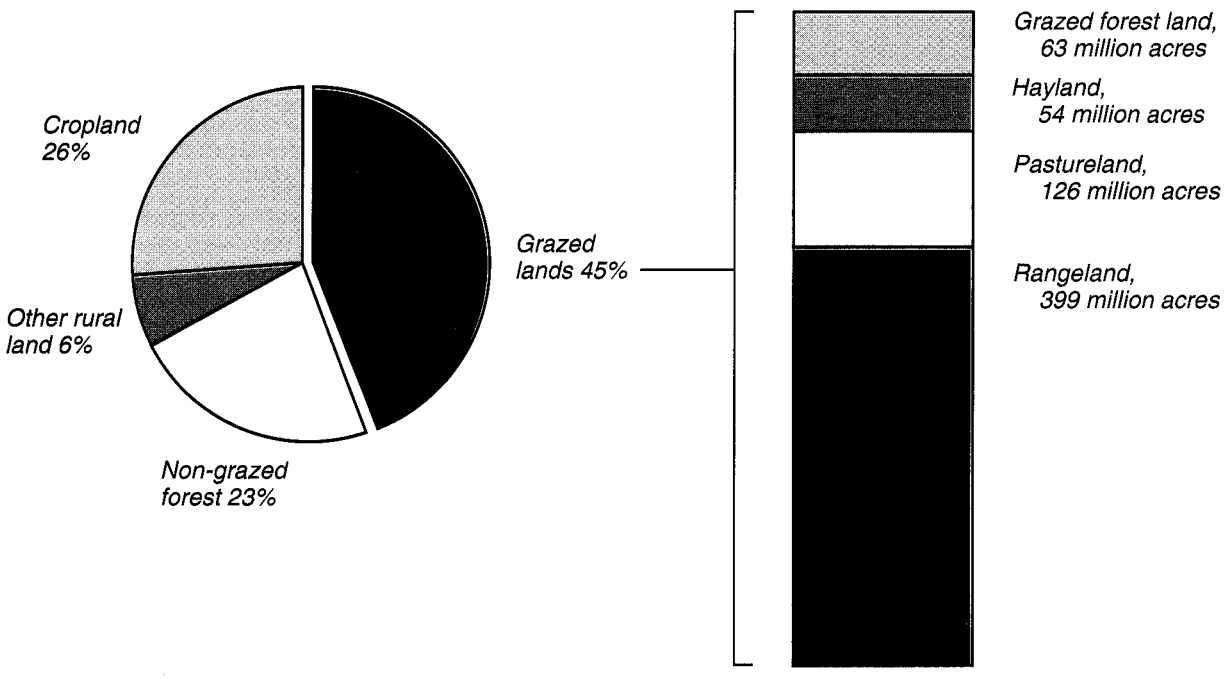
Food, medicine, and other products—Grazing by domestic livestock has been the primary use of grazing lands since European settlement and remains one of the most important uses today. Meat, milk, leather, wool, and mohair are well-known products from grazing animals. Less well known are pharmaceuticals produced from nonfood parts of the animals; natural fertilizers from animal bones, blood, and manure; and new and unique uses of familiar products—such as using wool, which readily absorbs oil, to remove spilled oil from soils, streams, lakes, and oceans.

Water storage and release—Vast quantities of rain and snow fall on the Nation's grazing lands. On healthy grazing lands, much of the water infiltrates into the soil and is used for plant growth, is stored in underground aquifers, or flows through the soil, providing water for streamflow, riparian areas, wetlands, and lakes, and subsequent use by people and wildlife.

Water quality—Modern grazing land management is one of the most important ways that farmers and ranchers can reduce erosion and water pollution and diversify income. For example, natural drainage areas on farms and the riparian areas adjacent to streams can be planted to grazing land plants. These forage plants capture runoff and sediment from the fields and protect water quality. Where sufficient plant material is left in grassed waterways or stream buffer zones for soil and water conservation purposes, a significant amount of the plant material can be grazed or mechanically harvested. There may also be outdoor recreation income options available—hiking, camping, horseback riding, hunting, and fishing.

Wildlife—Hunting and fishing are important recreational activities, and when many people think of wildlife they think of game species—deer, elk, grouse, or trout. But all wildlife have intrinsic value and are part of the ecological functioning of grazing lands. Everyone enjoys the unexpected view of a white-tailed deer on a pasture or grazed forest in the eastern United States, of an antelope in the Northern Great Plains or the Great Basin, of a pheasant in a grassed waterway in the Corn Belt, of a hawk in the desert Southwest, and of a mule deer on rangelands in any of the western states. People enjoy watching and listening to songbirds, and hearing—maybe seeing—a fish jump in a stream or pond. These experiences are made more enjoyable by the spectacular scenery that is often associated with grazing lands—the mountains of the West, the stark desert landscape of the Southwest, the prairie vistas of the Great Plains, and the green grass of pastures contrasted with the fall color of trees in the East.

