

Monitoring Grasslands Is Important

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Grasslands that are not performing close to their potential reduce the profit margins from the production of beef. Healthy grassland ecosystems produce greater quantities of herbage and more pounds of calf per acre than grasslands in good condition. The result is greater profit margins on healthy grasslands. Improving grasslands from an average condition to a healthy status

- increases herbage production to 133%-145%
- reduces acres per cow-calf pair per month 14%-57%
- reduces pasture costs per year 7%-169%
- reduces feed costs per day 7%-53%
- increases calf weight gain 19%-28%
- increases calf weaning weight by an average of 60 lbs
- reduces cost per pound of calf gain 22%-61%

- increases net return per cow-calf pair 40%-937%
- increases net return per acre 64%-2164%
- improves wildlife habitat, water and air quality, and aesthetic quality.

Improving the health performance status of grassland ecosystems requires two steps: first, implementing grazing management practices that meet the biological requirements of the plants and that coordinate grazing periods with grass growth stages so that both vegetative reproduction by tillering and activity of rhizosphere organisms are stimulated, and second, monitoring the response of grassland ecosystem performance to the changes in management practices. The response of biological mechanisms and ecosystem processes to changes in management strategy is slow, and the response of grassland ecosystem performance to management practices occurs in annual incremental changes, both positive and negative, which may be evident only through annual monitoring.

Management practices that focus on meeting the biological requirements of plants can sustain a healthy grassland ecosystem over time. The performance levels of the plant component of a grassland ecosystem regulate the performance levels of all the other components of the ecosystem. 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 provides the foundation for all uses of grasslands. By meeting the biological requirements of the plants and facilitating the operation of ecological processes at potential levels, proper management practices improve the performance levels of all grassland ecosystem components or maintain the health status and productivity of a grassland ecosystem functioning at high performance levels.

Monitoring the changes in the performance levels of several components of the grassland ecosystem over time provides indirect indication of the status of grassland ecosystem health. Grassland ecosystem monitoring can be accomplished rapidly and inexpensively through the use of the grassland ecosystem monitoring (GEM) method developed by North Dakota State University range scientists. This method comprises three simple procedures: taking plot photographs, compiling a major plant species present list, and completing a health status assessment. Ecosystem components considered during health status assessment procedures are aboveground vegetation, belowground plant structures, soil development processes, levels and types of erosion, ecological processes, and precipitation infiltration. With the grassland ecosystem monitoring procedures, ranchers can collect nonscientific, nonquantitative information that can be used to assess the performance status of grassland ecosystems, document changes in the ecosystem, and evaluate the effectiveness of management practices.

Implementation of beneficial management practices will improve the status of grassland ecosystem health, and annual monitoring will allow managers to evaluate changes in performance levels and to adjust management practices to ensure that the grassland ecosystems are functioning at high performance levels. Strengthening the status of health of the grassland ecosystem will provide improvement in livestock weight performance, reductions in livestock production costs, and increases in profit margins.

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