

## Northern Plains Rangelands

Report DREC 03-17b

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Northern Plains rangelands are a valuable renewable natural resource that provides a multitude of benefits. Much of the region's economic base is dependent on rangelands, which are the principal land type for the area's recreation, wildlife, and tourism industries and provide the majority of the forage base for the livestock industry. The use of rangelands as grazinglands for domesticated livestock is the premier example of high-value-added sustainable agriculture with low energy input. The vegetation is self-perpetuating, and the animals harvest their own forage. Grazing livestock on rangelands converts perennial vegetation that cannot be directly consumed by humans into a high-quality food and provides beneficial secondary products such as fibers, medicines, cosmetics, oils, glues, and base compounds. The vegetation on rangelands provides habitat for wildlife and scarce plants and animals and stabilizes the soil, protecting it from wind and water erosion. Through photosynthesis, the plants reduce the levels of carbon dioxide in the air and release clean oxygen into the atmosphere. Rangelands collect, filter, and store water in aquifers and small basins (pot holes), then slowly release it into streams and rivers by processes that reduce the damaging effects of fast runoff and floods. Rangelands provide clean water for plants, animals, and humans. The open spaces of rangelands are aesthetically appealing and offer opportunities for recreation and sightseeing.

Properly managed, rangelands can be maintained at high levels of production in perpetuity. Rangelands are managed with ecological principles, unlike cropland, which is managed with agronomic principles. Proper management of rangelands requires an understanding of the effects environmental forces have on plant growth and of the complex processes within the plants and ecosystems. Ecological and biological requirements of grass plants can be met by properly timed defoliation by grazing. Rangeland plants have become biologically adapted to grazing. The adaptations are expressed through resistance mechanisms plants have developed in response to the evolutionary selective forces of defoliation. To maintain adequate activity of these biological processes, healthy range plants require annual defoliation by grazing. Management that is focused on a single use and that does not include annual defoliation at the appropriate growth stages cannot sustain a healthy ecosystem over time. Management that places the biological requirements of the plants as the highest priority and facilitates the operation of ecosystem functions at potential levels will sustain healthy, productive rangelands that will remain a valuable renewable natural resource, providing forage for livestock, habitat for wildlife and plants, clean air, clean water, open spaces for recreation and sightseeing, and food, fiber, and energy for people. The greatest attribute of rangelands is that when managed properly, they can provide all of these valuable benefits at the same time.