Rangelands Are an Important Asset to the Northern Plains

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Management based on ecological concepts will protect the health of rangelands and ensure that this valuable renewable natural resource can continue to provide a multitude of benefits, says a North Dakota State University range scientist.

"Much of the Northern Plains' economic base is dependent on rangelands, which constitute the principal land type for the region's recreation, wildlife, and tourism industries and furnish the majority of the forage base for the livestock industry," states Lee Manske, a range scientist at NDSU's Dickinson Research Extension Center. "When managed according to ecological principles, rangelands can sustain high levels of productivity and contribute substantially to the region's quality of life in perpetuity."

The benefits derived from rangelands are not just economic, Manske observes. Rangeland vegetation serves as habitat for wildlife; stabilizes the soil, protecting it from wind and water erosion; and reduces the levels of carbon dioxide in the air by sequestering a portion of the carbon and releasing oxygen. Rangelands reduce the damaging effects of fast runoff and floods by collecting, filtering and storing water in aquifers and potholes and then releasing it slowly into streams and rivers. Rangelands supply clean water for plants, animals, and humans and are aesthetically appealing open spaces for recreation and sightseeing.

The use of rangelands as grazing lands for domesticated livestock is the premier example of high-value-added sustainable agriculture with low energy input, notes Manske. The vegetation is self perpetuating, and the animals harvest their own forage. Grazing on rangelands converts perennial vegetation, which humans do not consume, into a source of high-quality food and beneficial secondary products such as fibers, medicines, cosmetics, oils, glues, and base compounds. Ensuring the continued ability of rangelands to provide these benefits requires an understanding of the effects environmental forces have on plant growth and of the complex processes within the plants and ecosystems. Rangelands are managed with ecological principles, unlike cropland, which is managed by agronomic principles, explains Manske.

Sound rangeland management places priority on the plants. The performance levels of the plant component of a rangeland ecosystem regulate the performance levels of all the other components of the ecosystem, stresses Manske. Plants are the primary producers, converting light energy into chemical energy during photosynthesis. This captured solar energy is the primary force driving all ecosystem functions and the foundation for all uses of rangelands.

To maintain adequate activity of biological processes, healthy range plants require properly timed annual defoliation by grazing, says Manske. "Management that focuses on a single use of rangelands and does not include annual defoliation at the appropriate plant growth stages cannot sustain a healthy ecosystem over time," he emphasizes.

"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 continue to supply forage for livestock; habitat for wildlife; clean air and water; open spaces for recreation and sightseeing; and food, fiber, and energy for people," states Manske. "The greatest attribute of rangelands is that when properly managed, they can provide all these benefits at the same time."