

## **Not All Heavy Grazing Is Overgrazing**

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Improved understanding of the biological concept of overgrazing could help reduce controversy over grassland management, says a North Dakota State University range scientist.

"The term overgrazing is often used incorrectly to refer to grazing that exceeds an arbitrary level determined by the eye of the beholder," states Lee Manske, range scientist at NDSU's Dickinson Research Extension Center. "Technically, overgrazing refers to continued heavy grazing that exceeds the recovery capacity of the plant community and creates a deteriorated range." Under this biological definition, the recovery capacity of the plant community determines both the level at which grazing becomes too great and the difference between tolerable short-term heavy grazing and unacceptable long-term heavy grazing.

Short-term severe defoliation results from practices that remove a high proportion of leaf material within a short period, Manske explains. Such practices include fire, flash grazing, or mowing close to the ground. Healthy, vigorous plants with relatively high levels of stored carbohydrates can tolerate periodic short-term severe defoliation when the interval between events is great enough for the plants to recover fully. The recovery interval is variable: three to four years for tallgrass prairie, five to 10 years for moist mixed grass prairie, and up to 25 years for dry mixed grass prairie.

Long-term severe defoliation is continued heavy defoliation that exceeds the recovery capacity of the plants. Prolonged severe grazing that results in biological damage to plants is correctly called overgrazing, Manske says. Overgrazing significantly reduces the total leaf area and photosynthetic capacity of plants. Herbage biomass and root systems on the affected grassland are greatly diminished, plant growth patterns are distorted, and growth response is delayed. The reduced vigor of plants results in the death of some individual plants and in an unhealthy shift in plant species composition.

Such range deterioration could result from excessively high stocking rates. It could also result from grazing practices that exceed the vegetation's capacity for fully recovering biologically, Manske explains. Overgrazing can result from defoliation that occurs when plants are at or near stressful stages of development; that is too severe and removes too much leaf area, forcing plants to draw on limited stored carbohydrates; or that occurs too frequently to allow plants adequate recovery time.

The stocking rate that a particular land area can safely support varies with grazing system, so stocking rates cannot be properly determined for parcels of land or regions of the country without consideration of the grazing system used, Manske emphasizes. Grazing systems that are based on plant requirements and that coordinate grazing periods with plant growth stages can be properly stocked at levels that would cause biological damage on a given parcel of land managed with another type of grazing system. As a result, changing the grazing system on biologically damaged range may simultaneously permit continued stocking at the previous rate and lead to improved rangeland health.