



Cattle Producer's Handbook

Range and Pasture Section

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Monitoring Grazing Lands

*Dustin D. Johnson, Harney County Extension Agent
Oregon State University*

*Kirk W. Davies, Rangeland Scientist
USDA - Agricultural Research Service*

An important step in developing a ranch or allotment management plan for grazing lands is establishing a rangeland monitoring program to evaluate progress toward achieving management objectives (Bedell 1998).

A monitoring program can:

- Help determine the benefits gained from changes in grazing management or investments in range improvements;
- Facilitate a better understanding of rangeland plants and how they interact with each other, the environment, and grazing animals;
- Build confidence in the management strategy;
- Detect negative trends early to prevent more extensive problems with weed infestations, loss of productivity, and vegetation composition shifts toward less desirable forage species; and
- Provide lessons of success and failure (as the case may be) that can be shared with others as learning opportunities. Perhaps most importantly, monitoring allows managers to practice adaptive management, which is the process of adjusting management plans in response to monitoring results.

A monitoring program is a multi-step process that includes more than just the collection of data and information on grazing lands. It also involves analysis and interpretation of monitoring results in relation to management objectives and adjustments to support short-term and long-term management decision-making. Analysis and interpretation of monitoring information are difficult and less meaningful without clearly defined management objectives by which progress can be measured. Management objectives can take many forms but should describe the desired conditions of one's resources including vegetation, soil, and water on grazing lands. If current conditions characterize what is wanted or needed, then management objectives should focus on maintaining those conditions.

Two approaches to monitoring grazing lands are needed to evaluate the effectiveness of a management strategy.

1. One needs to be able to compare resource conditions to those identified in the management objectives over time to determine if the management strategy is making progress toward achieving desired conditions on the grazing land. This type of monitoring is typically repeated every 5 to 10 years (after establishing baseline conditions over 2 or 3 years) and is often referred to as long-term or trend monitoring. In more fragile environments, trend data may be collected on a more frequent basis (i.e., every 3 to 5 years) (Bedell 1998).
2. There is a need to categorize yearly or short term the effects of inputs such as forage utilization that can influence long-term trend. Inputs can be viewed as factors that affect grazing land resources over time. For example, if one is maintaining an irrigated perennial grass pasture, management inputs may include the amount, timing, and frequency of irrigation or fertilizer applications.

The pasture will respond to adjustments in fertilizer and irrigation inputs with varying forage production levels. The magnitude and direction of change in forage production can be explained by considering adjustments in those management inputs along with factors external to management (e.g., weather inputs) that also affect a pasture's growing conditions. Because inputs on grazing lands frequently change from one year to the next, they must be monitored annually and are often referred to as short-term monitoring information. Considered together, short-term and long-term monitoring information offer the best opportunity for grazing land managers to evaluate one's progress toward meeting management objectives.

Rangeland monitoring is generally associated with public land grazing allotments but is just as important