Grazing lands make up 45 percent of U.S. non-Federal rural land.



Waste utilization—As concentrated animal production facilities—poultry and swine farms, beef feedlots, and confinement dairies—have become more common in a few geographical areas, and cities have begun to run out of landfill space, grazing lands have become attractive and appropriate locations on which to spread organic products and recycle the nutrients they contain. Spreading poultry litter on pasture land in the southern and eastern United States has allowed landowners to improve forage production and develop a more successful beef industry.

When properly applied, manure and other organic by-products can enhance the productivity and soil quality of grazing lands by increasing soil organic-matter content, improving soil moisture-holding capacity, and supplying valuable nutrients. If such by-products are applied to degraded land, or if they are applied in excess of the land's capacity to absorb them, the organic matter and nutrients from them can wash into streams, lakes, and estuaries, causing serious water quality degradation.

Carbon sequestration—Grazing land soils in the Great Plains contain over 40 tons of carbon per acre, while cultivated soils contain only about 26, on average. Carbon dioxide and other greenhouse gases may be increasing in the earth's atmosphere and changing the earth's climate. The grasses, legumes, and shrubs on grazing lands remove carbon dioxide from the air through photosynthesis and store it in the soil when roots die and decompose. This process promotes the long-term sequestration of carbon as soil organic matter. Cultivated lands planted to grassland plants as part of the Conservation Reserve Program were found to have added an average of 1,000 pounds of carbon per acre per year during the first 5 years after planting. This means that the CRP alone is removing 18 million tons of carbon from the atmosphere each year. This gain in sequestration of atmospheric carbon will continue until the soil reaches its equilibrium level of carbon.

Biomass—Grazing land plants can be harvested as sources for biomass energy or as feed stocks for industrial materials. There is a growing interest in using plant materials for energy because of the United States' dependence on foreign oil and concern about climate change associated with the release of fossil carbon into the atmosphere. Using *homegrown* plant material for energy would reduce to some extent the amount of oil that is imported. Burning plants for energy releases carbon dioxide into the air, but this carbon is offset by the carbon removed from the atmosphere through photosynthesis. Biomass carbon is, therefore, a renewable and sustainable resource.

Riparian areas can be enhanced by grazing management and permanent vegetation cover.

Grazing land health

Good grazing land management often leads to a more productive mix of plants. Also, soils are less compacted and more protected from the erosive forces of wind or water, and the self-regenerative capacity of the land is improved. Collectively, this improvement is considered a gain in grazing land *health.* Loss of grazing land health means that some options for current and future uses of the land have been temporarily or perhaps permanently lost.

What causes loss of grazing land health? The most common reason is overgrazing by domestic and wild animals. Fortunately, *grazing lands can be maintained in a healthy state with grazing, and properly managed grazing can enhance ecosystem health.* Sheep grazing, for instance, can reduce the dominance of leafy spurge and other noxious weeds on rangelands and thereby promote greater biodiversity. In many parts of the country, livestock—cattle, sheep, and goats—graze in shrub- and forest-dominated ecosystems to remove and prevent the buildup of highly flammable material and reduce the likelihood of wildfire.

Multiple benefits of grazing lands

Healthy grazing lands provide benefits other than feed for domestic animals. They are important habitats for a variety of large and small mammals, birds, and insects. Water runoff on healthy grazing land is slow, so more water infiltrates into the soil, providing cleaner, more abundant water for fish, wildlife, and human use. The plant cover on more than 600 million acres of grazing land sequesters millions of tons of carbon, thus reducing atmospheric carbon dioxide. Many grazing lands are among the Nation's most picturesque landscapes.

Although grazing lands are our biggest agricultural reserve, most of them are not suitable for crops. Nevertheless, some 180 million acres of non-Federal grazing lands—more than one-fourth of all privately owned grazing lands—are in soil capability classes I through III and therefore *could* be used to produce crops in the future if needed.

Healthy grazing land.

The United States Department of Agriculture, through the Natural Resources Conservation Service (formerly Soil Conservation Service), is preparing an *environmental scan of the status, conditions, and trends* of natural resources on America's non-Federal land, as required by the Soil and Water Resources Conservation Act of 1977 (RCA), Public Law 95-192. The appraisal will help guide the updating of the National Conservation Program, which directs USDA's natural resource conservation policies and programs. Ten other USDA agencies and 10 non-USDA agencies are full partners in this effort.

This issue brief is one in a series being prepared by the Natural Resources Conservation Service. It was prepared by Fee Busby, special assistant to the chief, Natural Resources Conservation Service, Washington, DC. For more information or if you have comments or suggestions, please contact James Maetzold, USDA, Natural Resources Conservation Service, Natural Resources Inventory Division, P.O. Box 2890, Washington, DC 20013; Phone (202) 720-0132; Fax (202) 690-3266.

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